

NATIONAL HEALTH AND MORBIDITY SURVEY (NHMS) 2023

Non-Communicable Diseases
and Healthcare Demand

TECHNICAL REPORT



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Non-Communicable Diseases and Healthcare Demand (NMRR-22-00545-XAC)

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MESSAGE FROM THE DIRECTOR GENERAL OF HEALTH MALAYSIA

The National Health and Morbidity Survey (NHMS) has been a cornerstone of public health research in Malaysia since its inception in 1986. Beginning from 2011, the Institute for Public Health has been conducting this nationwide population-based survey annually in four-year cycles; designed to provide current insights into the nation's disease burden, health care needs, and healthcare expenditure. The NHMS 2023 furnishes crucial epidemiological data on prevalent non-communicable diseases (NCD), non-communicable disease risk factors, and healthcare demand, serving as a vital tool for healthcare planning and policy formulation.

Understanding the evolving trends of diseases and their associated risk factors is paramount for anticipating and addressing the healthcare needs of the people in Malaysia. Findings of the NHMS are instrumental in monitoring national health indicators and benchmarking progress towards global commitments, such as Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs). Moreover, these insights are pivotal in implementing the National Strategic Plan for Non-Communicable Diseases (NSP-NCD), as 5 out of 7 targets are based on NHMS findings. The NSP-NCD was developed in line with the World Health Organization (WHO) Global Action Plan for NCD Prevention and Control, which includes the prevalence of diabetes and obesity, high blood pressure, tobacco use, harmful alcohol use, and physical inactivity.

The NHMS 2023 survey serves as a critical assessment tool for determining whether the NSP-NCD targets for the year 2025 are able to be achieved. Through comprehensive data collection and analysis, the survey provides valuable insights into the effectiveness of ongoing interventions and strategies to combat non-communicable diseases and their

risk factors in Malaysia. These findings are essential for policymakers, healthcare professionals, and stakeholders to gauge progress and make informed decisions regarding future healthcare initiatives and resource allocation.



The NHMS 2023 report is a testament to various organisations' collaborative efforts, including the Institute for Public Health, the Institute for Health Systems Research, universities, and other agencies. I sincerely congratulate all collaborators on the completion of the survey and preparation of the report. I hope that the comprehensive insights of this report will aid in formulating evidence-based policies and interventions, benefiting numerous stakeholders across the healthcare spectrum.

The success of this survey owes much to the gracious support of the State Health Departments, whose endless contributions included providing logistic reinforcements and human resources. I extend my deepest gratitude to all the State Health Directors and their staff for their invaluable support. My commendation also goes to the survey teams from the Institute for Public Health and the Institute for Health Systems Research for completing this endeavour. I thank all the agencies involved for their unwavering support and cooperation. Last but not least, I extend my heartfelt gratitude to the respondents who generously participated in the survey, demonstrating their commitment to building a healthier and better Malaysia. Your invaluable contributions have enriched our understanding of the nation's health landscape and will guide efforts towards improving health outcomes for all people in Malaysia.

A handwritten signature in black ink, appearing to read 'Datuk Dr. Muhammad Radzi bin Abu Hassan'. The signature is fluid and cursive, with a horizontal line underneath it.

Datuk Dr. Muhammad Radzi bin Abu Hassan

Director General of Health Malaysia Chairman of NHMS Steering Committee
Ministry of Health Malaysia

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EXECUTIVE SUMMARY

The National Health and Morbidity Survey (NHMS) is a nationwide population-based survey that provides information on Malaysia's disease burden, health problems, healthcare needs, and health expenditures. The year 2023 marks the 7th cycle of NHMS, which focused on non-communicable diseases, their risk factors, healthcare demand, and other topics, as requested by the stakeholders. This survey described the health status of people in Malaysia and monitored the diseases and healthcare utilisation trends reported in the previous NHMS. By obtaining updated information about the diseases and risk factor trends, the Ministry of Health (MOH) can review its health policies, priorities, and programme strategies and determine the utilisation and expenditure of health services accordingly. In addition, the findings of NHMS will be used to monitor international indicators such as the Sustainable Development Goal (SDG), Universal Health Coverage (UHC), and national indicators such as the National Strategic Plan for Non-Communicable Diseases (NSP-NCD) by the year 2025.

A total of 5,988 living quarters (LQs) were randomly selected from 499 enumeration blocks (EBs) from all states, including the federal territories in Malaysia. From 5,988 LQs selected, 5,554 LQs were identified to be eligible. For field data collection, 13,616 individuals agreed to participate, with 5,006 LQs successfully visited, achieving an overall response rate of 83.2%. For the Healthcare Demand (HCD) module, a total of 2,579 LQ were successfully contacted, resulting in 9,177 respondents participating. The initial recruitment of respondents was conducted via face-to-face interviews by the field data collection team. Subsequently, respondents were contacted using the Computer-Assisted Telephone Interview (CATI) approach.

The survey found that the overall prevalence of diabetes was 15.6%, with prevalences of known diabetes at 9.7%, and raised blood glucose among those not known to have diabetes at 5.9%. An increasing trend in the overall prevalence of diabetes was seen from 2011 (11.2%), 2015 (13.4%), and 2023, which peaked in 2019 (18.3%). Among those with diabetes, a higher proportion of raised blood glucose among those not known to have diabetes was

observed among the younger age group, aged 18 to 39 years old, as compared to those with known diabetes.

The overall prevalence of hypertension was 29.2%, with prevalences of known hypertension at 17.3% and raised blood pressure among those not known to have hypertension at 11.9%. Compared to findings in 2011 at 32.7%, 2015 at 30.3%, and 2019 at 30.0%, the raised blood pressure trend demonstrates a plateau. Similar to diabetes, among those with hypertension, a higher proportion of raised blood pressure among those not known to have hypertension was observed among the younger age group, aged 18 to 39 years old, compared to known hypertension.

With a known prevalence of 15.2% and raised blood cholesterol at 18.1% among individuals who were not known to have hypercholesterolaemia, the prevalence of hypercholesterolemia was 33.3%. Regarding hypercholesterolaemia, among those with hypercholesterolaemia, the age group of 18 to 49 years old showed a higher proportion of raised blood cholesterol in those not known to have hypercholesterolaemia than in those known to have hypercholesterolaemia.

The survey found 54.4% of adults in Malaysia were overweight and obese, with 32.6% being overweight and 21.8% being obese. The prevalence of abdominal obesity was 54.5%. Between 2011 and 2023, the prevalence of overweight and obesity increased from 44.5% to 54.4%, while the prevalence of abdominal obesity rose from 45.4% to 54.5%. It was noted that about a third (29.9%) of the adult population in Malaysia were physically inactive. However, the prevalence of physical inactivity had decreased as compared to 2006 (43.7%). Sedentary behaviour was also observed to be prevalent among adults at 49.9%. In addition, 95.1% of adults in Malaysia did not consume adequate fruit and vegetables.

The prevalence of current tobacco and e-cigarette smokers were 19.0% and 5.0%, respectively. There was a declining trend among current tobacco smokers from 22.8% in 2015 to 21.3% in 2019 and 19.0% in 2023. The prevalence of current alcohol drinkers among those aged 18 and above was 10.4%.

The percentage of harmful alcohol use among current alcohol drinkers has decreased from 2011 to 2023, with binge drinking dropping from 50.2% to 45.1% and heavy episodic drinking decreasing from 18.3% to 11.1%. Nevertheless, the percentage of binge drinking has remained high, with nearly half (45.1%) of current drinkers continuing to engage in this behaviour in 2023.

More than half (57.2%) of the respondents attended health screenings in 2023; the prevalence was higher as compared to 2019 (49.0%). Despite of increased health screening participation in 2023, there was a reduction in the prevalence of cancer screenings in 2023 as compared to 2019; mammogram examinations (12.8% vs 21.0%), pap smear examinations (34.9% vs 36.6%), and faecal occult blood tests (6.8% vs 10.8%).

A total of 4.6% of adults in Malaysia were found to be suffering from depression. The prevalence of depression doubled as compared to 2019 (2.3%) and was more prevalent among younger age groups, specifically those aged 16 to 29 years old. The prevalence of mental health problems has increased from 7.9% (2019) to 16.5% (2023), affecting 1 in 6 children aged 5 to 15 years old in Malaysia.

The findings of NHMS 2023 showed a decreasing prevalence of overall disability and overall difficulty. The prevalence of overall disability decreased from 11.8% in 2015 to 11.1% in 2019 and 8.2% in 2023; while the prevalence of overall difficulty decreased from 27.3% in 2019 to 21.7% in 2023. Less than half of individuals with disability utilised rehabilitation services.

The prevalence of known asthma among adults aged 18 years old and above was 6.2%, while the prevalence of probable asthma was 2.7%. There was an increase of known asthma in 2023 as compared to 2006 (4.5%). Among those with known asthma, 29.9% had one attack or more. For asthma among children aged 6 to 17 years, the prevalence of current asthma was 3.4%; decreasing from 5.4% in 2006.

The Healthcare Demand (HCD) module has been a pertinent part of the NHMS nationwide community-based cross-sectional survey. The year 2023 marked the seventh cycle for the HCD module, where several components had been modified or newly added. Components in this year's HCD module included self-rated health, acute health problems, health-seeking behaviour, barrier(s) to get healthcare, healthcare services utilisation, sources of payment for healthcare and the newly added components on online healthcare services and informed of sick child's diagnosis.

Looking at the country's general state of health, 18.8% of the population reported having acute health problems in the last two weeks prior to the interview. Among them, 70.8% sought treatment/ medication/ advice from healthcare practitioners (HCPs), 20.7% took medicine without advice from HCPs, and 15.1% got advice from other resources such as the Internet, TV, radio and others. Findings also showed that generally, 85.2% of the country's population aged 13 years old and above self-rated their health as "excellent or good" during the survey.

Meanwhile, about 2.3% of the population had reported unmet healthcare needs in the last 12 months prior to interview. Among them, 12.9% reported that the unmet healthcare needs were due to treatment being too expensive or cannot afford or a lack of money.

The survey found that among adults, 34.6% utilised medical check-ups, and among them had reported that it was referred by HCP (47.4%), self-initiated (31.2%) or other reasons (21.4%) in the last 12 months. In the same timeline, online healthcare services (OHS) were utilised by 6.3% or 1.5 million adults in Malaysia, where the majority used OHS for appointment scheduling (1.1 million).

Findings on healthcare services utilisation showed that 12.5% utilised outpatient healthcare services in the last two weeks prior to an interview, with a mean number of 3.54 visits per capita per year; whereby an equal share of public-private outpatient utilisation was reported. Meanwhile, inpatient healthcare was utilised by 5.8% of the population in the last 12 months, with a mean number of 0.07 admissions per capita per year, similar to NHMS 2019. In addition, 25.7% utilised oral healthcare services in the last 12 months, with a mean number of 0.33 visits per capita per year, where the public sector remains the main sector utilised.

With regards to the financial aspects of healthcare, overall outpatient healthcare services had the largest average out-of-pocket expenditure (RM 134.10), followed by overall oral healthcare services expenditure (RM28.41).

The experience of caregivers being given information on sick children's diagnosis during their visits to healthcare facilities was collected for the first time in this cycle of NHMS. Among the population aged 18 years old and above, 10.6% had experienced accompanying a sick child to a healthcare facility in the last 3 months. Among them, 96.9% were informed of the diagnosis and/ or care plan by healthcare practitioners.

The compelling evidence will hopefully assist policymakers and stakeholders in assessing disease trends, monitoring and evaluating the effectiveness of MOH's existing programmes, developing evidence-based policies, determining the utilisation and expenditure of health services, and monitoring the country's progress towards national goals and global commitments. Implementing a 'health in policies' approach via inter-ministerial commitment by getting input and involvement from the relevant ministries is essential to combating the rising prevalence of several NCDs and their risk factors in Malaysia.

Besides, empowering people to take charge of their health is also necessary. This can be done by enhancing health literacy through education on lifestyle modifications, nutrition, and regular screenings to prevent NCDs and risk factors. The HCD findings showed an overall picture of the population's current demand for healthcare services in 2023. These findings serve as input for the MOH to review existing programmes, formulate actionable policies to be implemented, and plan the resources required. In addition, further exploration into the underlying reasons for these findings can also be considered to achieve better health for Malaysia in the future.

LIST OF ABBREVIATIONS

AUDIT	Alcohol Use Disorders Identification Test
BMI	Body Mass Index
BRFSS	Behavioural Risk Factor Surveillance System
CI	Confidence Interval
EB	Enumeration Block
ECRHS	European Community Respiratory Health Survey
FBS	Fasting Blood Sugar
FOBT	Faecal Occult Blood Tests
FS	Field Supervisor
GATS	Global Adult Tobacco Survey
GPAQ	Global Physical Activity Questionnaire
HCD	Healthcare Demand
ISAAC	International Study of Asthma and Allergies in Childhood
LQ	Living Quarter
MDG	Malaysian Dietary Guidelines
MET	Metabolic Equivalent of Task
MOH	Ministry of Health
NCD	Non-Communicable Disease
NGO	Non-Governmental Organization
NHMS	National Health and Morbidity Survey
PHQ-9	Patient Health Questionnaire-9
RBS	Random Blood Sugar
REDCap	Research Electronic Data Capture
SDG	Sustainable Development Goals
SDQ	Strengths and Difficulties Questionnaire
STEPS	STEPwise approach to NCD Risk Factor Surveillance
WC	Waist Circumference
WG	Short Set Washington Group Short Set
WHO	World Health Organization

INTRODUCTION

INTRODUCTION

1.1 BACKGROUND

The National Health and Morbidity Survey (NHMS) is a nationwide population-based survey conducted since 1986. Its main objective is to give current information on Malaysia's disease burden, health problems, health care needs, and health expenditure. Beginning from 2011, the NHMS has been conducted yearly in four-year cycles. The first year of each cycle focuses on non-communicable diseases and healthcare demand, with subsequent years concentrating on other priority areas determined by the Ministry of Health.

The year 2023 marked the beginning of a new cycle for NHMS, which focused on non-communicable diseases (NCDs), risk factors, healthcare demand and a few additional topics, based on the requests from key stakeholders. The findings from the survey describe the health status of people in Malaysia and monitor the diseases and healthcare utilisation trends reported in the previous NHMS. By obtaining updated information about diseases and trends of risk factors, the MOH could review health policies, priorities, and programme strategies and determine the utilisation and expenditure of health services accordingly.

NCDs are the leading causes of death worldwide. Globally, NCDs kill 41 million people each year, equivalent to 71.0% of all deaths (1). The burden of NCDs is increasing rapidly and has significant social, economic, and health consequences, especially in developing countries (2,3). Meanwhile, in Malaysia, NCDs contributed to 72.0% of premature deaths and more than 76.0% of the burden of diseases (4,5). The previous surveys had reported an increasing prevalence of NCDs and NCD risk factors and increased demand for government healthcare utilisation (6). In this regard, the implementation of the NHMS is to assess disease trends, monitor and evaluate the effectiveness of MOH programmes. Furthermore, the compelling evidence will assist policymakers and stakeholders in developing evidence-based policies, determining utilisation and expenditure of health services, and monitoring international indicators such as the Sustainable Development Goal (SDG), Universal Health Coverage

(UHC) and national indicator with targets such as The National Strategic Plan for Non-Communicable Diseases (NSP-NCD) by the year 2025.

1.2 SCOPES OF THE SURVEY

Suggestions and feedback were obtained from the stakeholders and programme managers from all the divisions within MOH. Emphasis was placed on streamlining the topics based on the main scopes of NCDs and healthcare demand. Several discussions and engagements with stakeholders were held to justify all the scopes; whether old or new areas to be included in the survey. The selected topics were then shortlisted. All suggestions were critically analysed and discussed at the institutional level for selection to be included in the NHMS, based on criteria and suitability for a population-based survey. The final scopes to be included in the survey were endorsed by the NHMS Steering Committee, chaired by the Director-General of Health Malaysia.

1.3 OBJECTIVES

General objective

To provide community-based data and evidence to the MOH on NCDs, NCD risk factors, and healthcare demand, for the review of national health priorities and programmes.

Specific objective

To determine the prevalence of non-communicable diseases (NCDs), NCD risk factors and healthcare demand among population of Malaysia (**Table 1.1**):

Table 1.1: Summary of scopes for non-communicable diseases (NCDs) and healthcare demand (HCD), NHMS 2023

NON-COMMUNICABLE DISEASES (NCD)	HEALTHCARE DEMAND (HCD)
Main Non-Communicable Diseases (NCDs): Diabetes, Hypertension, Hypercholesterolaemia	General Health: Self-rated Health, Acute Health Problems, Health Seeking Behaviour
NCD Risk Factors: Physical Inactivity, Tobacco Use, Alcohol Consumption	Barrier(s) to Receive Healthcare
Health Screening	Medical Check-up
Dietary Practices	Online Healthcare
Nutritional Status	Outpatient Healthcare
Mental Health	Inpatient Healthcare
Asthma	Oral Healthcare
Disability	Quantum & Distribution of Out-of-Pocket Expenditure Informed of Sick Child's Diagnosis

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METHODOLOGY

METHODOLOGY

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2.1 TARGET POPULATION

The NHMS 2023 survey encompassed urban and rural regions throughout all 13 states and three federal territories in Malaysia. The target population was all individuals residing in non-institutional living quarters (LQs). The survey did not include those residing in institutional settings such as hotels, hostels, hospitals, etc.

2.2 SAMPLING FRAME

The sampling frame is derived from the National Population and Housing Census 2020. The geographical regions of Malaysia were divided into Enumeration Blocks (EBs). An EB typically consists of approximately 80 to 120 Living Quarters (LQs), accommodating an average population of 500 to 600 individuals (1). The categorisation of each EB as urban or rural is defined and classified by the Department of Statistics Malaysia (DOSM) based on the population size of the designated territory. An urban area is a gazetted area with adjoining areas with a combined population of 10,000 individuals or more (1). The definition of urban also takes into account the special development area which is not gazetted and can be identified and separated from a gazetted area or built-up area of more than 5 km and a population of at least 10,000 with 60.0% of the population (aged 15 years and over) engaged in non-agricultural activities (1). A rural area is a gazetted geographic region with a population count of less than 10,000 individuals.

2.3 SAMPLE SIZE DETERMINATION

The sample size was calculated using a single proportion formula for the estimation of prevalence.

$$n_{srs} \geq \frac{Z^2_{\alpha/2} P(1-P)}{e^2}$$

The sample size calculation was based on a few criteria as below:

- i. Variance of a proportion of the variable of interest (Based on NHMS 2019 or other literatures)
- ii. Margin of error (e) (Between 0.01 to 0.07)
- iii. Confidence Interval of 95%

To ensure optimum sample size, a few adjustments were made:

- i. Adjusted for finite population (Using estimated population data from 2022)
- ii. Adjusted for the design effect (deff) (Based on previous survey: NHMS 2019)
 $n(\text{complex}) = n(\text{srs}) * \text{deff}$
- iii. Adjusted the $n(\text{complex})$, taking into account expected non-response rates of 35%
 $n(\text{adj}) = n(\text{complex}) * (1 + \text{non-response rate})$

The sample size was subsequently adjusted based on the requirements of the analysis, depending on whether the prevalence estimate was for the national or state level. Considering the main objectives and factors mentioned above, the sample size needed was 5,988 LQs.

The allocation of samples among the states, urban and rural areas was conducted using the respective population sizes. More samples were assigned to states with larger populations, such as Selangor, Johor, and Sabah. In comparison, fewer samples were assigned to states with smaller population sizes.

2.4 SAMPLING DESIGN

The NHMS 2023 is a cross-sectional, population-based survey. A two-stage stratified random sampling design was used for this survey to ensure national representativeness. The two strata are the primary stratum, which comprises the states of Malaysia, including the Federal Territories, and the Secondary stratum, which includes urban and rural localities formed within the primary stratum.

Sampling involves two stages: the primary sampling unit (PSU), which is the Enumeration Blocks (EBs) and the secondary sampling unit (SSU), which is the Living Quarters (LQs) within the selected EBs. The PSU and SSU were randomly chosen by the Department of Statistics Malaysia (DOSM) based on the required sample size.

A total of 5,988 LQs were selected from 499 EBs in Malaysia. Four hundred and two EBs were from Peninsular Malaysia, 37 EBs, 32 EBs, and 28 EBs were from Sabah, Sarawak and WP Labuan respectively. Stratifying by urban and rural areas, there were 389

EBs from urban and 110 EBs from rural areas. Twelve LQs were randomly selected from each selected EB. The allocation of samples was done proportionally to the population size (PPS). A bigger number of samples was allocated to states with bigger population, and a smaller number was allocated to smaller population. The allocation of the selected sample by state is presented in **Table 2.1**. The eligible respondents in this survey were all individuals who resided in a primary residence for at least 2 weeks before data collection.

Table 2.1: Distribution of samples by states, NHMS 2023

NO	STATE	ENUMERATION BLOCK			LIVING QUARTERS		
		URBAN	RURAL	TOTAL	URBAN	RURAL	TOTAL
1	Johor	33	8	41	396	96	492
2	Kedah	18	7	25	216	84	300
3	Kelantan	13	12	25	156	144	300
4	Melaka	23	2	25	276	24	300
5	Negeri Sembilan	18	8	26	216	96	312
6	Pahang	14	11	25	168	132	300
7	Pulau Pinang	24	2	26	288	24	312
8	Perak	21	7	28	252	84	336
9	Perlis	18	7	25	216	84	300
10	Selangor	67	5	72	804	60	864
11	Terengganu	18	7	25	216	84	300
12	Sabah	20	17	37	240	204	444
13	Sarawak	18	14	32	216	168	384
14	WP Kuala Lumpur	29	0	29	348	0	348
15	WP Labuan	25	3	28	300	36	336
16	WP Putrajaya	30	0	30	360	0	360
TOTAL		389	110	499	4668	1320	5988

2.5 ETHICAL CONSIDERATIONS

The survey successfully obtained ethical permission from the Medical Research and Ethics Committee of the Ministry of Health Malaysia. The survey has been registered in the National Medical Research Registry under the identification number NMRR ID-22-00545-XAC.

2.6 CONSENT AND ASSENT

Information sheets and consent forms were made available for every respondent. Respondents were briefed on the survey's purpose, process, and requirements before each interview.

Details of the consent and assent form are as follows:

- Respondent Information Sheet for 3 age groups (below 12 years old, 13 to 17 years old, and above 18 years old)
- Respondents 5 to 12 years old: signed by the parents or guardian (**Appendix 8**)
- Respondents aged 13 to 17 years old: assent form signed by the parents or guardian (**Appendix 8**)
- Respondents aged 18 years old and above: consent form was signed by the respondent; meanwhile, for people with disabilities and minors, signed consent was obtained from the parent or guardian with a witness. For illiterate respondents, thumbprint impressions were taken from the respondent with a literate person as the witness.

- For the Computer-Assisted Telephone Interview (CATI), all consents and assents were obtained during the field data collection before proceeding with collecting their contact details to be called later.

2.7 QUESTIONNAIRES AND OTHER SURVEY MATERIALS

The data collection process for this survey involved the use of structured questionnaires. Three methods of data collection were utilised: face-to-face interviews, self-administered questionnaires (SAQ) and Computer Assisted Telephone Interview (CATI).

Pre-testing, including cognitive debriefing, was conducted to ensure the validity and reliability of additional questionnaires. Pre-test training was provided to the related key person for the modules, and 30 respondents from each related module participated in the pre-test held in January 2023. The members of the study team recorded and discussed the feedback from the respondents. The questionnaire's phrasing was modified accordingly in response to the feedback.

The face-to-face interviews employed a validated questionnaire available in Malay and English. A questionnaire manual was also provided to ensure consistency in the interview process. The questionnaires were created using the REDCap system, with the REDCap mobile apps installed on

handheld devices for the face-to-face interviews. Hard copies of the self-administered questionnaires were distributed to the respondents. It is available in two languages: Malay and English. The instrument used, method of data collection and the target age group for each module under non-communicable disease or healthcare demand components are as presented in **Table 2.2**.

In 2023, the HCD module was conducted using the CATI approach instead of face-to-face interviews in considerations of resource limitations. Structured questionnaires were used to collect data based on the scopes of the survey and a modified bilingual (Malay and English languages) questionnaire was used. The questionnaire was modified from the previous questionnaire used in 2019, with scopes shortlisted following stakeholder engagements and consensus, resulted in a more condensed version to suit the method of data collection using CATI approach. Additionally, pre- and pilot testing were conducted on the questionnaire to ensure its validity (2). The web-based REDCap system was exclusively used for the CATI questionnaire development and data collection. Manuals for questionnaire and REDCap, guide for CATI and online survey application were used as a guide during data collection. The complete questionnaire and code book for NHMS 2023 can be found in the appendix of this report (**Appendices 9 and 10**).

Table 2.2: Modules, instruments, methods of data collection and target age groups, NHMS 2023

NO.	MODULES	INSTRUMENTS	METHODS	TARGET AGE GROUPS
NON-COMMUNICABLE DISEASES				
1	Household	-	Face-to-face	All
2	Sociodemography	-	Face-to-face	All
3	Diabetes	STEPS	Face-to-face	≥18 years
4	Hypertension	STEPS	Face-to-face	≥18 years
5	Hypercholesterolaemia	STEPS	Face-to-face	≥18 years
6	Physical Activity	GPAQ	Face-to-face	≥18 years
7	Smoking and Tobacco Use	Mini GATS	Face-to-face	≥15 years
8	Health Screening	-	Face-to-face	≥18 years
9	Dietary Practices	STEPS	Face-to-face	≥18 years
10	Disability	WG Short Set	Face-to-face	≥18 years
11	Asthma (Adults)	ECRHS	Face-to-face	≥18 years
12	Asthma (Children)	ISAAC	Face-to-face	6 - 17 years
13	Nutritional status (Anthropometric)	-	-	≥15 years
14	Mental Health (Adults)	PHQ-9	Self- Administered	≥16 years
15	Mental Health (Children)	SDQ	Self- Administered	5 - 15 years
16	Alcohol	AUDIT	Self- Administered	≥13 years
17	Insufficient sleep	BRFSS	Face-to-face	≥18 years
HEALTHCARE DEMAND				
18	Self-Rated Health	World Health Survey		≥13 years
19	Acute Health Problems			All
20	Health Seeking Behaviour			
21	Barrier(s) To Get Healthcare			
22	Medical check-up		Computer-Assisted Telephone Interview (CATI)	≥18 years
23	Online Healthcare Services			
24	Outpatient Healthcare	Questionnaire (2,3)		
25	Inpatient Healthcare			
26	Oral Healthcare			
27	Quantum & Distribution of Out-of-Pocket Expenditure			
28	Informed of Sick Child's Diagnosis			≥18 years

The survey conducted interviews with respondents aged 13 years and above. In cases where the respondents were younger, interviews were answered by their parents or guardians, acting as proxies. Similar protocols were employed for the SAQ and CATI.

Both clinical assessment and blood investigation devices had been calibrated and validated before the survey commenced. The clinical assessment and blood investigation carried out during the survey are presented in **Table 2.3**. The anthropometry measurements (weight, height and waist circumference) were carried out twice by the trained nurses or assistant medical officers.

Table 2.3: Clinical assessments and blood investigations, NHMS 2023

NO	PROCEDURES	MEASUREMENTS	DEVICES	TARGET AGE GROUP
1	Clinical Assessment	Weight	Tanita HD Weight Measurement 319	≥15 years
		Height	SECA Stadiometer213	≥15 years
		Waist Circumference	SECA measuring tape 201	≥18 years
		Blood pressure	OMRON 907	≥15 years
2	Blood Investigation	Capillary Blood Glucose	Accu-Chek® Guide	≥18 years
		Capillary Blood Cholesterol (TC, LDL, HDL, TG)	CardioCheck® PA	≥18 years

The exclusion criteria for the anthropometric measurement included those who were pregnant, post-natal less than 60 days from the visit date, bedridden, or have physical disabilities which can affect normal standing, including those using wheelchairs or deformities.

A finger-prick blood test using the Point of Care Testing (POCT) devices (Accu-Chek® Guide and CardioCheck® PA) was offered to all respondents aged 18 years and above. Respondents were instructed to follow at least an 8-hour fasting period, either on the interview day or by scheduling an appointment for the test on a different day. A total volume of 40.6µL was required from the finger prick to measure blood glucose and blood cholesterol values. Calibration and quality control (QC) were performed to ensure the reliability and consistency of the assay results. The POCT devices were calibrated and QC was run weekly before use to check its performance. Control solutions from the manufacturer were used for QC of the devices. The control intervals and limits should be adapted to each laboratory’s individual requirements. All QC done were recorded in QC forms provided for both devices.

The clinical assessment measurements were recorded in the clinical assessment book and keyed into the mobile device by nurses/ assistant medical officers.

2.8 FIELD DATA COLLECTION PREPARATION, CATI PREPARATION, AND LOGISTIC SUPPORT

NHMS 2023 received excellent support from the State Health Department for the field preparation of data collection. A liaison officer was appointed in each state to facilitate data collection activities. The primary role of these individuals was to promote the dissemination of information included in the survey. Additionally, they were responsible for coordinating with the designated communities, District Health

Officers, and Local Authorities to make necessary logistical preparations. They also facilitated the promotion of the survey by disseminating relevant information to various stakeholders, including the public. Briefing sessions about the survey and support required were carried out for all liaison officers.

The data collectors carried out scouting activities in the specified districts before and during the initiation of data collection. The study respondents were contacted, and those residing in the LQs were informed about the survey. Pamphlets regarding the survey were distributed to the communities and pertinent government agencies.

Field Supervisors (FS) from each state were recruited from the Institute for Public Health (IKU), the Institute for Behavioural Research (IPTK), and the State Health Department personnel. Before the actual data collection period, FSs conducted field preparation, including securing lodging for the teams, transportation, determining routes for data collection, and starting points based on selected LQs in the various EBs (the daily target for each team was to visit at least four LQs). FSs were responsible for planning the movement of the teams with the help of State Liaison Officers. FSs were also responsible for channelling financial requirements, particularly fuel and other expenses on the field **(Figure 2.2)**.

As for CATI, CATI Supervisors were recruited from the Institute for Health Systems Research (IHSR). Pre-survey preparations included training sessions for field supervisors and data collectors, development and testing of questionnaire in the web-based REDCap application, integration testing for the line-listings received from field data collection teams, development and testing of online registry and online progress monitoring dashboard for the day-to-day activity during data collection, as well as roster and shift scheduling for field supervisors and data collectors; some of which will be elaborated in each respective section **(Figure 2.3)**.

2.9 TRAINING

i. Field data collection

To ensure effective and uniform data collection, field supervisors, team leaders, nurses/ assistant medical officers, and field interviewers underwent a 7-day training on the interview methodology by the trainers. The initial in-house training for FS was conducted in June 2023 in IKU. Training courses for data collectors were conducted separately in Sabah, Sarawak, and Peninsular Malaysia. The training was held from 4-10 July 2023 in Sabah and Sarawak and from 12-18 July 2023 in Peninsular Malaysia.

The training comprised a review of the survey's content and completion procedure. Each data collection team members (field supervisor, team leader, nurse or assistant medical officer and interviewers) received research materials explaining the survey's activities, interview questionnaire, and the tasks and obligations. The objective of the training was to familiarise the data collection teams with the questionnaire, cultivate their interpersonal skills, and instill an appreciation for the importance of good teamwork. The training included a briefing on the questionnaire, a simulated interview in the hall, and individual interviewing practice under supervision.

Nurses and assistant medical officers underwent training to conduct clinical assessments and how to handle devices. They were also informed about the guidelines for referring individuals with health issues. A pilot data collection was conducted after the completion of the training programme.

ii. CATI training

As this was the first time HCD module to be conducted in CATI approach, several in-house trainings were made for the CATI Supervisors and data collectors. Four in-house training sessions were held for the CATI Supervisors between May and June 2023 in IHSR. While training sessions for the data collectors were conducted on 17-20 July 2023 and 16-17 August 2023, corresponding to the respective batch of recruitments.

The objectives of the training courses consisted of understanding the questionnaire contents, manual and code book, familiarisation with the web-based REDCap application and the in-house caller system as well as hands-on practice and simulation of the general interviewing workflow in their respective roles as FS and data collector. Emphasis was made on the importance of interpersonal and communication skills, as well as the essential role for both CATI

Supervisors and data collectors in upholding data integrity and quality. Training sessions were essential to refine interviewer techniques and understanding of the questionnaire (e.g. interpretation, rephrasing and translation of questions where needed). Several live individual interviews were conducted with the data collectors before the end of the training session.

2.10 PUBLICITY

A publicity campaign is crucial in enhancing engagement for a nationwide community survey. The primary objective of this initiative is to raise public awareness and knowledge regarding the planned survey activities and to maximise the level of participation from household members residing in the selected LQs across the country. The publicity campaign utilised both conventional print media and digital platforms, and its prominence was further accentuated during the various listing activities.

A dedicated publicity team undertook the coordination of all publicity operations. The publicity team developed "NHMS 2023 Media Kit": the template and content of various promotional materials, including pamphlets, posters, buntings, banners, car stickers, respondent information sheets, promotional videos, media press releases, and radio and television interview texts (including questions and answers). This process involved collaboration with the Principal Investigator and the approval from the NHMS Central Coordinating Team (CCT). The printed publicity materials, including pamphlets, were designed in multiple languages, including Malay, English, Mandarin, and Tamil, to reach diverse ethnic communities. Data collection teams distributed the pamphlets during their initial visits. These teams also disseminated the promotional video of NHMS 2023 and the official NHMS website's Unified Resource Locator (URL) link to selected households through a WhatsApp message sent by the head of the community. In addition, the Honourable Minister of Health officially launched the survey with mass media coverage on 14 July 2023. A mini-exhibition about the survey was held concurrently during the launch assisted in imparting knowledge about the survey to media reporters.

The public relations team collaborated closely with the MOH's Corporate Communication Unit to manage publicity efforts across several media platforms, including written publications and television broadcasts. Liaison Officers from State Health Departments supported publicity at the state level. Each state's liaison officer or field supervisor was responsible for organising local media interviews and other publicity efforts. NHMS 2023 utilised social media platforms such as the MOH's Facebook and Instagram page to enhance public awareness.

A summary of the publicity activities and materials employed is included in **Appendix 11**.

2.11 DATA COLLECTION

i. Field data collection

Data collection was conducted from 11 July - 29 September 2023. A total of 36 teams were formed to cover field activities throughout Malaysia: 27 teams in Peninsular Malaysia and 9 teams in Sabah, Sarawak and WP Labuan. The teams in Peninsular Malaysia were divided according to the zone: North (6 teams), Central (9 teams), South (7 teams), and East Coast (5 teams). Meanwhile, Sabah, Sarawak, and WP Labuan were divided according to state. Each state had two to four teams (**Figure 2.1**).

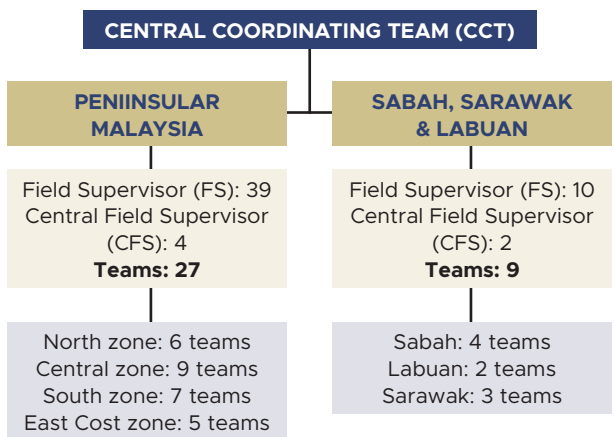


Figure 2.1 : Distribution of teams for data collection, NHMS 2023

Each team comprised one research assistant, Q27, as a team leader, one nurse or assistant medical officer, one research assistant, Q17, as an interviewer, and one other research assistant, Q17, as a driver and interviewer. To ensure efficient logistic support, one FS was assigned to supervise and support the team, and one CFS was assigned to monitor the team according to zone or state (**Figure 2.2**).

The team leader was in charge of planning visits to the LQs during the data collection, making appointments with the households for interviews and blood taking, and ensuring the team was keeping up to the schedule during data collection.

To ensure good response rates and survey completeness, the teams visited every enlisted LQ. At least three visits at different times of the day were attempted before the selected LQ was classified as non-response.

A non-response household survey could have been caused by LQs that were locked, unoccupied, or

refused to participate, in addition to other factors, including a hostile or dangerous setting. Individual unsuccessful surveys may result from respondents who were not eligible for the survey, people who were absent from homes during the planned visits, people who declined to participate, or had language barrier.

Consent from the respondent and/ or his/ her legally authorised representative was obtained before initiating the survey at the respondent’s house. If a respondent decided to withdraw after the interview had started, the interviewer stopped the interview. Respondents who withdrew after the commencement of interview were recorded as incomplete but successful interview.

Data collection through face-to-face interviews was conducted by the research assistant (Q27 and Q17) using hand-held mobile devices. As each research assistant was provided with a hand-held mobile device, more than one respondent may be interviewed by a team at a time. The questionnaires were pre-installed with in-built quality checks and skip patterns (if applicable).

For the SAQ, respondents were given hard copies of the questionnaire. Once completed, respondents put the hardcopy questionnaires into sealed envelopes and handed them to data collectors at the later hour on the same day or the following day. The data collection teams subsequently entered responses from all SAQs into the system.

For quality check, the FS observed the interview session and re-interviewed part of the module (verification interview) for 5% of the respondents.

A finger-prick blood test at the point of care was offered to all respondents aged 18 years and above. During the data collection period, any respondent detected as having any medical problems was referred to the nearest government health clinic for further management. A token of appreciation was given to the head of household of each LQ who completed the survey interview.

ii. CATI data collection

The data collection period for CATI was from 21 July - 14 October 2023. A total of 17 CATI Supervisors and 21 data collectors were scheduled to work in two shifts on a rotational basis in a designated workspace within the National Institutes of Health. Each workspace was equipped with a computer, an in-house caller system and a headphone set. Each working day consisted of two shifts of 8am to 5pm and 1pm to 10pm, with up to two FS and up to 10 data collectors per shift.

CATI Supervisors were in-charge of planning and strategising the calls to make during data collection, provide supervision and live support to the data collectors (and intervene when necessary), observing the data collectors' mannerisms when conversing with respondents, verifying the collected data on the completed interviews, and reporting the daily progress of data collection.

Data collectors made telephone calls based on a list of respondents who agreed for CATI that was derived from the line-listing of respondents received from field data collection teams. The gap between field data collection and CATI was between 10 to 25 days. To ensure good response rates and survey completeness, contacted respondents were inquired on their eligibility status as it might have changed since the visit made by the field data collection team. In addition, data collectors also asked respondents regarding the presence of possible eligible members within their households that were not included during field data collection; if there were any, verbal consent to participate was acquired from that person and/ or legal guardian before proceeding with the interview.

The responses were recorded into the web-based REDCap application, while the status of each interview was recorded into an online registry. An interview was declared successful if at least one question was answered during the interview.

An unsuccessful interview occurred when there was a refusal to participate, inability to converse further due to language barrier, inability to contact the respondent due to incorrect or invalid phone number given, or non-response (at least three separate telephone calls were attempted at different times before concluding it as a non-response).

Completion of data recorded in the web-based REDCap application were then verified by the CATI Supervisors; repeat telephone calls were made to solve missing responses or to address identified discrepancies. The verification details of each response were also recorded into the same online registry. An online dashboard was also developed as an interface for the online registry to monitor the daily achievements and progress throughout the data collection process. Daily monitoring of the dashboard allowed for immediate re-strategising when necessary. At the same time, the transparency of information shared regarding the data collection targets enabled the HCD team to reach the same level of understanding and expectations.

2.12 DATA MANAGEMENT AND MONITORING DURING DATA COLLECTION

The centralisation of data processing activities at the Institute for Public Health involved a series of steps, beginning with the reception of data from the field through a mobile tablet device and concluding with the delivery of a cleaned dataset to the data analysis team.

The data collection teams utilised mobile tablet devices equipped with the REDCap mobile application to conduct face-to-face interviews and the REDCap web-based application for CATI. The self-administered questionnaire (SAQs) was returned to the team, and all were subsequently entered into the system. The completed modules were transmitted via internet to the centralised survey system server located at the National Institutes of Health (NIH) (**Figure 2.4**). For CATI, data entered into the REDCap web-based application was stored live on the server. Additional data on the data collectors who conducted the interview, the CATI Supervisors who verified each record entry and the audit trail of amendments made were also recorded and kept in the server. The data management team downloaded data from the server weekly for quality control (especially on the respondent ID, outliers or incorrect data). Subsequently, the dataset was analysed.

The CCT held regular weekly meetings throughout the designated period for data collection to monitor and evaluate the progress made by each team. The Director of IKU chaired these sessions, focusing on team movements, logistical challenges, response rates, and publicity. The productivity monitoring of each team involved comparing the cumulative targeted LQs with the weekly progress report by the teams and the amount of data received in the server.

The information, as mentioned earlier, was regularly updated on an online monitoring board (Google Sheet).

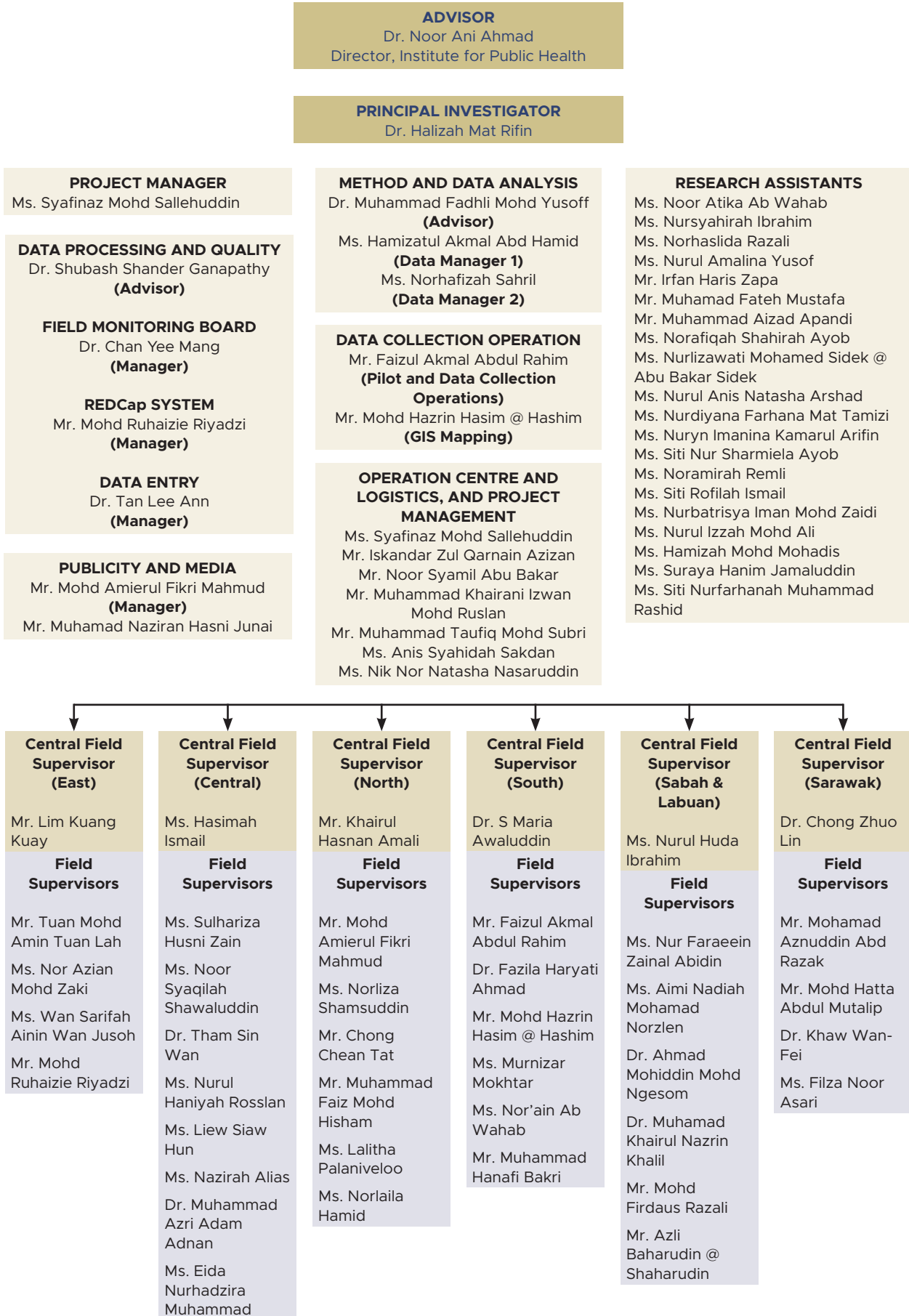


Figure 2.2: Organisation chart for field data collection team, NHMS 2023



Figure 2.3: Organisation chart for CATI team, NHMS 2023 Healthcare Demand Module

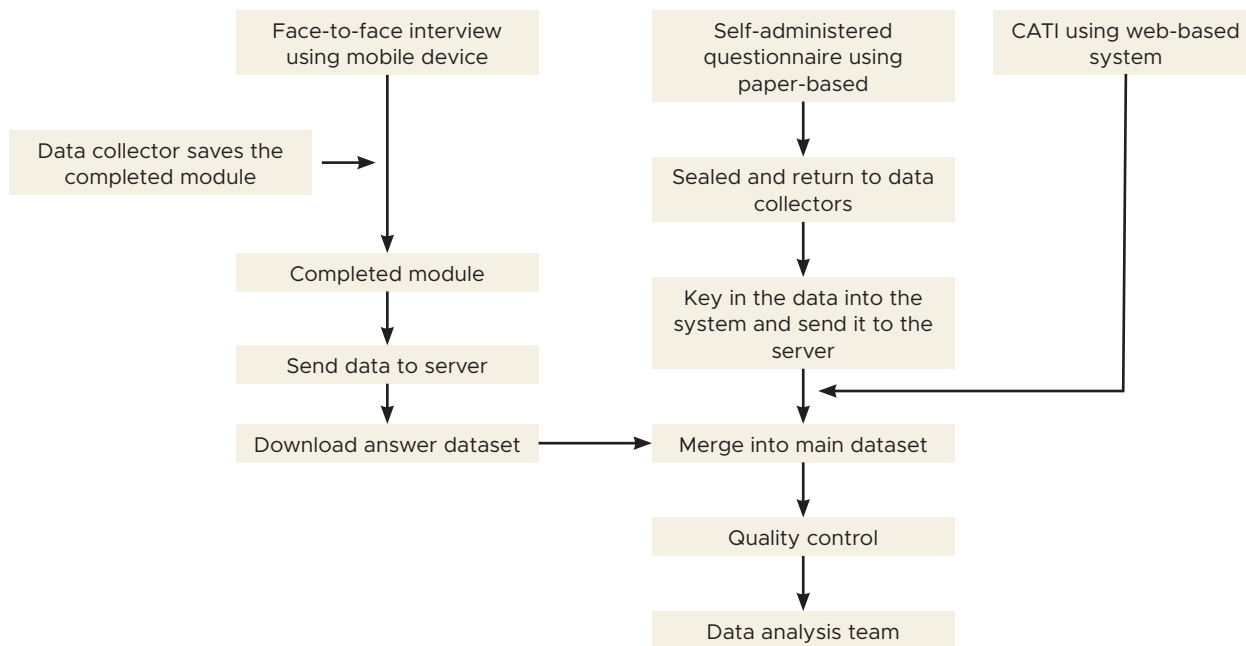


Figure 2.4: Flow chart of data entry and quality control, NHMS 2023

2.13 DATA ANALYSIS

Data analysis was based on the survey’s objectives, working definitions, and dummy tables. The analysis employed complex sampling procedures and was conducted with a confidence interval of 95%.

A weighting factor was applied to adjust for non-response and the varying probabilities of selection. The weight used for estimation was calculated by using the formula:

$$W = W1 \times W2 \times F \times PS$$

Where;

W1: the inverse of the probability of selecting the EBs.

W2: the inverse of the probability of selecting the LQs.

F: the non-response adjustment factor

PS: a post-stratification adjustment factor calculated by age, gender and ethnicity

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NON-COMMUNICABLE DISEASES

NON-COMMUNICABLE DISEASES: GENERAL FINDINGS

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3.1 SAMPLE COVERAGE

From the 5,554 eligible LQs, a total of 5,006 LQs were successfully visited, giving a response rate of 90.1%. From these LQs, a total of 14,745 participants were eligible for interview. A total of 13,616 respondents were successfully interviewed, giving an individual response rate of 92.3%. Therefore, the overall response rate for this population-based survey was 83.2%. The response rate by state is presented in **Table 3.1**.

Table 3.1: Response rates by living quarters and individuals by states, NHMS 2023

STATE	LIVING QUARTERS			INDIVIDUALS			TOTAL RESPONSE RATE (%)
	ELIGIBLE	VISITED	RESPONSE RATE (%)	ELIGIBLE	INTERVIEWED	RESPONSE RATE (%)	
Johor	473	459	97.0	1,346	1,282	95.2	92.43
Kedah	284	270	95.1	735	662	90.1	85.63
Kelantan	283	276	97.5	814	752	92.4	90.1
Melaka	275	265	96.4	785	748	95.3	91.82
Negeri Sembilan	290	266	91.7	775	744	96.0	88.06
Pahang	284	265	93.3	759	720	94.9	88.52
Pulau Pinang	296	273	92.2	678	644	95.0	87.60
Perak	321	294	91.6	743	684	92.1	84.32
Perlis	282	265	94.0	697	643	92.3	86.69
Selangor	771	622	80.7	1,936	1,726	89.2	71.92
Terengganu	279	268	96.1	742	687	92.6	88.94
Sabah	399	353	88.5	1,042	975	93.6	82.78
Sarawak	343	295	86.0	1,056	956	90.5	77.86
WP Kuala Lumpur	326	278	85.3	800	691	86.4	73.66
WP Labuan	327	320	97.9	984	942	95.7	93.68
WP Putrajaya	321	237	73.8	853	760	89.1	65.78
MALAYSIA	5,554	5,006	90.1	14,745	13,616	92.3	83.23

3.2 SOCIODEMOGRAPHIC CHARACTERISTIC

Out of 13,616 respondents, the majority were Malaysian citizens (94.8%), from urban localities (76.4%), and more than half (52.8%) were females. About 13% (12.7%) of the respondents were from the state of Selangor. The highest percentage of respondents were those aged 60 years and above (21.9%). More than half of the respondents

(60.3%) were Malays and obtained a secondary education level (53.5%). Using reported individual incomes, household income was calculated and then categorised according to state-specific thresholds for B40, M40, and T20 obtained from DOSM (1). The results indicated that 62.8% of respondents belonged to the B40 household income category, while only 11.7% were in the T20 category (**Table 3.2**).

Table 3.2: Sociodemographic characteristics of respondents, NHMS 2023

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	PERCENTAGE (%)	SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	PERCENTAGE (%)
MALAYSIA	13,616	100.0	Marital Status		
State			Never married	5,004	36.8
Johor	1,282	9.4	Married/ Living with a partner	7,252	53.3
Kedah	662	4.9	Separated/ Divorced/ Widowed	1,351	9.9
Kelantan	752	5.5	Education Level		
Melaka	748	5.5	No formal education	2,955	21.8
Negeri Sembilan	744	5.5	Primary education	1,985	14.6
Pahang	720	5.3	Secondary education	7,267	53.5
Pulau Pinang	644	4.7	Tertiary education	1,373	10.1
Perak	684	5.0	Occupation		
Perlis	643	4.7	Government employee	994	7.3
Selangor	1,726	12.7	Private employee	3,205	23.6
Terengganu	687	5.0	Self-employed	1,651	12.2
Sabah	975	7.2	Unpaid worker/ Homemaker/ Caregiver	2,032	15.0
Sarawak	956	7.0	Retiree	836	6.2
WP Kuala Lumpur	691	5.1	Student	2,735	20.2
WP Labuan	942	6.9	Not working (unemployed, health problem, old age & child)	2115	15.6
WP Putrajaya	760	5.6	Household Income Group		
Location			Less than RM 1000	1,933	14.2
Urban	10,402	76.4	RM 1,000 – RM 1999	2,024	14.9
Rural	3,214	23.6	RM 2,000 – RM 3,999	3,588	26.4
Sex			RM 4,000 – RM 5,999	2,223	16.4
Male	6,426	47.2	RM 6,000 – RM 7,999	1,364	10.0
Female	7,190	52.8	RM 8,000 – RM 9,999	890	6.6
Age Group (Years)			RM 10,000 and above	1,557	11.5
5 - 9	1,185	8.7	Household Income Quintile		
10 - 19	1,903	14.0	Quintile 1	2,719	20.0
20 - 29	1,780	13.1	Quintile 2	2,783	20.5
30 - 39	2,056	15.1	Quintile 3	2,649	19.5
40 - 49	1,907	14.0	Quintile 4	2,824	20.8
50 - 59	1,806	13.3	Quintile 5	2,604	19.2
60 and above	2,979	21.9	Household Income Category		
Citizenship			Bottom 40%	8,528	62.8
Malaysian	12,889	94.8	Middle 40%	3,466	25.5
Permanent resident	73	0.5	Top 20%	1,585	11.7
Non-Malaysian	637	4.7			
Ethnicity					
Malay (includes Orang Asli)	8,217	60.3			
Chinese	1,909	14.0			
Indian	839	6.2			
Bumiputera Sabah	1,366	10.0			
Bumiputera Sarawak	512	3.8			
Others	773	5.7			

3.3 SAMPLE REPRESENTATIVENESS

The estimated population obtained in the NHMS 2023 closely resembles the actual population structure of Malaysia for 2023, as provided by the DOSM.

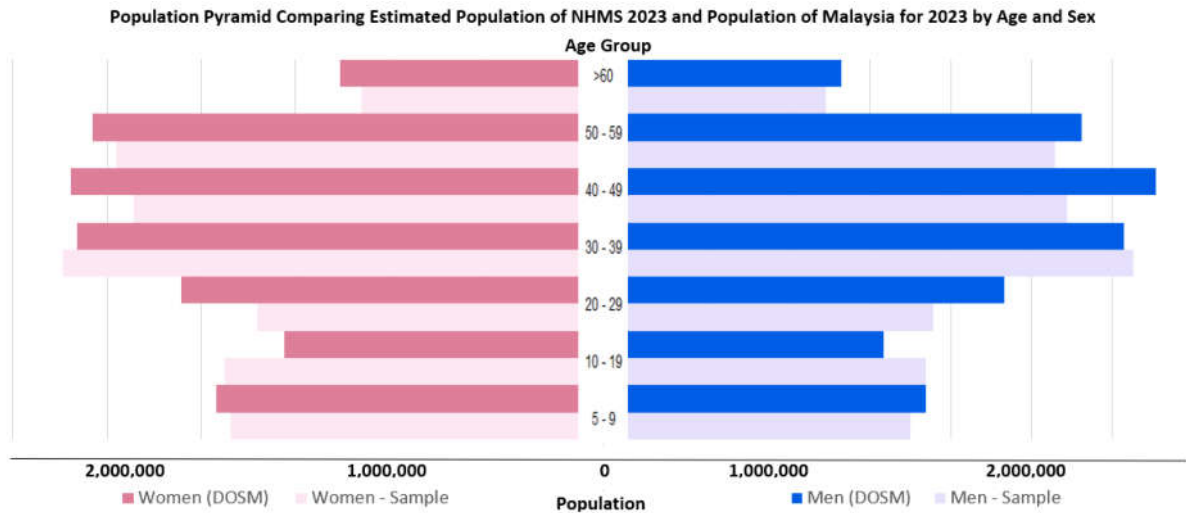


Figure 3.1: Population pyramid comparing estimated population of NHMS 2023 and projected population of Malaysia for 2023 by age and sex

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**NON-COMMUNICABLE
DISEASES:
SPECIFIC FINDINGS**

NON-COMMUNICABLE DISEASES: DIABETES, HYPERTENSION AND HYPERCHOLESTEROLAEMIA

Non-communicable diseases (NCDs) are the leading causes of ill health and deaths in the world (1). One of the Sustainable Development Goals' (SDGs) targets is to reduce premature mortality by one-third from NCDs (2). The highest risks of dying from NCDs are observed in low-and middle-income countries (1). Findings from the NHMS 2019 showed that prevalences of diabetes, hypertension, and hypercholesterolemia among adults aged 18 years and above were 18.3%, 30.0%, and 38.1%, respectively (3). A potential public health crisis is on the horizon as Malaysia is expected to reach the status of an aged nation by 2030, with people over the age of 60 years old making up more than 14% of the population (4). This impending demographic shift is expected to further increase the NCD burden in the country.

It has been scientifically and statistically established that diabetes, hypertension, and hypercholesterolaemia are risk factors for cardiovascular diseases, which are the leading cause of death in the country (5). The International Diabetes Federation cautions that diabetes is one of the quickest-growing global health emergencies of the twenty-first century (6). Based on the previous NHMS, the prevalence of diabetes in the country had increased from 11.2% in 2011 to 13.4% in 2015 to 18.3% in 2019 (3). Meanwhile, although the prevalence of hypertension had fluctuated minimally over the years, the plateau in prevalence should serve as a clarion call that cardiovascular diseases will continue to be main burden of diseases in the future (3). In recognising hypercholesterolaemia as a vital risk factor for atherosclerotic cardiovascular disease, earlier NHMS cycles concentrated on measuring the total cholesterol. This foundational approach, however, provided only a limited view of the lipid profile critical for a more comprehensive cardiovascular risk assessment. In a groundbreaking shift, the NHMS 2023 has expanded its diagnostic parameters to include a complete lipid profile by using the CardioChek® PA device.

As such, the current NHMS 2023 is critical for Malaysia to evaluate its NCD-related targets, in line with the global targets set by the World Health Organization. The pioneering expansion of clinical parameters and questionnaire scopes in the NHMS 2023 will be

able to provide compelling evidence to initiate and further drive public health control strategies and programmes in the country.

4.1 DIABETES

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HIGHLIGHTS

- 15.6% of adults in Malaysia had diabetes.
- 9.7% of adults in Malaysia knew that they had diabetes.
- 5.9% of adults in Malaysia did not know that they had diabetes.
- Among participants with known diabetes, 40.5% had glucometers at home.

OBJECTIVES

General Objective

To determine the prevalence of diabetes among adults aged 18 years old and above in Malaysia.

Specific Objectives

1. To determine the prevalence of overall raised blood glucose by sociodemographic subgroups
2. To determine the prevalence of known diabetes by sociodemographic subgroups
3. To determine the prevalence of raised blood glucose among those not known to have diabetes by sociodemographic subgroups

METHODS

The diabetes module was carried out on all respondents aged 18 years old and above. Data was collected through a questionnaire and measurement of capillary blood glucose was performed using the Accu-Chek® portable blood test system. The questionnaire was adapted from the World Health Organization (WHO) STEPS Instrument (7).

DEFINITIONS

1. **Overall raised blood glucose** was defined as the sum of known diabetes and raised blood glucose among those not known to have diabetes.
2. **Known diabetes** was self-reported by a respondent who was told to have diabetes by a doctor or assistant medical officer.
3. **Raised blood glucose among those not known to have diabetes (undiagnosed diabetes)** was defined as a respondent who was not known to have diabetes but had a fasting blood sugar (FBS) of ≥ 7.0 mmol/L or random blood sugar (RBS) of ≥ 11.1 mmol/L (8) during the field survey.

FINDINGS

A total of 10,853 respondents responded to the diabetes module. The prevalence figures are presented as crude values.

Overall raised blood glucose

The prevalence of overall raised blood glucose was 15.6% (95% CI: 14.41, 16.86). The prevalence of overall raised blood glucose increased with age, from 3.2% (95% CI: 2.23, 4.55) in the 18 - 29 years age group, and reached a peak of 38.0% (95% CI: 35.43, 40.71) among those aged 60 years and above. Prevalence was higher in rural areas [17.6% (95% CI: 14.15, 21.59)] as compared to urban areas [15.0% (95% CI: 13.92, 16.23)] (**Table 4.1.1**).

There was a large variation between the states, with the highest prevalence of 21.7% (95% CI: 15.82, 29.08)

in Perak, followed by Pahang [21.5% (95% CI: 17.06, 26.82)] and Perlis [20.6% (95% CI: 17.45, 24.11)]; while the lowest prevalence was reported in Sabah [8.8% (95% CI: 6.91, 11.14)] (**Table 4.1.1**).

The prevalence among males and females was 15.0% (95% CI: 13.63, 16.48) and 16.2% (95% CI: 14.67, 17.95), respectively. Indian ethnic group had the highest prevalence [26.4% (95% CI: 22.09, 31.24)], followed by Bumiputera Sarawak [17.2% (95% CI: 13.01, 22.32)], Malay [16.2% (95% CI: 15.08, 17.38)], and Chinese ethnic group [15.1% (95% CI: 11.60, 19.47)]. Overall raised blood glucose was more common among those who were separated/ divorced/ widowed [34.6% (95% CI: 30.34, 39.21)], those with no formal education [28.9% (95% CI: 23.90, 34.42)], retirees [38.2% (95% CI: 34.39, 42.13)] and those from the B40 household income category [17.7% (95% CI: 16.05, 19.38)] (**Table 4.1.1**).

Known diabetes

The prevalence of known diabetes was 9.7% (95% CI: 8.97, 10.47). The prevalence of known diabetes increased with age. The prevalence was 2.4% (95% CI: 1.64, 3.43) among those aged 30 - 39 years and peaked among those aged 60 years and above at 29.3% (95% CI: 27.18, 31.46). Prevalence in urban areas was higher [9.9% (95% CI: 9.06, 10.84)] as compared to rural areas [8.9% (95% CI: 7.73, 10.26)]. There was considerable variation between states; the highest prevalence of 14.8% (95% CI: 12.11, 17.94) was observed in Perak, followed by Perlis [13.6% (95% CI: 10.68, 17.07)] and Pulau Pinang [12.8% (95% CI: 9.44, 17.18)]; while the lowest prevalence was seen in Sabah [4.3% (95% CI: 3.04, 5.92)] (**Table 4.1.2**).

The prevalence of known diabetes in males and females was 8.8% (95% CI: 7.90, 9.76) and 10.7% (95% CI: 9.73, 11.71), respectively. In terms of ethnic groups, Indians had the highest prevalence [20.8% (95% CI: 16.94, 25.27)], followed by Bumiputera Sarawak [11.2% (95% CI: 7.60, 16.33)], Malay [10.7% (95% CI: 9.81, 11.64)] and Chinese [8.4% (95% CI: 6.97, 10.11)]. Known diabetes was more common among those who were separated/ divorced/ widowed [23.7% (95% CI: 20.98, 26.74)], those with no formal education [18.0% (95% CI: 15.12, 21.39)], retirees [29.7% (95% CI: 26.22, 33.46)] and those from the B40 household income category [10.8% (95% CI: 9.84, 11.74)] (**Table 4.1.2**).

Among those with known diabetes, 21.8% reported that they were on insulin therapy, 88.9% claimed to be on oral antidiabetic drugs, 91.2% had received specific diabetes diet advice from healthcare personnel, 78.1% claimed to have been advised by healthcare personnel to lose weight, and 83.1% had received exercise advice. About 15.1% opted for traditional and complementary medication.

Most of those with known diabetes sought treatment at MOH health clinics (77.5%), followed by MOH hospitals (9.4%), private clinics (8.3%), and private hospitals (2.6%). About 1.3% self-medicated by purchasing medications directly from pharmacies, and 0.1% sought treatment from traditional and complementary medicine practitioners. However, 0.8% of respondents did not seek any diabetes treatment.

About 40.5% of respondents with diabetes had glucometers at home. Among those with glucometers, 65.1% tested their blood sugar at least once a week, 30.1% at least once a month, and 4.8% never tested their blood sugar levels at home.

Among known diabetes respondents, 35.1% had an eye examination before, out of which 72.9%, 17.1% and 10.0% reported had an eye examination within one year, one to three years and more than three years ago, respectively. About 21.9% had been referred to eye specialist clinics for diabetes retinopathy.

Raised blood glucose among those not known to have diabetes (undiagnosed diabetes)

The prevalence of raised blood glucose amongst those not known to have diabetes was 5.9% (95% CI: 5.02, 6.91). The prevalence of raised blood glucose amongst those not known to have diabetes increased with age. The prevalence was reported to be 2.7% (95% CI: 1.80, 3.98) among those aged 18 - 29 years old and peaked among those aged 50 - 59 years old [10.3% (95% CI: 6.92, 14.95)]. The prevalence was higher in rural areas, 8.7% (95% CI: 5.92, 12.49), compared to urban areas, 5.1% (95% CI: 4.42, 5.93). There was a large variation between states; the highest prevalence of 12.8% (95% CI: 9.65, 16.88) was observed in WP Labuan, followed by Johor [10.4% (95% CI: 6.13, 17.16)] and Pahang [9.9% (95% CI: 6.43, 14.82)]; while the lowest was seen in WP Kuala Lumpur [2.1% (95% CI: 1.18, 3.83)] (**Table 4.1.3**).

The prevalence of raised blood glucose amongst those not known to have diabetes in males and females was 6.2% (95% CI: 5.16, 7.46) and 5.6% (95% CI: 4.47, 6.90), respectively. 'Others' ethnic group had the highest prevalence at 8.1% (95% CI: 5.66, 11.52), followed by Chinese [6.7% (95% CI: 3.95, 11.19)], Bumiputera Sarawak [5.9% (95% CI: 3.85, 9.01)], Indian [5.6% (95% CI: 3.91, 8.00)], Malay [5.5% (95% CI: 4.83, 6.28)] and Bumiputera Sabah [3.4% (95% CI: 2.17, 5.19)]. Raised blood glucose amongst those not known to have diabetes was more common among those who were separated/ divorced/ widowed [10.9% (95% CI: 7.17, 16.22)], those with no formal education [10.8% (95% CI: 7.22, 15.93)], retirees [8.5% (95% CI: 6.23, 11.43)] and those from the B40 income category [6.9% (95% CI: 5.67, 8.38)] (**Table 4.1.3**).

In comparing age groups, the biggest proportion of those with undiagnosed diabetes were within the age range of 18 - 29 years old (**Figure 4.1**).

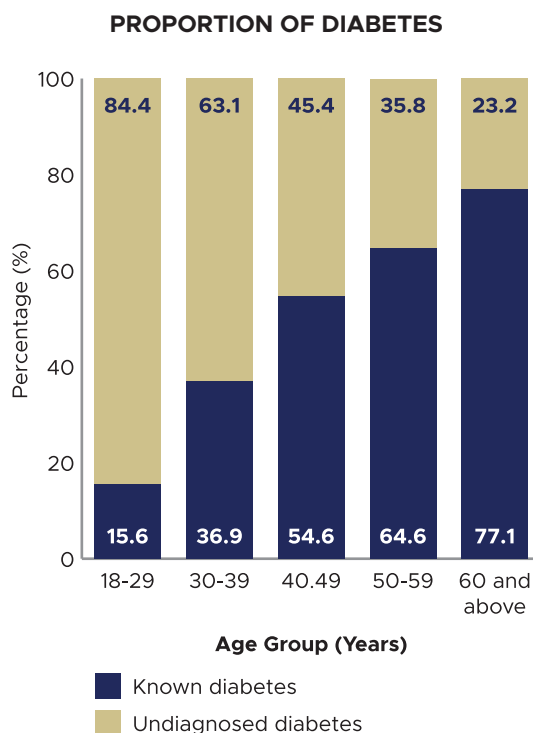


Figure 4.1: Proportions of raised blood glucose among those not known to have diabetes as compared to those known to have diabetes.

Age-standardised prevalence of diabetes by states in Malaysia

The state with the highest age-standardised prevalence of overall raised blood glucose was Pahang (24.7%), followed by Melaka (20.5%) and Perlis (19.4%); while the lowest was Sabah (9.5%). The state with the highest age-standardised prevalence of known diabetes was Melaka (13.4%), followed by Pahang (13.3%) and Perlis (12.6%). The state with the highest age-standardised prevalence of raised blood glucose among those not known to have diabetes was WP Labuan (12.5%), followed by Pahang (11.4%) and Johor (9.4%) (**Table 4.1.4**).

4.2 HYPERTENSION

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HIGHLIGHTS

- 29.2% of adults in Malaysia had hypertension.
- 17.3% of adults in Malaysia knew that they had hypertension.
- 11.9% of adults in Malaysia did not know they had hypertension.
- Among participants with known hypertension, 44.3% had a home blood pressure monitoring device.

OBJECTIVES

General Objective

To determine the prevalence of hypertension among adults aged 18 years old and above in Malaysia.

Specific Objectives

1. To determine the prevalence of overall raised blood pressure by sociodemographic sub-groups.
2. To determine the prevalence of known hypertension by sociodemographic subgroups.
3. To determine the prevalence of raised blood pressure among those not known to have hypertension by sociodemographic sub-groups.

METHODS

The hypertension module was conducted among respondents aged 18 years old and above. Data was collected using an adapted version of the WHO STEPS Instrument and blood pressure was measured using the Omron Digital Automatic Blood Pressure Monitor, Model HEM-907.

The study protocol required 3 blood pressure measurements to be taken 3 minutes apart for each respondent. A diagnosis of hypertension was made if the average of the second and third measurement was ≥ 140 mmHg for the systolic pressure reading and/ or ≥ 90 mmHg for the diastolic pressure reading (9).

DEFINITIONS

1. **Overall raised blood pressure** was defined as the sum of known hypertension and raised blood pressure among those not known to have hypertension.
2. **Known hypertension** was defined as a hypertensive state self-reported by a respondent who was previously told to have hypertension by a doctor or an assistant medical officer.
3. **Raised blood pressure among those not known to have hypertension (undiagnosed hypertension)** was defined as a respondent who was not previously diagnosed with hypertension but recorded an average systolic blood pressure measurement of ≥ 140 mmHg and/ or ≥ 90 mmHg for the diastolic pressure reading during the field survey.

FINDINGS

A total of 10,858 respondents were eligible and answered the hypertension module. The prevalence figures are presented as crude values.

Overall raised blood pressure prevalence

The prevalence of overall raised blood pressure was 29.2% (95% CI: 27.66, 30.75) (**Table 4.2.1**). This prevalence was lower as compared to the previous NHMS conducted in 2015 (30.3%) and 2019 (30.0%) respectively.

The prevalence in males and females were 28.8% (95% CI: 26.73, 30.86) and 29.6% (95% CI: 27.83, 31.51) respectively. The highest prevalence of overall raised blood pressure was among the 60 years and above age group [67.2% (95% CI: 64.42, 69.77)]. There was a remarkable variation between the states, with the highest prevalence of 40.2% (95% CI: 34.48, 46.23) in Perak, followed by Sarawak [39.9% (95% CI: 34.74, 45.26)] and Perlis [39.1% (95% CI: 32.30, 46.38)];

while the lowest prevalence was reported in WP Kuala Lumpur [20.4% (95% CI: 15.55, 26.24)] (**Table 4.2.1**).

In terms of the main ethnic groups, overall raised blood pressure was highest among Bumiputera Sarawak [41.1% (95% CI: 35.03, 47.53)], followed by the Chinese [30.9% (95% CI: 26.52, 35.68)]. Other specific demographics that reported notably higher prevalences were among those who were separated/ widowed/ divorced [57.4% (95% CI: 53.31, 61.44)], those with no formal education [49.5% (95% CI: 43.93, 55.17)], retirees [64.2% (95% CI: 59.80, 68.35)] and those from the B40 income household income category [32.0% (95% CI: 30.07, 34.06)] (**Table 4.2.1**).

Known hypertension

The prevalence of known hypertension was 17.3% (95% CI: 16.21, 18.37). Females had a higher prevalence of hypertension [18.6% (95% CI: 17.29, 19.95)] as compared to males [16.0% (95% CI: 14.68, 17.48)]. The prevalence of known hypertension increased with age, beginning with 1.1% (95% CI: 0.68, 1.83) among those aged 18 - 29 years old and peaked at 53.2% (95% CI: 50.44, 55.87) among those aged 60 years old and above. There was a remarkable variation between the states, with the highest prevalence of 24.2% (95% CI: 19.51, 29.52) in Perak, followed by Sarawak [23.4% (95% CI: 20.41, 26.76)] and Pulau Pinang [20.9% (95% CI: 15.76, 27.08)]; while the lowest prevalence was reported in Sabah [13.3% (95% CI: 11.07, 15.88)] (**Table 4.2.2**).

In terms of ethnicity, the prevalence of known hypertension was highest among the Bumiputera Sarawak [27.4% (95% CI: 23.55, 31.56)], and followed by Indians [22.3% (95% CI: 18.50, 26.68)]. Known hypertension was more common among rural dwellers [18.0% (95% CI: 15.96, 20.21)], those who were separated/ widowed/ divorced [41.8% (95% CI: 38.33, 45.35)], those who had no formal education [32.9% (95% CI: 27.94, 38.34)], retirees [50.7% (95% CI: 46.17, 55.21)], and those from the B40 household income category [10.8% (95% CI: 9.84, 11.74)] (**Table 4.2.2**).

Among those with known hypertension, 44.3% had a blood pressure monitoring device at home; of which 88.9% used it at least once a day.

In terms of the management of blood pressure, 91.2% claimed to have been on oral anti-hypertensive medications within the past 2 weeks, 89.7% had received advice to reduce salt intake from healthcare personnel, 75.9% claimed to have been advised by healthcare personnel to lose weight, and 82.2% had been advised to be more physically active or start exercising. In addition, 11.6% of

respondents reported taking herbal and traditional medicine.

With regards to their usual place of treatment, more than half sought treatment at MOH health clinics (71.1%), followed by private clinics (13.1%), MOH hospitals (10.8%), and private hospitals (3.4%). Less than 1% did not seek any treatment.

Raised blood pressure amongst those not known to have hypertension (undiagnosed hypertension)

Among those who were not known to have hypertension, the prevalence of raised blood pressure was 11.9% (95% CI: 10.88, 13.04). It was higher in males [12.7% (95% CI: 11.34, 14.24)] compared to females [11.1% (95% CI: 9.85, 12.38)]. Raised blood pressure amongst those not known to have hypertension was more prevalent among those who resided in rural areas [15.8% (95% CI: 12.91, 19.09)], aged 50 - 59 years old [20.5% (95% CI: 16.87, 24.75)], those with no formal education [16.6% (95% CI: 12.43, 21.87)], unpaid worker/ homemaker/ caregiver [15.9% (95% CI: 13.52, 18.54)], and those from the B40 household income category [12.4% (95% CI: 11.01, 13.86)] (**Table 4.2.3**).

The prevalence of raised blood pressure among those not known to have hypertension varied significantly across states, with the highest prevalence of 19.0% (95% CI: 13.78, 25.62) in Perlis, followed by Sarawak [16.4% (95% CI: 12.83, 20.84)] and Pahang [16.4% (95% CI: 13.14, 20.28)]; while the lowest prevalence was reported in WP Kuala Lumpur [5.80% (95% CI: 3.71, 8.97)] (**Table 4.2.3**).

In comparing age groups, the biggest proportion of those with undiagnosed hypertension were within the age range of 18-29 years old (**Figure 4.2**).

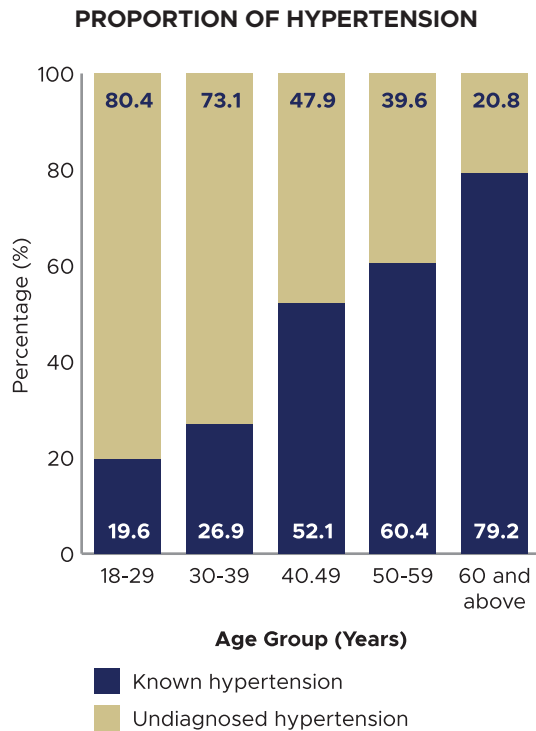


Figure 4.2: Proportions of raised blood pressure among those not known to have hypertension as compared to known hypertension.

Age-standardised prevalence of hypertension by states in Malaysia

The state with the highest age-standardised prevalence of overall raised blood pressure was Perlis (36.9%), followed by Sarawak (36.8%) and Pahang (35.1%), while the lowest was recorded in Negeri Sembilan (20.7%). The state with the highest age-standardised prevalence of known hypertension was Sarawak (21.2%), followed by Melaka (20.9%) and Pulau Pinang (18.4%). The state with the highest age-standardised prevalence of raised blood pressure among those not known to have hypertension was Pahang (18.9%), followed by Perlis (17.9%) and Sarawak (15.7%) (Table 4.2.4).

4.3 HYPERCHOLESTEROLAEMIA/ DYSLIPIDAEMIA

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5. Cheras Baru Health Clinic, Ministry of Health Malaysia
6. Disease Control Division, Non-Communicable Diseases, Ministry of Health Malaysia

HIGHLIGHTS

- 33.3% of adults in Malaysia had raised blood cholesterol
- 15.2% of adults in Malaysia knew that they had hypercholesterolaemia
- 18.1% of adults in Malaysia did not know that they had hypercholesterolaemia
- 40.9% of adults in Malaysia had high low-density lipoprotein (LDL)

OBJECTIVES

General Objective

To determine the prevalence of hypercholesterolaemia in Malaysia.

Specific Objectives

1. To determine the prevalence of overall raised blood cholesterol by sociodemographic sub-groups
2. To determine the prevalence of known hypercholesterolaemia by sociodemographic sub-groups
3. To determine the prevalence of raised total cholesterol among those who were not known to have hypercholesterolaemia by sociodemographic sub-groups
4. To determine the prevalence of overall raised LDL cholesterol by selected sociodemographic sub-groups
5. To determine the prevalence of lipid profile by gender

METHODS

All eligible respondents aged 18 years old and above answered the hypercholesterolaemia module. The questionnaire was adapted from the WHO STEPS Instrument (7). Measurement of total cholesterol, high density lipoprotein (HDL), LDL and triglyceride (TG) was carried out via finger prick capillary blood using the CardioChek® PA 3-in-1 lipid panel which was validated (13).

DEFINITIONS

1. **Overall raised blood cholesterol** was defined as known hypercholesterolaemia and raised total cholesterol among those not known to have hypercholesterolaemia.
2. **Known hypercholesterolaemia** was defined as self-reported or being told to have hypercholesterolaemia by a doctor or assistant medical officer.
3. **Raised total cholesterol amongst those not known to have hypercholesterolaemia** was defined as those who were not known to have hypercholesterolaemia and had a total cholesterol of 5.2 mmol/L or more during the field survey (10).
4. **Raised LDL** was defined as those who had LDL of more than 2.6 mmol/L (11).
5. **Raised TG** was defined as those who had TG of more than 1.7 mmol/L (11).
6. **Low HDL** is defined as males who had HDL lower than 1.0 mmol/L and females who had HDL lower than 1.2 mmol/L (11).

FINDINGS

A total of 10,852 respondents responded to the hypercholesterolaemia module. The prevalence figures are presented as crude values.

Overall raised total cholesterol

The prevalence of overall raised blood cholesterol was 33.3% (95% CI: 31.67, 34.95). The prevalence was higher among females 36.3% (95% CI: 34.21, 38.36) as compared to males 30.5% (95% CI: 28.46, 32.69). There was a wide variation between states with the highest prevalence of 41.3% (95% CI: 34.82, 48.14) in Perak, followed by Perlis [41.0% (95% CI: 34.31, 48.00)] and Sarawak [38.9% (95% CI: 34.20, 43.75)]; while the lowest prevalence was reported in WP Kuala Lumpur [22.2% (95% CI: 17.05, 28.29)] (**Table 4.3.1**).

The highest prevalence of overall raised blood cholesterol was among the 60 years and above age group [62.8% (95% CI: 60.16, 65.34)]. Overall raised blood cholesterol was more common among Bumiputera Sarawak [38.7% (95% CI: 32.81, 44.88)], those who were separated/ widowed/ divorced

[54.5% (95% CI: 50.23, 58.63)], those with no formal education [46.6% (95% CI: 41.67, 51.66)], retirees [61.2% (95% CI: 56.60, 65.66)] and those from the B40 household income category [35.7% (95% CI: 33.65, 37.71)] (**Table 4.3.1**).

Known hypercholesterolaemia

The prevalence of known hypercholesterolaemia was 15.2% (95% CI: 14.24, 16.30). The prevalence of known hypercholesterolaemia among females was higher [17.1% (95% CI: 15.79, 18.44)] compared to males [13.6% (95% CI: 12.34, 14.86)]. Nearly half of the respondents from the age group of 60 years and above [45.7% (95% CI: 42.91, 48.55)] were aware that they had hypercholesterolaemia. There was a variation in the prevalence of hypercholesterolaemia between states; with the highest prevalence in Perak at 23.0% (95% CI: 19.01, 27.57), followed by Perlis [22.3% (95% CI: 18.24, 26.92)] and Pulau Pinang [20.5% (95% CI: 16.18, 25.51)]; while the lowest was in Sabah [9.4% (95% CI: 7.37, 11.86)] (**Table 4.3.2**).

Known hypercholesterolaemia was more common among those who were separated/ widowed/ divorced [35.3% (95% CI: 32.06, 38.74)], those with no formal education [25.7% (95% CI: 21.24, 30.66)] and retirees [44.3% (95% CI: 39.59, 49.08)] (**Table 4.3.2**).

Among those with known hypercholesterolaemia, 83.0% claimed to be on oral drugs within the past 2 weeks, 89.7% claimed they had received specific diet advice from healthcare personnel, 76.4% claimed to have been advised by healthcare personnel to lose weight and 83.0% had been advised to be more physically active or to start exercising. About 11.8% of respondents reported taking herbal and traditional medicine to treat their condition.

Raised total cholesterol amongst those not known to have hypercholesterolaemia (undiagnosed hypercholesterolaemia)

The prevalence of raised total cholesterol amongst those not known to have hypercholesterolaemia was 18.1% (95% CI: 16.80, 19.37). The prevalence among females was higher [19.2% (95% CI: 17.66, 20.81)] as compared to males [17.0% (95% CI: 15.29, 18.83)].

The state with the highest prevalence of undiagnosed hypercholesterolaemia was Pahang [24.9% (95% CI: 19.48, 31.22)], followed by Sabah [22.7% (95% CI: 19.17, 26.68)], Kelantan [21.6% (95% CI: 16.65, 27.47)] and Terengganu [21.6% (95% CI: 16.86, 27.29)]; while the lowest prevalence was in WP Kuala Lumpur [9.8% (95% CI: 6.24, 14.98)]. The prevalence was higher among those in rural areas [21.9% (95% CI: 19.38, 24.60)] compared to those in urban areas 17.0% [(95% CI: 15.55, 18.48)] (**Table 4.3.3**).

PROPORTION OF HYPERCHOLESTEROLAEMIA

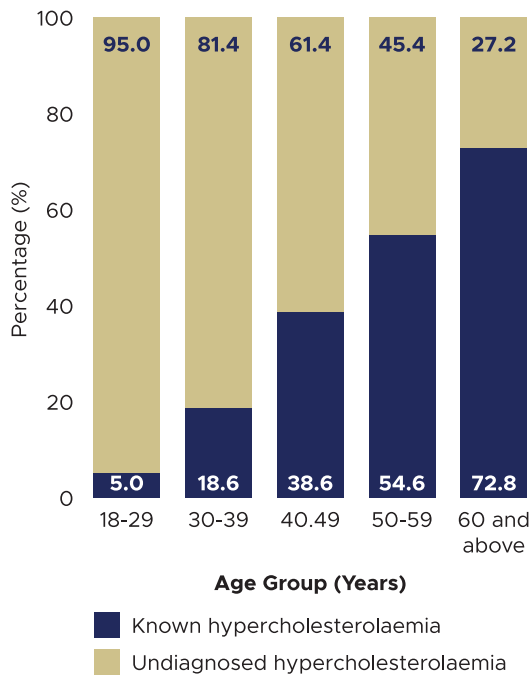


Figure 4.3: Proportions of raised blood cholesterol among those not known to have hypercholesterolaemia as compared to those with known hypercholesterolaemia.

Among different age groups, the biggest proportion of those with undiagnosed hypercholesterolaemia was among the 18 - 29 age group (**Figure 4.3**).

Raised Low Density Lipoprotein (LDL) cholesterol

The prevalence of raised LDL cholesterol was 40.9% (95% CI: 38.94, 42.92). The highest prevalence of overall raised LDL was found in Pahang [50.5% (95% CI: 43.64, 57.41)] while the lowest was in WP Kuala Lumpur [26.3% (95%CI: 17.94, 36.86)]. The prevalence among those in rural areas [45.9% (95% CI: 42.54, 49.39)] was higher as compared to those in urban areas [39.5% (95% CI: 37.16, 41.87)] (**Table 4.3.4**).

Raised Triglycerides (TG)

The prevalence of TG was 23.2% (95% CI: 21.66, 24.88). The prevalence was higher among males [26.7% (95% CI: 24.72, 28.76)] as compared to females [19.5% (95% CI: 17.68, 21.45)] (**Table 4.3.5**).

Low High Density Lipoprotein (HDL) cholesterol

The prevalence of low HDL cholesterol was 27.3% (95% CI: 25.98, 28.67). There was no significant difference in the prevalence among males [27.2% (95% CI: 25.39, 29.12)] as compared to females [27.4% (95% CI: 25.70, 29.17)] (**Table 4.3.5**).

Age-standardised prevalence of hypercholesterolaemia by states in Malaysia

The state with the highest age-standardised prevalence of overall raised blood cholesterol

was Pahang (42.0%), followed by Perlis (39.0%) and Sarawak (36.0%); while the lowest was found in WP Kuala Lumpur (23.0%). The state with the highest age-standardised prevalence of known hypercholesterolaemia was Perlis (21.1%), followed by Melaka (21.0%) and Pulau Pinang (18.1%). The state with the highest age-standardised prevalence of undiagnosed hypercholesterolaemia was Pahang (28.5%), followed by Sabah (22.6%) and Terengganu (21.0%) (**Table 4.3.6**).

CONCLUSION

The prevalence of diabetes and hypertension were above the national targets in the National Strategic Plan for Non-communicable Diseases 2016 - 2025, which were 15.0% and 24.0%, respectively (12). It is evident that urgent interventions are required to safeguard the health of our younger generations. The NHMS is a testament to Malaysia’s commitment towards monitoring and curbing the rise of non-communicable diseases to achieve target 3.4 of the United Nations SDG 3, which is to reduce premature mortality from NCDs by one third by 2030. Therefore, it is crucial that our government continues to formulate and implement effective national public health initiatives that address modifiable risk factors and enhance primary care level interventions such as screening and early interventions. Furthermore, evidence-based efforts focused on vulnerable and at-risk populations are a critical step toward preserving our nation’s health and tackling the present NCD epidemic.

Table 4.1: Trends in the prevalence of non-communicable diseases, 2011-2023

NON-COMMUNICABLE DISEASES	2011 (%)	2015 (%)	2019 (%)	2023 (%)
Diabetes				
Overall raised blood glucose	11.2	13.4	18.3	15.6
Known diabetes	7.2	8.3	9.4	9.7
Raised blood glucose amongst those not known to have diabetes	4.0	5.1	8.9	5.9
Hypertension				
Overall raised blood pressure	32.7	30.3	30.0	29.2
Known hypertension	12.8	13.1	15.9	17.3
Raised blood pressure amongst those not known to have hypertension	19.8	17.2	14.1	11.9
Hypercholesterolaemia				
Overall raised total cholesterol	35.1	47.7	38.1	33.3
Known hypercholesterolaemia	8.4	9.1	13.5	15.2
Raised total cholesterol among those not known to have hypercholesterolaemia	26.6	38.6	24.6	18.1

RECOMMENDATIONS

- To operationalise a “whole-of-government” approach and “Health in All Policies” in tackling the social determinants of health such as poverty, income disparity, and low health literacy levels.
- To incorporate policy interventions from the list of the World Health Organisation’s “best buys” and other recommended interventions to curb NCDs.
- To encourage the practice of healthy lifestyles by making it easier for people to make healthier choices.
- To empower people to self-monitor health conditions and play a more active role in preserving their health.
- Integrate technology in daily health practices through health mobile applications to encourage those at risk to perform periodic health screening and self-monitoring.
- To expand the age for all health screening programmes to encompass younger age groups, e.g., 18 years old and above.
- To enhance the accessibility and level of resources available to screen for diabetic retinopathy and hypercholesterolaemia.
- To target interventions in certain high-risk subpopulations e.g., B40

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Table 4.1.1 : Prevalence of overall raised blood glucose among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,853)

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL RAISED BLOOD GLUCOSE														
	MALE					FEMALE									
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER					
MALAYSIA	2,308	3,555,276	15.6	14.41	16.86	1,036	1,774,390	15.0	13.63	16.48	1,272	1,780,886	16.2	14.67	17.95
State															
Johor	252	547,083	19.9	14.84	26.10	109	266,795	18.1	13.21	24.26	143	280,288	22.0	15.79	29.67
Kedah	152	277,781	19.5	15.75	23.92	69	147,032	20.5	15.54	26.57	83	130,750	18.5	14.27	23.64
Kelantan	132	185,938	16.3	13.05	20.15	47	85,053	14.8	10.65	20.28	85	100,884	17.8	13.55	22.95
Melaka	157	142,655	19.7	15.11	25.26	76	68,046	18.0	12.09	25.85	81	74,609	21.6	17.21	26.73
Negeri Sembilan	162	156,741	19.1	15.02	24.00	68	77,705	18.6	13.79	24.61	94	79,036	19.6	14.68	25.74
Pahang	140	216,457	21.5	17.06	26.82	67	128,930	24.9	18.21	33.17	73	87,527	17.9	13.64	23.23
Pulau Pinang	159	261,215	20.5	15.70	26.42	70	123,351	19.2	12.01	29.18	89	137,864	22.0	16.91	27.99
Perak	153	341,452	21.7	15.82	29.08	64	148,390	19.8	15.63	24.86	89	193,061	23.4	13.54	37.43
Perlis	164	40,570	20.6	17.45	24.11	73	16,891	17.5	12.76	23.50	91	23,678	23.6	19.73	27.87
Selangor	192	619,186	11.7	9.66	14.11	91	342,307	12.1	9.54	15.30	101	276,878	11.2	8.79	14.21
Terengganu	120	121,855	16.0	12.72	19.91	52	54,783	14.2	9.50	20.80	68	67,072	17.8	14.36	21.80
Sabah	81	206,974	8.8	6.91	11.14	39	99,993	8.1	5.49	11.80	42	106,981	9.6	6.58	13.72
Sarawak	146	265,238	14.7	11.26	18.87	72	132,301	14.6	10.68	19.52	74	132,937	14.8	10.75	19.97
WP Kuala Lumpur	90	152,867	9.9	7.31	13.26	40	72,551	8.5	5.71	12.60	50	80,317	11.5	8.14	16.09
WP Labuan	150	11,577	17.9	14.54	21.81	65	6,044	18.7	13.90	24.77	85	5,533	17.0	12.92	22.14
WP Putrajaya	58	7,687	11.3	8.67	14.67	34	4,217	12.8	9.57	16.84	24	3,470	10.0	6.67	14.63
Location															
Urban	1,728	2,674,806	15.0	13.92	16.23	782	1,366,745	14.7	13.18	16.34	946	1,308,061	15.4	14.10	16.85
Rural	580	880,470	17.6	14.15	21.59	254	407,645	16.1	13.15	19.66	326	472,825	19.0	14.20	24.98
Age Group (Years)															
18 - 29	72	192,464	3.2	2.23	4.55	33	118,066	3.7	2.19	6.08	39	74,398	2.6	1.69	4.10
30 - 39	149	378,508	6.5	5.16	8.05	69	214,617	6.9	5.03	9.27	80	163,891	6.0	4.52	7.93
40 - 49	340	545,275	15.2	13.22	17.39	142	258,968	13.7	11.10	16.81	198	286,307	16.8	14.22	19.80
50 - 59	523	1,071,966	28.8	24.98	33.01	232	523,296	28.4	24.20	32.99	291	548,669	29.3	24.35	34.72
60 and above	1,224	1,367,064	38.0	35.43	40.71	560	659,442	37.7	34.03	41.52	664	707,622	38.4	35.03	41.78
Ethnicity															
Malay ^a	1,395	1,953,008	16.2	15.08	17.38	624	939,989	15.5	14.12	17.08	771	1,013,020	16.9	15.42	18.41
Chinese	333	739,076	15.1	11.60	19.47	159	365,089	14.8	11.18	19.25	174	373,987	15.5	11.03	21.30
Indian	240	350,492	26.4	22.09	31.24	103	184,828	28.4	22.13	35.74	137	165,664	24.5	19.39	30.36
Bumiputera Sabah	166	136,058	9.3	7.28	11.84	72	69,476	9.5	6.84	13.04	94	66,582	9.1	6.53	12.62
Bumiputera Sarawak	83	159,234	17.2	13.01	22.32	39	67,954	14.9	10.41	20.98	44	91,280	19.3	14.32	25.56
Others	91	217,408	10.2	7.51	13.62	39	147,055	10.0	6.61	14.77	52	70,353	10.6	6.44	16.96
Education Level															
No formal education	380	537,314	28.9	23.90	34.42	99	150,879	18.7	14.13	24.44	281	386,435	36.6	29.42	44.42
Primary education	444	568,674	22.9	19.97	26.03	183	266,456	19.0	15.35	23.24	261	302,218	27.9	24.09	32.00
Secondary education	1,333	2,144,483	14.3	13.12	15.60	673	1,163,216	14.5	12.90	16.25	660	981,267	14.1	12.54	15.82
Tertiary education	145	301,307	8.9	7.01	11.24	79	191,512	12.5	9.10	16.93	66	109,796	5.9	4.22	8.25

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL RAISED BLOOD GLUCOSE						MALE			FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		
				LOWER	UPPER				LOWER	UPPER			LOWER	UPPER	
Marital Status															
Never married	133	298,116	4.6	3.59	5.95	72	198,302	5.1	3.67	7.10	61	99,814	3.9	2.79	5.42
Married/ Living with partner	1,668	2,573,698	17.9	16.45	19.43	862	1,421,976	19.2	17.36	21.09	806	1,151,722	16.5	14.87	18.36
Separated/ Divorced/ Widowed	504	676,081	34.6	30.34	39.21	100	147,595	28.6	22.68	35.29	404	528,486	36.8	31.55	42.43
Occupation															
Government employee	120	154,275	9.3	7.34	11.84	71	95,076	10.6	7.79	14.16	49	59,200	7.9	5.38	11.45
Private employee	377	773,551	9.1	7.94	10.47	266	595,241	10.5	8.97	12.33	111	178,310	6.3	4.98	7.99
Self employed	329	533,574	14.5	12.55	16.66	199	336,740	13.6	11.39	16.06	130	196,835	16.4	12.87	20.70
Unpaid worker/ Homemaker/ Caregiver	489	745,438	19.7	16.89	22.89	20	38,931	29.4	17.08	45.74	469	706,507	19.4	16.49	22.62
Retiree	337	469,202	38.2	34.39	42.13	249	341,418	41.2	36.19	46.33	88	127,784	32.0	25.32	39.49
Student	13	-	-	-	-	4	-	-	-	-	9	-	-	-	-
Not working ^a	628	820,971	29.9	26.56	33.48	221	339,211	27.0	21.96	32.65	407	481,760	32.4	28.63	36.37
Household Income Group															
Less than RM 1000	514	761,587	27.6	23.06	32.57	163	270,757	26.9	20.94	33.93	351	490,830	27.9	22.64	33.87
RM 1,000 – RM 1999	412	557,272	16.7	13.95	19.87	187	270,352	14.8	11.72	18.60	225	286,920	18.9	14.60	24.21
RM 2,000 – RM 3,999	574	876,356	14.8	13.16	16.56	281	476,602	14.9	12.66	17.36	293	399,754	14.7	12.63	17.01
RM 4,000 – RM 5,999	321	550,921	14.0	11.93	16.31	154	292,822	13.5	10.89	16.63	167	258,099	14.6	11.88	17.74
RM 6,000 – RM 7,999	173	280,952	12.3	9.99	14.96	84	162,506	13.6	10.55	17.33	89	118,446	10.8	8.28	14.00
RM 8,000 – RM 9,999	118	195,927	12.2	9.44	15.69	61	103,287	12.3	8.84	16.87	57	92,641	12.1	7.83	18.31
RM 10,000 and above	189	312,958	11.1	8.86	13.79	101	182,398	11.9	8.96	15.52	88	130,560	10.2	7.62	13.45
Household Income Quintile															
Quintile 1	699	966,263	24.6	21.32	28.20	254	381,666	23.6	19.24	28.65	445	584,598	25.3	21.04	30.05
Quintile 2	507	785,961	16.8	14.58	19.35	231	400,830	15.6	12.95	18.65	276	385,130	18.3	14.75	22.59
Quintile 3	385	595,255	13.2	11.52	15.14	197	336,628	13.8	11.42	16.67	188	258,627	12.5	10.47	14.88
Quintile 4	381	647,232	13.0	11.38	14.93	177	335,681	12.5	10.32	15.07	204	311,551	13.7	11.49	16.24
Quintile 5	329	541,263	11.7	9.83	13.86	172	303,919	12.3	9.84	15.24	157	237,344	11.0	8.68	13.88
Household Income Category															
Bottom 40%	1,614	2,403,452	17.7	16.05	19.38	685	1,129,204	16.4	14.63	18.32	929	1,274,249	18.9	16.73	21.37
Middle 40%	458	774,376	12.4	10.89	14.03	224	429,211	12.6	10.61	14.98	234	345,165	12.1	10.26	14.13
Top 20%	229	358,146	12.7	10.50	15.35	122	200,310	13.4	10.49	17.00	107	157,836	11.9	8.90	15.86

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.1.2 : Prevalence of known diabetes among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,853)

SOCIODEMOGRAPHIC CHARACTERISTICS	KNOWN DIABETES						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	1,554	2,210,457	9.7	8.97	10.47	660	1,039,773	8.8	7.90	9.76	894	1,170,683	10.7	9.73	11.71			
State																		
Johor	152	260,425	9.5	7.79	11.45	61	115,023	7.8	5.56	10.84	91	145,402	11.4	9.05	14.24			
Kedah	98	164,105	11.5	8.89	14.82	42	79,696	11.1	7.89	15.44	56	84,409	11.9	8.94	15.78			
Kelantan	92	114,130	10.0	7.95	12.50	29	42,708	7.4	5.19	10.58	63	71,421	12.6	9.27	16.85			
Melaka	111	91,132	12.6	9.38	16.67	54	44,965	11.9	7.85	17.57	57	46,166	13.4	9.99	17.64			
Negeri Sembilan	104	98,808	12.0	8.93	16.06	40	47,130	11.3	7.62	16.39	64	51,678	12.8	9.48	17.16			
Pahang	89	117,420	11.7	9.06	14.95	40	60,480	11.7	8.39	16.09	49	56,940	11.7	8.14	16.45			
Pulau Pinang	109	163,020	12.8	9.44	17.18	48	64,922	10.1	6.69	14.94	61	98,098	15.6	10.48	22.64			
Perak	121	232,428	14.8	12.11	17.94	45	104,139	13.9	10.60	18.09	76	128,289	15.6	11.94	20.06			
Perlis	120	26,727	13.6	10.68	17.07	50	9,781	10.1	6.34	15.79	70	16,946	16.9	13.51	20.84			
Selangor	147	457,836	8.7	6.97	10.70	69	246,791	8.7	6.60	11.50	78	211,045	8.6	6.50	11.17			
Terengganu	90	83,093	10.9	8.56	13.80	35	34,504	9.0	5.82	13.58	55	48,589	12.9	10.09	16.30			
Sabah	49	100,051	4.3	3.04	5.92	25	53,255	4.3	2.79	6.61	24	46,796	4.2	2.75	6.32			
Sarawak	93	173,219	9.6	6.68	13.54	42	77,092	8.5	5.59	12.67	51	96,127	10.7	7.00	15.97			
WP Kuala Lumpur	74	119,843	7.8	5.51	10.81	32	55,078	6.5	4.28	9.73	42	64,765	9.3	6.21	13.70			
WP Labuan	67	3,269	5.1	3.43	7.38	25	1,357	4.2	2.78	6.32	42	1,911	5.9	3.44	9.90			
WP Putrajaya	38	4,952	7.3	5.30	9.98	23	2,853	8.6	6.28	11.78	15	2,100	6.0	3.53	10.12			
Location																		
Urban	1,190	1,763,723	9.9	9.06	10.84	514	837,976	9.0	7.96	10.17	676	925,746	10.9	9.79	12.16			
Rural	364	446,734	8.9	7.73	10.26	146	201,797	8.0	6.53	9.75	218	244,937	9.8	8.31	11.64			
Age Group (Years)																		
18 - 29	11	-	-	-	-	3	-	-	-	-	8	-	-	-	-			
30 - 39	54	139,183	2.4	1.64	3.43	22	59,556	1.9	1.09	3.29	32	79,628	2.9	1.83	4.63			
40 - 49	172	298,117	8.3	6.90	9.97	62	131,814	7.0	5.12	9.44	110	166,303	9.8	7.77	12.23			
50 - 59	364	690,580	18.6	16.33	21.05	152	325,464	17.7	14.71	21.04	212	365,116	19.5	16.60	22.72			
60 and above	953	1,052,179	29.3	27.18	31.46	421	512,094	29.3	26.12	32.64	532	540,084	29.3	26.43	32.28			
Ethnicity																		
Malay ^a	968	1,288,704	10.7	9.81	11.64	403	582,893	9.6	8.53	10.87	565	705,811	11.7	10.58	13.03			
Chinese	225	410,934	8.4	6.97	10.11	105	199,626	8.1	6.35	10.22	120	211,309	8.7	6.68	11.38			
Indian	187	275,973	20.8	16.94	25.27	81	146,608	22.6	17.06	29.21	106	129,366	19.1	14.75	24.37			
Bumiputera Sabah	92	86,859	5.9	4.14	8.48	39	45,409	6.2	3.85	9.85	53	41,450	5.7	3.59	8.88			
Bumiputera Sarawak	52	104,306	11.2	7.60	16.33	21	35,442	7.8	4.74	12.55	31	68,864	14.6	9.56	21.61			
Others	30	43,679	2.0	1.07	3.85	11	-	-	-	-	19	13,883	2.1	1.07	4.03			
Education Level																		
No formal education	269	335,791	18.0	15.12	21.39	64	96,321	12.0	8.72	16.20	205	239,470	22.7	18.84	27.03			
Primary education	331	405,422	16.3	14.09	18.78	130	175,136	12.5	9.95	15.54	201	230,286	21.2	17.85	25.08			
Secondary education	863	1,288,168	8.6	7.78	9.49	411	652,156	8.1	7.08	9.32	452	636,013	9.1	8.04	10.38			
Tertiary education	88	178,688	5.3	4.07	6.81	54	113,988	7.4	5.33	10.29	34	64,700	3.5	2.27	5.33			

SOCIODEMOGRAPHIC CHARACTERISTICS	KNOWN DIABETES						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
Marital Status																		
Never married	52	107,309	1.7	1.13	2.44	23	56,787	1.5	0.85	2.52	29	50,522	2.0	1.21	3.19			
Married/ Living with partner	1,127	1,632,388	11.3	10.40	12.37	564	869,891	11.7	10.53	13.03	563	762,497	11.0	9.76	12.27			
Separated/ Divorced/ Widowed	372	463,379	23.7	20.98	26.74	71	106,579	20.6	15.67	26.66	301	356,800	24.9	21.63	28.40			
Occupation																		
Government employee	76	108,195	6.6	4.91	8.70	50	72,011	8.0	5.61	11.26	26	36,183	4.8	2.92	7.88			
Private employee	196	386,570	4.6	3.76	5.53	136	285,746	5.1	4.00	6.37	60	100,824	3.6	2.63	4.83			
Self employed	188	294,106	8.0	6.57	9.66	103	165,620	6.7	5.22	8.47	85	128,486	10.7	7.91	14.36			
Unpaid worker/ Home-maker/ Caregiver	331	437,288	11.6	10.01	13.34	15	21,409	16.2	8.60	28.36	316	415,880	11.4	9.80	13.22			
Retiree	259	365,085	29.7	26.22	33.46	191	265,868	32.1	27.55	36.92	68	99,217	24.8	18.71	32.19			
Student	3	-	-	-	-	1	-	-	-	-	2	-	-	-	-			
Not working ^a	489	595,002	21.7	19.54	23.97	161	221,632	17.6	14.29	21.54	328	373,370	25.1	22.13	28.31			
Household Income Group																		
Less than RM 1000	369	480,034	17.4	15.33	19.62	112	158,257	15.7	12.44	19.74	257	321,776	18.3	15.69	21.23			
RM 1,000 – RM 1999	275	325,697	9.8	8.12	11.69	118	155,858	8.6	6.50	11.16	157	169,838	11.2	9.19	13.62			
RM 2,000 – RM 3,999	371	519,561	8.8	7.64	10.03	172	259,437	8.1	6.63	9.83	199	260,124	9.6	8.10	11.25			
RM 4,000 – RM 5,999	204	334,666	8.5	6.92	10.38	92	161,661	7.5	5.63	9.81	112	173,005	9.8	7.63	12.42			
RM 6,000 – RM 7,999	116	182,740	8.0	6.13	10.31	50	94,130	7.9	5.54	11.07	66	88,610	8.1	5.97	10.87			
RM 8,000 – RM 9,999	81	134,290	8.4	5.92	11.73	41	69,995	8.3	5.74	11.96	40	64,295	8.4	4.68	14.69			
RM 10,000 and above	133	215,415	7.6	6.02	9.63	71	125,622	8.2	5.98	11.05	62	89,794	7.0	5.05	9.61			
Household Income Quintile																		
Quintile 1	504	628,391	16.0	14.30	17.85	179	241,181	14.9	12.39	17.88	325	387,210	16.7	14.59	19.14			
Quintile 2	318	417,564	8.9	7.68	10.38	128	194,469	7.6	6.00	9.49	190	223,094	10.6	8.98	12.53			
Quintile 3	253	360,163	8.0	6.73	9.50	129	190,894	7.8	6.20	9.89	124	169,269	8.2	6.54	10.20			
Quintile 4	246	413,210	8.3	7.04	9.84	102	189,370	7.1	5.47	9.05	144	223,840	9.8	8.06	11.95			
Quintile 5	228	373,075	8.1	6.62	9.79	118	209,046	8.5	6.60	10.76	110	164,028	7.6	5.72	10.06			
Household Income Category																		
Bottom 40%	1,089	1,464,044	10.8	9.84	11.74	440	644,984	9.4	8.22	10.65	649	819,060	12.2	10.98	13.48			
Middle 40%	301	492,284	7.9	6.71	9.20	134	256,784	7.6	6.03	9.44	167	235,500	8.2	6.82	9.90			
Top 20%	159	236,075	8.4	6.71	10.43	82	123,192	8.2	6.40	10.57	77	112,883	8.5	5.91	12.21			

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.1.3 : Prevalence of raised blood glucose among those not known to have diabetes aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,853)

SOCIODEMOGRAPHIC CHARACTERISTICS	RAISED BLOOD GLUCOSE AMONGST THOSE NOT KNOWN TO HAVE DIABETES						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	754	1,344,820	5.9	5.02	6.91	376	734,617	6.2	5.16	7.46	378	610,203	5.6	4.47	6.90			
State																		
Johor	100	286,659	10.4	6.13	17.16	48	151,773	10.3	5.80	17.62	52	134,886	10.6	6.10	17.68			
Kedah	54	113,677	8.0	5.60	11.26	27	67,336	9.4	5.97	14.48	27	46,340	6.6	3.73	11.28			
Kelantan	40	71,808	6.3	4.33	9.06	18	42,345	7.4	4.60	11.64	22	29,463	5.2	3.19	8.34			
Malaka	46	51,523	7.1	4.37	11.38	22	23,081	6.1	3.49	10.44	24	28,443	8.2	4.35	15.04			
Negeri Sembilan	58	57,933	7.1	5.38	9.22	28	30,575	7.3	5.12	10.36	30	27,358	6.8	4.12	11.00			
Pahang	51	99,037	9.9	6.43	14.82	27	68,450	13.2	7.13	23.30	24	30,587	6.3	4.26	9.14			
Pulau Pinang	50	98,195	7.7	4.83	12.13	27	-	-	-	-	28	39,765	6.3	4.05	9.76			
Perak	32	109,023	6.9	3.25	14.19	19	44,251	5.9	3.51	9.81	13	-	-	-	-			
Perlis	44	13,843	7.0	4.93	9.91	23	7,110	7.4	4.85	11.03	21	6,733	6.7	4.31	10.26			
Selangor	45	161,350	3.1	2.11	4.39	22	95,516	3.4	2.20	5.18	23	65,833	2.7	1.71	4.14			
Terengganu	30	38,763	5.1	3.00	8.49	17	-	-	-	-	13	18,483	4.9	2.73	8.62			
Sabah	32	106,922	4.5	2.93	6.99	14	-	-	-	-	18	60,185	5.4	2.84	9.99			
Sarawak	53	92,019	5.1	3.59	7.16	30	55,209	6.1	3.90	9.34	23	36,810	4.1	2.64	6.29			
WP Kuala Lumpur	16	33,025	2.1	1.18	3.83	8	-	-	-	-	8	-	-	-	-			
WP Labuan	83	8,308	12.8	9.65	16.88	40	4,686	14.5	9.99	20.66	43	3,622	11.2	7.74	15.81			
WP Putrajaya	20	2,735	4.0	2.52	6.39	11	1,364	4.1	2.51	6.74	9	-	-	-	-			
Location																		
Urban	538	911,083	5.1	4.42	5.93	268	528,769	5.7	4.61	6.98	270	382,314	4.5	3.79	5.36			
Rural	216	433,736	8.7	5.92	12.49	108	205,848	8.2	5.51	11.90	108	227,889	9.2	5.58	14.68			
Age Group (Years)																		
18 - 29	61	162,066	2.7	1.80	3.98	30	107,220	3.3	1.93	5.69	31	54,846	1.9	1.15	3.27			
30 - 39	95	239,324	4.1	3.05	5.44	47	155,061	5.0	3.35	7.26	48	84,263	3.1	2.14	4.43			
40 - 49	168	247,158	6.9	5.65	8.37	80	127,154	6.7	5.06	8.90	88	120,004	7.1	5.49	9.02			
50 - 59	159	381,386	10.3	6.92	14.95	80	197,833	10.7	7.23	15.65	79	183,553	9.8	6.11	15.32			
60 and above	271	314,886	8.8	7.08	10.79	139	147,348	8.4	6.75	10.47	132	167,537	9.1	6.50	12.54			
Ethnicity																		
Malay ^a	427	664,304	5.5	4.83	6.28	221	357,095	5.9	4.98	6.99	206	307,208	5.1	4.31	6.05			
Chinese	108	328,142	6.7	3.95	11.19	54	165,464	6.7	3.81	11.50	54	162,678	6.7	3.38	12.99			
Indian	53	74,519	5.6	3.91	8.00	22	38,220	5.9	3.63	9.38	31	36,299	5.4	3.36	8.45			
Bumiputera Sabah	74	49,199	3.4	2.17	5.19	33	24,067	3.3	1.83	5.84	41	25,132	3.4	2.01	5.84			
Bumiputera Sarawak	31	54,928	5.9	3.85	9.01	18	32,512	7.1	4.39	11.43	13	22,415	4.7	2.69	8.25			
Others	61	173,729	8.1	5.66	11.52	28	117,259	8.0	4.82	12.84	33	56,470	8.5	4.59	15.22			
Education Level																		
No formal education	111	201,523	10.8	7.22	15.93	35	54,558	6.8	4.03	11.17	76	146,965	13.9	8.16	22.73			
Primary education	113	163,253	6.6	4.98	8.61	53	91,320	6.5	4.34	9.64	60	71,932	6.6	4.86	8.99			
Secondary education	470	856,315	5.7	4.86	6.71	262	511,061	6.4	5.14	7.87	208	345,254	5.0	4.02	6.11			
Tertiary education	57	122,619	3.6	2.44	5.35	25	77,524	5.1	2.92	8.61	32	45,096	2.4	1.56	3.77			

SOCIODEMOGRAPHIC CHARACTERISTICS	RAISED BLOOD GLUCOSE AMONGST THOSE NOT KNOWN TO HAVE DIABETES						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
Marital Status																		
Never married	81	190,807	3.0	2.10	4.17	49	141,515	3.6	2.37	5.58	32	49,292	1.9	1.24	2.98			
Married/ Living with partner	541	941,310	6.5	5.40	7.90	298	552,085	7.4	6.06	9.10	243	389,225	5.6	4.40	7.08			
Separated/ Divorced/ Widowed	132	212,702	10.9	7.17	16.22	29	41,016	7.9	5.05	12.27	103	171,686	12.0	7.19	19.25			
Occupation																		
Government employee	44	46,081	2.8	1.83	4.24	21	23,064	2.6	1.37	4.74	23	23,016	3.1	1.73	5.40			
Private employee	181	386,981	4.6	3.70	5.62	130	309,495	5.5	4.32	6.92	51	77,486	2.7	1.95	3.85			
Self employed	141	239,468	6.5	5.15	8.18	96	171,119	6.9	5.26	8.97	45	68,349	5.7	3.73	8.61			
Unpaid worker/ Home-maker/ Caregiver	158	308,149	8.2	5.98	11.02	5	-	-	-	-	153	290,627	8.0	5.76	10.92			
Retiree	78	104,117	8.5	6.23	11.43	58	75,550	9.1	6.46	12.70	20	28,567	7.2	4.14	12.08			
Student	10	-	-	-	-	3	-	-	-	-	7	-	-	-	-			
Not working ^b	139	225,969	8.2	5.61	11.92	60	117,579	9.4	5.11	16.51	79	108,390	7.3	4.60	11.35			
Household Income Group																		
Less than RM 1000	145	281,554	10.2	6.89	14.82	51	112,500	11.2	5.93	20.12	94	169,054	9.6	5.72	15.72			
RM 1,000 – RM 1999	137	231,575	6.9	4.87	9.80	69	114,494	6.3	4.31	9.06	68	117,082	7.7	4.19	13.82			
RM 2,000 – RM 3,999	203	356,796	6.0	4.89	7.39	109	217,166	6.8	5.21	8.76	94	139,630	5.1	3.74	7.01			
RM 4,000 – RM 5,999	117	216,255	5.5	4.27	7.03	62	131,161	6.0	4.37	8.31	55	85,094	4.8	3.33	6.88			
RM 6,000 – RM 7,999	57	98,213	4.3	2.98	6.14	34	68,376	5.7	3.70	8.75	23	29,836	2.7	1.64	4.50			
RM 8,000 – RM 9,999	37	61,638	3.8	2.48	5.92	20	-	-	-	-	17	28,346	3.7	2.22	6.15			
RM 10,000 and above	56	97,543	3.5	2.24	5.30	30	56,776	3.7	2.18	6.19	26	40,767	3.2	1.96	5.10			
Household Income Quintile																		
Quintile 1	195	337,873	8.6	6.17	11.87	75	140,485	8.7	5.11	14.41	120	197,388	8.5	5.40	13.24			
Quintile 2	189	368,397	7.9	6.07	10.19	103	206,361	8.0	6.04	10.59	86	162,036	7.7	4.69	12.46			
Quintile 3	132	235,092	5.2	4.17	6.53	68	145,735	6.0	4.43	8.05	64	89,358	4.3	3.23	5.76			
Quintile 4	135	234,022	4.7	3.68	6.03	75	146,311	5.5	3.92	7.54	60	87,711	3.9	2.72	5.43			
Quintile 5	101	168,188	3.6	2.60	5.07	54	94,872	3.8	2.41	6.06	47	73,316	3.4	2.36	4.89			
Household Income Category																		
Bottom 40%	525	939,409	6.9	5.67	8.38	245	484,220	7.0	5.69	8.66	280	455,189	6.8	5.14	8.86			
Middle 40%	157	282,093	4.5	3.62	5.59	90	172,427	5.1	3.77	6.81	67	109,666	3.8	2.90	5.05			
Top 20%	70	122,071	4.3	2.95	6.34	40	77,118	5.2	3.06	8.57	30	44,953	3.4	2.20	5.22			

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.1.4 : Age-standardised prevalence of diabetes by states in Malaysia

NO	STATE	OVERALL RAISED BLOOD GLUCOSE (%)	KNOWN DIABETES (%)	RAISED BLOOD GLUCOSE AMONGST THOSE NOT KNOWN TO HAVE DIABETES (%)
1	Johor	18.0	8.7	9.4
2	Kedah	17.1	10.0	7.0
3	Kelantan	15.6	9.5	6.1
4	Melaka	20.5	13.4	7.1
5	Negeri Sembilan	14.0	8.9	5.1
6	Pahang	24.7	13.3	11.4
7	Pulau Pinang	18.4	11.3	7.1
8	Perak	16.8	11.4	5.4
9	Perlis	19.4	12.6	6.8
10	Selangor	11.3	8.4	2.9
11	Terengganu	15.9	10.9	5.0
12	Sabah	9.5	4.8	4.6
13	Sarawak	13.4	8.6	4.8
14	WP Kuala Lumpur	10.5	8.3	2.2
15	WP Labuan	18.1	5.6	12.5
16	WP Putrajaya	12.0	9.2	2.8

Table 4.2.1: Prevalence of overall raised blood pressure among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=11,335)

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL HYPERTENSION						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	4,048	6,651,650	29.2	27.66	30.75	1,840	3,401,351	28.8	26.73	30.86	2,208	3,250,299	29.6	27.83	31.51			
State																		
Johor	400	879,067	32.0	26.27	38.28	183	475,481	32.3	25.10	40.44	217	403,586	31.6	26.56	37.13			
Kedah	244	464,918	32.7	27.88	37.82	107	231,868	32.3	25.29	40.30	137	233,051	33.0	27.32	39.17			
Kelantan	223	318,829	27.9	23.64	32.68	88	157,030	27.4	21.42	34.28	135	161,799	28.5	23.60	33.95			
Melaka	237	213,623	29.5	24.10	35.52	123	116,199	30.7	23.02	39.57	114	97,424	28.2	23.40	33.53			
Negeri Sembilan	231	229,298	28.0	22.40	34.28	100	119,655	28.6	21.23	37.42	131	109,643	27.2	22.13	33.01			
Pahang	212	309,238	30.8	26.91	34.94	90	154,266	29.8	22.61	38.26	122	154,973	31.8	27.27	36.62			
Pulau Pinang	252	449,548	35.4	29.42	41.79	101	194,897	30.3	22.33	39.65	151	254,650	40.6	33.99	47.46			
Perak	285	632,126	40.2	34.48	46.23	126	303,766	40.6	34.33	47.23	159	328,361	39.9	29.38	51.35			
Perlis	280	77,088	39.1	32.30	46.38	120	37,094	38.4	26.85	51.43	160	39,994	39.8	33.65	46.27			
Selangor	373	1,221,306	23.1	19.79	26.75	185	670,389	23.8	19.55	28.54	188	550,917	22.3	18.96	26.10			
Terengganu	176	184,206	24.2	19.23	29.92	68	76,174	19.8	13.58	27.94	108	108,033	28.6	23.58	34.28			
Sabah	243	600,127	25.5	22.14	29.20	112	321,022	26.0	21.20	31.45	131	279,105	25.0	20.05	30.64			
Sarawak	329	721,381	39.9	34.74	45.26	150	348,737	38.4	30.64	46.72	179	372,644	41.4	33.62	49.66			
WP Kuala Lumpur	166	315,203	20.4	15.55	26.24	84	175,937	20.7	14.75	28.33	82	139,266	19.9	14.25	27.19			
WP Labuan	272	18,808	29.1	24.13	34.55	131	9,347	29.0	21.46	37.86	141	9,462	29.1	23.64	35.34			
WP Putrajaya	125	16,883	24.9	20.76	29.52	72	9,490	28.7	23.46	34.68	53	7,393	21.2	15.99	27.61			
Location																		
Urban	2,968	4,960,199	27.9	26.30	29.55	1,386	2,605,466	28.0	25.83	30.29	1,582	2,354,733	27.8	25.98	29.62			
Rural	1,080	1,691,451	33.7	30.07	37.63	454	795,884	31.5	26.81	36.64	626	895,567	36.0	31.21	41.09			
Age Group (Years)																		
18 - 29	126	339,853	5.6	4.51	7.02	77	228,204	7.1	5.36	9.33	49	111,649	4.0	2.72	5.74			
30 - 39	315	938,865	16.0	13.96	18.31	174	560,070	17.9	14.96	21.23	141	378,795	13.9	11.28	16.96			
40 - 49	593	1,034,524	28.8	26.22	31.56	251	498,122	26.4	22.73	30.36	342	536,402	31.5	27.96	35.33			
50 - 59	953	1,924,757	51.8	47.95	55.63	401	926,480	50.3	45.30	55.35	552	998,277	53.2	48.64	57.79			
60 and above	2,061	2,413,651	67.2	64.42	69.77	937	1,188,474	67.9	64.36	71.32	1,124	1,225,177	66.4	62.61	69.99			
Ethnicity																		
Malay ^a	2,398	3,572,686	29.6	27.93	31.41	1,056	1,741,986	28.8	26.55	31.19	1,342	1,830,700	30.5	28.57	32.44			
Chinese	658	1,510,919	30.9	26.52	35.68	337	816,136	33.0	27.66	38.82	321	694,783	28.8	23.51	34.66			
Indian	266	394,121	29.7	25.41	34.38	114	202,325	31.1	24.89	38.16	152	191,795	28.3	23.09	34.21			
Bumiputera Sabah	378	426,489	29.2	24.91	33.88	185	234,681	32.1	26.78	37.89	193	191,808	26.3	20.53	33.02			
Bumiputera Sarawak	193	381,451	41.1	35.03	47.53	89	178,526	39.2	31.44	47.63	104	202,926	43.0	34.34	52.04			
Others	155	365,984	17.1	13.37	21.62	59	227,697	15.4	11.05	21.17	96	138,287	20.8	14.60	28.70			
Education Level																		
No formal education	660	921,929	49.5	43.93	55.17	192	285,854	35.5	28.32	43.44	468	636,075	60.2	54.15	66.01			
Primary Education	798	1,133,686	45.6	41.39	49.82	350	581,069	41.4	35.22	47.87	448	552,617	51.0	45.84	56.09			
Secondary education	2,291	4,001,626	26.7	25.16	28.33	1,127	2,160,533	26.9	24.87	29.11	1,164	1,841,093	26.5	24.51	28.49			
Tertiary education	289	585,881	17.3	14.53	20.48	167	368,358	24.0	19.41	29.37	122	217,524	11.7	9.22	14.83			

SOCIODEMOGRAPHIC CHARACTERISTICS	TOTAL HYPERTENSION														
	MALE						FEMALE								
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER					
Marital Status															
Never married	307	765,825	11.9	10.21	13.80	177	509,712	13.1	10.84	15.86	130	256,114	10.0	7.71	12.85
Married/ Living with partner	2,901	4,757,740	33.1	31.20	35.00	1,491	2,611,036	35.2	32.81	37.62	1,410	2,146,704	30.8	28.81	32.93
Separated/ Divorced/ Widowed	836	1,119,392	57.4	53.31	61.44	169	272,774	53.1	44.28	61.66	667	846,617	59.0	54.36	63.47
Occupation															
Government employee	245	387,024	23.5	19.89	27.44	144	244,462	27.1	21.82	33.21	101	142,563	19.0	14.93	23.93
Private employee	708	1,568,113	18.5	16.73	20.42	483	1,162,278	20.6	18.20	23.14	225	405,835	14.4	12.15	16.91
Self employed	613	1,116,620	30.3	26.96	33.88	383	737,712	29.7	25.84	33.86	230	378,909	31.6	26.00	37.76
Unpaid worker/ Home-maker/ Caregiver	846	1,363,830	36.1	33.01	39.27	30	68,487	51.7	35.50	67.61	816	1,295,343	35.5	32.40	38.75
Retiree	552	788,700	64.2	59.80	68.35	395	575,177	69.4	64.47	73.83	157	213,523	53.5	45.43	61.32
Student	15	42,147	3.7	2.14	6.28	9	29,355	5.5	2.91	10.31	6	-	-	-	-
Not working ^b	1,048	1,359,665	49.6	45.94	53.21	387	575,885	45.9	39.43	52.50	661	783,780	52.7	48.57	56.75
Household Income Group															
Less than RM 1000	901	1,309,006	47.4	43.04	51.73	283	456,923	45.5	38.41	52.71	618	852,083	48.5	43.20	53.73
RM 1,000 – RM 1999	744	1,103,336	33.1	28.98	37.41	338	544,163	29.9	24.67	35.61	406	559,173	36.9	32.06	42.06
RM 2,000 – RM 3,999	949	1,605,240	27.1	24.79	29.50	457	827,975	25.8	22.78	29.14	492	777,264	28.6	25.74	31.55
RM 4,000 – RM 5,999	600	1,064,842	27.0	24.02	30.24	306	619,275	28.6	24.42	33.07	294	445,567	25.1	21.43	29.27
RM 6,000 – RM 7,999	311	539,160	23.5	20.31	27.09	153	296,425	24.8	20.62	29.49	158	242,735	22.2	18.54	26.27
RM 8,000 – RM 9,999	219	401,166	25.0	21.07	29.44	122	244,373	29.1	23.94	34.89	97	156,793	20.5	15.45	26.74
RM 10,000 and above	316	607,047	21.5	18.04	25.41	176	397,131	25.8	20.74	31.63	140	209,915	16.3	13.12	20.16
Household Income Quintile															
Quintile 1	1,246	1,760,443	44.8	41.62	48.05	440	668,797	41.4	35.85	47.18	806	1,091,646	47.2	42.93	51.51
Quintile 2	829	1,335,959	28.6	25.53	31.92	381	680,446	26.5	22.72	30.62	448	655,513	31.2	27.52	35.20
Quintile 3	707	1,228,078	27.3	24.64	30.10	351	638,826	26.3	22.78	30.05	356	589,253	28.5	24.96	32.31
Quintile 4	680	1,232,492	24.9	22.39	27.49	349	729,691	27.2	23.68	30.99	331	502,801	22.1	19.21	25.29
Quintile 5	578	1,072,824	23.2	20.52	26.06	314	668,507	27.0	23.26	31.16	264	404,318	18.8	15.94	21.93
Household Income Category															
Bottom 40%	2,790	4,360,643	32.0	30.07	34.06	1185	2,028,013	29.5	26.83	32.23	1605	2,332,630	34.7	32.41	37.02
Middle 40%	874	1,572,612	25.1	22.87	27.53	446	918,605	27.0	23.92	30.41	428	654,007	22.9	20.05	25.92
Top 20%	376	696,541	24.7	21.78	27.94	204	439,649	29.4	25.12	34.15	172	256,892	19.4	16.13	23.20

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.2.2: Prevalence of known hypertension among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=11,335)

SOCIODEMOGRAPHIC CHARACTERISTICS	KNOWN HYPERTENSION						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	2,614	3,934,888	17.3	16.21	18.37	1,143	1,896,586	16.0	14.68	17.48	1,471	2,038,302	18.6	17.29	19.95			
State																		
Johor	253	439,761	16.0	13.39	19.00	113	220,941	15.0	11.36	19.56	140	218,820	17.1	14.04	20.75			
Kedah	163	290,674	20.4	16.26	25.32	73	143,437	20.0	14.34	27.21	90	147,237	20.8	16.76	25.59			
Kelantan	141	174,779	15.3	12.81	18.21	46	68,652	12.0	8.48	16.63	95	106,127	18.7	14.82	23.30			
Melaka	182	143,153	19.8	15.27	25.19	94	73,316	19.4	13.49	26.98	88	69,837	20.2	15.68	25.65			
Negeri Sembilan	174	154,348	18.8	15.61	22.50	72	74,165	17.8	13.55	22.92	102	80,183	19.9	16.07	24.41			
Pahang	110	144,474	14.4	11.84	17.36	45	67,958	13.1	9.44	18.03	65	76,516	15.7	12.02	20.20			
Pulau Pinang	157	265,250	20.9	15.76	27.08	67	125,737	19.5	12.90	28.48	90	139,512	22.2	16.50	29.22			
Perak	184	379,849	24.2	19.51	29.52	73	168,002	22.5	18.24	27.35	111	211,846	25.7	18.34	34.79			
Perlis	167	39,636	20.1	16.66	24.07	73	18,941	19.6	14.62	25.79	94	20,695	20.6	16.65	25.18			
Selangor	262	817,749	15.5	12.90	18.41	123	425,556	15.1	11.87	18.96	139	392,193	15.9	13.21	19.01			
Terengganu	115	103,804	13.6	10.44	17.58	39	36,250	9.4	6.08	14.32	76	67,555	17.9	14.00	22.61			
Sabah	146	312,710	13.3	11.07	15.88	61	143,423	11.6	9.20	14.57	85	169,287	15.1	11.77	19.28			
Sarawak	216	423,862	23.4	20.41	26.76	95	194,171	21.4	17.33	26.03	121	229,691	25.5	21.33	30.23			
WP Kuala Lumpur	123	225,430	14.6	10.60	19.71	62	126,540	14.9	9.75	22.14	61	98,890	14.2	10.04	19.61			
WP Labuan	145	9,319	14.4	11.21	18.31	69	4,801	14.9	10.68	20.36	76	4,518	13.9	9.93	19.16			
WP Putrajaya	76	10,090	14.9	11.21	19.46	38	4,695	14.2	10.19	19.49	38	5,396	15.5	10.56	22.15			
Location																		
Urban	1,935	3,033,262	17.1	15.84	18.34	867	1,496,988	16.1	14.50	17.82	1,068	1,536,274	18.1	16.72	19.60			
Rural	679	901,625	18.0	15.96	20.21	276	399,598	15.8	13.64	18.29	403	502,028	20.2	17.19	23.55			
Age Group (Years)																		
18 - 29	22	67,547	1.1	0.68	1.83	10	-	-	-	-	12	37,262	1.3	0.66	2.62			
30 - 39	102	254,464	4.3	3.34	5.62	54	149,645	4.8	3.38	6.71	48	104,819	3.8	2.61	5.61			
40 - 49	287	540,209	15.0	13.11	17.22	120	254,614	13.5	10.80	16.70	167	285,595	16.8	14.18	19.76			
50 - 59	604	1,161,851	31.3	28.50	34.18	246	546,756	29.7	25.72	34.02	358	615,095	32.8	29.50	36.30			
60 and above	1,599	1,910,816	53.2	50.44	55.87	713	915,285	52.3	48.75	55.88	886	995,531	54.0	50.31	57.56			
Ethnicity																		
Malay ^a	1,531	2,087,186	17.3	16.11	18.59	646	965,123	16.0	14.43	17.63	885	1,122,063	18.7	17.23	20.21			
Chinese	471	938,700	19.2	16.54	22.18	239	502,962	20.3	16.96	24.20	232	435,737	18.0	14.89	21.68			
Indian	195	296,236	22.3	18.50	26.68	85	150,225	23.1	17.55	29.81	110	146,011	21.6	16.81	27.20			
Bumiputera Sabah	225	256,842	17.6	14.52	21.13	101	121,684	16.6	12.91	21.16	124	135,158	18.5	13.98	24.16			
Bumiputera Sarawak	135	253,817	27.4	23.55	31.56	57	106,146	23.3	17.41	30.52	78	147,672	31.3	25.46	37.73			
Others	57	102,106	4.8	3.11	7.26	15	50,445	3.4	1.73	6.65	42	51,661	7.8	5.05	11.75			
Education Level																		
No formal education	486	612,718	32.9	27.94	38.34	126	155,722	19.3	14.62	25.15	360	456,997	43.3	36.59	50.22			
Primary education	560	742,737	29.9	26.71	33.20	238	341,456	24.3	20.32	28.84	322	401,280	37.0	32.48	41.79			
Secondary education	1,398	2,249,011	15.0	13.88	16.23	677	1,181,359	14.7	13.24	16.36	721	1,067,652	15.3	13.92	16.88			
Tertiary education	163	323,698	9.6	7.62	11.93	99	213,579	13.9	10.63	18.06	64	110,119	5.9	4.32	8.12			

SOCIODEMOGRAPHIC CHARACTERISTICS	KNOWN HYPERTENSION										MALE					FEMALE				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL						
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER					
Marital Status																				
Never married	111	259,120	4.0	3.15	5.12	54	153,030	3.9	2.74	5.66	57	106,090	4.1	2.98	5.73					
Married/ Living with partner	1,882	2,852,346	19.8	18.49	21.24	975	1,555,865	21.0	19.30	22.72	907	1,296,480	18.6	17.06	20.28					
Separated/ Divorced/ Widowed	617	814,729	41.8	38.33	45.35	111	179,862	35.0	27.52	43.27	506	634,867	44.2	40.61	47.93					
Occupation																				
Government employee	126	193,125	11.7	9.41	14.47	73	123,993	13.8	10.17	18.38	53	69,132	9.2	6.38	13.15					
Private employee	360	732,672	8.6	7.49	9.95	240	522,225	9.2	7.73	11.01	120	210,447	7.5	5.97	9.26					
Self employed	344	580,863	15.8	13.60	18.21	212	368,484	14.8	12.49	17.52	132	212,378	17.7	14.24	21.80					
Unpaid worker/ Home-maker/ Caregiver	527	763,835	20.2	18.19	22.39	19	39,490	29.8	16.58	47.63	508	724,345	19.9	17.85	22.03					
Retiree	426	622,890	50.7	46.17	55.21	304	452,372	54.5	49.32	59.67	122	170,517	42.7	34.94	50.83					
Student	3	-	-	-	-	2	-	-	-	-	1	-	-	-	-					
Not working ^b	813	1,012,651	36.9	33.81	40.14	288	381,248	30.4	26.45	34.62	525	631,403	42.4	38.56	46.41					
Household Income Group																				
Less than RM 1000	637	864,541	31.3	27.95	34.82	202	294,825	29.3	24.49	34.70	435	569,716	32.4	28.62	36.42					
RM 1,000 – RM 1999	484	641,472	19.2	16.59	22.16	219	316,368	17.4	13.95	21.38	265	325,105	21.5	18.20	25.14					
RM 2,000 – RM 3,999	602	939,204	15.8	14.24	17.59	283	462,691	14.4	12.31	16.86	319	476,513	17.5	15.46	19.76					
RM 4,000 – RM 5,999	353	549,953	14.0	12.03	16.13	164	278,462	12.8	10.55	15.53	189	271,491	15.3	12.73	18.33					
RM 6,000 – RM 7,999	197	323,296	14.1	11.72	16.90	89	168,352	14.1	11.01	17.83	108	154,944	14.1	11.34	17.51					
RM 8,000 – RM 9,999	140	234,870	14.7	11.45	18.56	74	130,394	15.5	11.75	20.25	66	104,475	13.7	9.39	19.51					
RM 10,000 and above	199	375,992	13.3	10.68	16.49	110	239,934	15.6	11.75	20.41	89	136,058	10.6	8.16	13.63					
Household Income Quintile																				
Quintile 1	887	1,170,557	29.8	27.19	32.55	318	435,865	27.0	23.30	31.01	569	734,692	31.8	28.46	35.26					
Quintile 2	510	741,610	15.9	13.93	18.06	226	371,860	14.5	11.86	17.55	284	369,750	17.6	15.30	20.19					
Quintile 3	440	693,219	15.4	13.68	17.29	215	350,101	14.4	12.08	17.06	225	343,118	16.6	14.24	19.24					
Quintile 4	409	680,640	13.7	11.96	15.70	189	352,444	13.1	10.88	15.76	220	328,196	14.4	12.20	16.98					
Quintile 5	366	643,301	13.9	11.83	16.26	193	380,755	15.4	12.59	18.68	173	262,546	12.2	9.93	14.85					
Household Income Category																				
Bottom 40%	1,857	2,677,172	19.7	18.29	21.12	768	1,193,222	17.3	15.57	19.24	1,089	1,483,950	22.1	20.32	23.91					
Middle 40%	523	854,039	13.6	12.15	15.30	251	470,437	13.8	11.80	16.18	272	383,603	13.4	11.62	15.42					
Top 20%	232	398,117	14.1	11.80	16.84	122	227,367	15.2	12.20	18.84	110	170,749	12.9	10.05	16.43					

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.2.3: Prevalence of raised blood pressure among those not known to have hypertension aged 18 years old and above in Malaysia by sociodemographic characteristics (n=11,335)

SOCIODEMOGRAPHIC CHARACTERISTICS	RAISED BLOOD PRESSURE AMONGST THOSE NOT KNOWN TO HAVE HYPERTENSION						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	1,434	2,716,762	11.9	10.88	13.04	697	1,504,765	12.7	11.34	14.24	737	1,211,997	11.1	9.85	12.38			
State																		
Johor	147	439,306	16.0	11.23	22.23	70	254,540	17.3	11.95	24.35	77	184,767	14.5	9.83	20.80			
Kedah	81	174,245	12.2	9.30	15.95	34	88,430	12.3	7.91	18.74	47	85,814	12.1	8.93	16.31			
Kelantan	82	144,050	12.6	9.40	16.74	42	88,378	15.4	10.64	21.79	40	55,672	9.8	6.37	14.79			
Melaka	55	70,470	9.7	5.88	15.68	29	42,883	11.3	6.71	18.49	26	27,587	8.0	4.16	14.79			
Negeri Sembilan	57	74,950	9.1	5.82	14.06	28	45,490	10.9	6.22	18.38	29	29,460	7.3	4.38	11.98			
Pahang	102	164,764	16.4	13.14	20.28	45	86,307	16.7	11.88	22.97	57	78,457	16.1	12.55	20.38			
Pulau Pinang	95	184,298	14.5	10.83	19.14	34	69,160	10.7	7.71	14.80	61	115,138	18.3	12.41	26.24			
Perak	101	252,278	16.1	12.90	19.80	53	135,763	18.2	13.47	24.01	48	116,514	14.1	9.89	19.83			
Perlis	113	37,452	19.0	13.78	25.62	47	18,152	18.8	10.06	32.38	66	19,299	19.2	13.24	27.01			
Selangor	111	403,557	7.6	5.97	9.70	62	244,833	8.7	6.37	11.70	49	158,724	6.4	4.72	8.71			
Terengganu	61	80,402	10.6	7.45	14.73	29	39,924	10.4	5.87	17.69	32	40,478	10.7	7.46	15.20			
Sabah	97	287,417	12.2	10.00	14.84	51	177,599	14.4	10.82	18.87	46	109,818	9.8	6.80	14.01			
Sarawak	113	297,519	16.4	12.83	20.84	55	154,566	17.0	11.27	24.84	58	142,953	15.9	10.64	23.06			
WP Kuala Lumpur	43	89,773	5.8	3.71	8.97	22	49,397	5.8	3.62	9.23	21	40,376	5.8	3.01	10.83			
WP Labuan	127	9,489	14.7	11.65	18.30	62	4,546	14.1	9.52	20.37	65	4,943	15.2	11.60	19.74			
WP Putrajaya	49	6,793	10.0	7.38	13.44	34	4,795	14.5	9.58	21.42	15	1,997	5.7	3.52	9.21			
Location																		
Urban	1,033	1,926,937	10.8	9.85	11.91	519	1,108,478	11.9	10.53	13.45	514	818,459	9.7	8.53	10.90			
Rural	401	789,826	15.8	12.91	19.09	178	396,287	15.7	12.08	20.14	223	393,539	15.8	12.54	19.77			
Age Group (Years)																		
18 - 29	104	272,306	4.5	3.49	5.82	67	197,919	6.2	4.54	8.28	37	74,387	2.6	1.66	4.17			
30 - 39	213	684,401	11.7	9.87	13.76	120	410,425	13.1	10.63	16.05	93	273,976	10.0	7.68	13.02			
40 - 49	306	494,315	13.8	11.84	15.95	131	243,508	12.9	10.27	16.06	175	250,807	14.7	12.08	17.87			
50 - 59	349	762,906	20.5	16.87	24.75	155	379,724	20.6	16.25	25.82	194	383,182	20.4	16.35	25.25			
60 and above	462	502,835	14.0	12.37	15.78	224	273,189	15.6	13.33	18.22	238	229,646	12.4	10.46	14.75			
Ethnicity																		
Malay ^a	867	1,485,500	12.3	11.16	13.59	410	776,863	12.9	11.28	14.60	457	708,637	11.8	10.47	13.26			
Chinese	187	572,220	11.7	8.64	15.67	98	313,174	12.7	9.08	17.39	89	259,046	10.7	7.21	15.67			
Indian	71	97,884	7.4	5.22	10.33	29	52,100	8.0	4.71	13.34	42	45,784	6.8	4.54	9.96			
Bumiputera Sabah	153	169,647	11.6	9.19	14.58	84	112,997	15.4	11.42	20.55	69	56,650	7.8	5.46	10.95			
Bumiputera Sarawak	58	127,634	13.8	10.69	17.56	32	72,380	15.9	10.34	23.68	26	55,254	11.7	7.19	18.46			
Others	98	263,878	12.3	9.32	16.14	44	177,251	12.0	8.17	17.35	54	86,627	13.0	8.66	19.11			
Education Level																		
No formal education	174	309,210	16.6	12.43	21.87	66	130,132	16.2	10.65	23.79	108	179,078	17.0	11.41	24.47			
Primary education	238	390,949	15.7	12.93	18.97	112	239,613	17.1	12.93	22.21	126	151,337	14.0	11.12	17.38			
Secondary education	893	1,752,615	11.7	10.56	12.95	450	979,174	12.2	10.65	13.96	443	773,441	11.1	9.64	12.78			
Tertiary education	126	262,183	7.7	6.01	9.92	68	154,779	10.1	7.39	13.66	58	107,404	5.8	3.95	8.43			

SOCIODEMOGRAPHIC CHARACTERISTICS	RAISED BLOOD PRESSURE AMONGST THOSE NOT KNOWN TO HAVE HYPERTENSION										MALE				FEMALE			
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
Marital Status																		
Never married	196	506,705	7.9	6.51	9.48	123	356,682	9.2	7.28	11.56	73	150,023	5.9	3.98	8.52			
Married/ Living with partner	1,019	1,905,394	13.2	11.89	14.73	516	1,055,171	14.2	12.49	16.13	503	850,223	12.2	10.71	13.89			
Separated/ Divorced/ Widowed	219	304,663	15.6	13.00	18.68	58	92,912	18.1	13.15	24.33	161	211,751	14.8	11.75	18.36			
Occupation																		
Government employee	119	193,899	11.8	9.17	14.94	71	120,468	13.4	9.80	17.99	48	73,431	9.8	6.61	14.29			
Private employee	348	835,441	9.9	8.50	11.41	243	640,053	11.3	9.53	13.41	105	195,389	6.9	5.27	9.03			
Self employed	269	535,758	14.5	12.28	17.14	171	369,227	14.9	12.07	18.17	98	166,530	13.9	10.04	18.88			
Unpaid worker/ Home-maker/ Caregiver	319	599,995	15.9	13.52	18.54	11	28,997	21.9	12.02	36.53	308	570,998	15.7	13.28	18.37			
Retiree	126	165,810	13.5	10.75	16.81	91	122,804	14.8	11.58	18.75	35	43,006	10.8	7.06	16.08			
Student	12	30,453	2.7	1.41	4.98	7	-	-	-	-	5	-	-	-	-			
Not working ^b	235	347,014	12.7	10.07	15.78	99	194,637	15.5	10.76	21.85	136	152,377	10.2	8.19	12.73			
Household Income Group																		
Less than RM 1000	264	444,465	16.1	13.26	19.37	81	162,098	16.1	10.56	23.86	183	282,367	16.1	13.11	19.52			
RM 1,000 – RM 1999	260	461,864	13.8	11.25	16.91	119	227,796	12.5	9.46	16.32	141	234,068	15.5	11.21	20.92			
RM 2,000 – RM 3,999	347	666,035	11.2	9.66	13.04	174	365,284	11.4	9.30	13.90	173	300,751	11.0	8.87	13.69			
RM 4,000 – RM 5,999	247	514,890	13.1	10.86	15.64	142	340,813	15.7	12.52	19.54	105	174,076	9.8	7.28	13.13			
RM 6,000 – RM 7,999	114	215,864	9.4	7.35	11.99	64	128,073	10.7	7.88	14.39	50	87,791	8.0	5.77	11.03			
RM 8,000 – RM 9,999	79	166,296	10.4	7.84	13.61	48	113,979	13.6	9.64	18.79	31	52,318	6.9	4.38	10.57			
RM 10,000 and above	117	231,055	8.2	6.18	10.75	66	157,197	10.2	7.32	14.09	51	73,857	5.7	3.87	8.46			
Household Income Quintile																		
Quintile 1	359	589,886	15.0	12.80	17.54	122	232,932	14.4	10.35	19.74	237	356,954	15.4	12.91	18.35			
Quintile 2	319	594,349	12.7	10.59	15.23	155	308,586	12.0	9.65	14.85	164	285,763	13.6	10.26	17.84			
Quintile 3	267	534,859	11.9	9.96	14.12	136	288,725	11.9	9.48	14.76	131	246,134	11.9	9.05	15.50			
Quintile 4	271	551,851	11.1	9.35	13.19	160	377,247	14.1	11.29	17.35	111	174,604	7.7	6.00	9.77			
Quintile 5	212	429,524	9.3	7.66	11.19	121	287,752	11.6	9.25	14.54	91	141,772	6.6	4.97	8.66			
Household Income Category																		
Bottom 40%	933	1,683,471	12.4	11.01	13.86	417	834,791	12.1	10.39	14.10	516	848,681	12.6	11.09	14.31			
Middle 40%	351	718,573	11.5	9.81	13.40	195	448,168	13.2	10.87	15.93	156	270,405	9.4	7.31	12.14			
Top 20%	144	298,424	10.6	8.47	13.18	82	212,282	14.2	10.76	18.54	62	86,143	6.5	4.73	8.90			

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.2.4: Age-standardised prevalence of hypertension by states in Malaysia

NO	STATE	OVERALL RAISED BLOOD PRESSURE (%)	KNOWN HYPERTENSION (%)	RAISED BLOOD PRESSURE AMONG THOSE NOT KNOWN TO HAVE HYPERTENSION (%)
1	Johor	29.4	14.7	14.7
2	Kedah	28.7	17.4	11.3
3	Kelantan	26.4	14.3	12.1
4	Melaka	30.9	20.9	10.0
5	Negeri Sembilan	20.7	13.9	6.7
6	Pahang	35.1	16.2	18.9
7	Pulau Pinang	31.3	18.4	13.0
8	Perak	31.6	18.3	13.4
9	Perlis	36.9	19.0	17.9
10	Selangor	22.3	15.0	7.3
11	Terengganu	24.0	13.6	10.4
12	Sabah	27.9	15.2	12.7
13	Sarawak	36.8	21.2	15.7
14	WP Kuala Lumpur	21.3	15.1	6.2
15	WP Labuan	30.0	15.3	14.7
16	WP Putrajaya	27.2	19.5	7.7

Table 4.3.1: Prevalence of overall raised total cholesterol among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,852)

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL RAISED TOTAL CHOLESTEROL														
	MALE					FEMALE									
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER					
MALAYSIA	4,353	7,588,344	33.3	31.67	34.95	1,820	3,612,119	30.5	28.46	32.69	2,533	3,976,225	36.3	34.21	38.36
State															
Johor	428	937,246	34.1	29.54	38.95	170	449,884	30.6	23.56	38.58	258	487,362	38.2	32.86	43.78
Kedah	257	542,169	38.1	31.79	44.80	110	276,400	38.6	28.63	49.53	147	265,769	37.6	30.99	44.72
Kelantan	260	398,030	34.9	30.09	39.98	96	167,247	29.2	23.50	35.55	164	230,784	40.6	33.34	48.39
Melaka	251	234,406	32.4	27.24	37.95	122	125,898	33.2	25.77	41.66	129	108,508	31.4	25.87	37.51
Negeri Sembilan	260	269,633	32.9	27.35	38.90	108	119,080	28.5	22.16	35.84	152	150,553	37.4	30.54	44.79
Pahang	240	368,022	36.6	31.22	42.40	93	163,222	31.6	24.29	39.91	147	204,800	42.0	34.84	49.46
Pulau Pinang	247	475,576	37.4	32.77	42.29	107	226,531	35.2	28.73	42.28	140	249,045	39.7	33.62	46.03
Perak	271	649,419	41.3	34.82	48.14	101	279,937	37.4	29.63	45.94	170	369,482	44.8	35.42	54.65
Perlis	275	80,767	41.0	34.31	48.00	113	36,540	37.8	29.08	47.44	162	44,227	44.0	36.22	52.09
Selangor	447	1,525,477	28.8	24.41	33.71	206	798,790	28.3	23.07	34.19	241	726,687	29.5	24.55	34.87
Terengganu	228	265,955	34.9	29.12	41.17	79	106,927	27.8	21.90	34.57	149	159,027	42.1	34.61	50.06
Sabah	276	754,649	32.1	28.66	35.71	117	353,320	28.6	24.85	32.70	159	401,329	35.9	28.62	43.91
Sarawak	344	702,994	38.9	34.20	43.75	148	319,856	35.2	29.91	40.85	196	383,139	42.6	36.25	49.17
WP Kuala Lumpur	166	342,524	22.2	17.05	28.29	76	169,418	20.0	14.39	27.02	90	173,106	24.8	18.18	32.98
WP Labuan	225	18,024	27.8	22.96	33.33	90	8,242	25.6	19.79	32.32	135	9,781	30.1	23.87	37.23
WP Putrajaya	178	23,453	34.6	29.26	40.28	84	10,828	32.8	26.48	39.80	94	12,625	36.2	29.28	43.83
Location															
Urban	3,222	5,745,323	32.3	30.43	34.24	1,347	2,748,176	29.5	27.18	32.01	1,875	2,997,147	35.3	33.07	37.70
Rural	1,131	1,843,022	36.8	33.75	39.89	473	863,943	34.2	30.11	38.57	658	979,078	39.4	34.92	43.99
Age Group (Years)															
18 - 29	265	767,552	12.7	10.82	14.90	120	399,692	12.4	9.98	15.37	145	367,860	13.1	10.42	16.27
30 - 39	487	1,380,711	23.6	21.07	26.24	232	771,132	24.6	20.97	28.68	255	609,579	22.3	19.28	25.71
40 - 49	712	1,261,439	35.1	32.30	38.08	300	618,858	32.8	28.79	36.99	412	642,582	37.8	34.14	41.54
50 - 59	993	1,921,878	51.7	48.24	55.19	360	812,191	44.1	39.00	49.38	633	1,109,687	59.2	54.44	63.77
60 and above	1,896	2,256,764	62.8	60.16	65.34	808	1,010,246	57.8	53.87	61.55	1,088	1,246,517	67.6	64.40	70.57
Ethnicity															
Malay ^a	2,645	4,172,111	34.6	32.77	36.51	1,098	1,965,016	32.5	29.97	35.16	1,547	2,207,095	36.7	34.53	39.00
Chinese	714	1,643,316	33.6	29.86	37.59	319	783,115	31.7	26.51	37.32	395	860,200	35.6	30.92	40.60
Indian	285	449,155	33.8	28.68	39.43	113	218,010	33.6	26.26	41.72	172	231,145	34.1	28.41	40.35
Bumiputera Sabah	336	443,785	30.4	26.49	34.57	132	199,386	27.3	22.14	33.05	204	244,399	33.5	28.27	39.19
Bumiputera Sarawak	185	358,554	38.7	32.81	44.88	80	152,853	33.6	25.50	42.78	105	205,701	43.6	34.95	52.56
Others	188	521,424	24.4	19.31	30.29	78	293,739	19.9	14.97	26.00	110	227,685	34.3	24.10	46.20
Education Level															
No formal education	589	867,758	46.6	41.67	51.66	165	291,140	36.2	29.46	43.49	424	576,618	54.6	47.29	61.73
Primary education	753	1,099,512	44.2	40.49	47.97	307	495,693	35.3	30.50	40.45	446	603,819	55.7	51.02	60.27
Secondary education	2,587	4,768,869	31.8	30.08	33.65	1,157	2,411,407	30.1	27.74	32.50	1,430	2,357,462	33.9	31.66	36.18
Tertiary education	409	831,500	24.6	21.19	28.27	183	401,567	26.2	21.71	31.25	226	429,933	23.2	19.38	27.51

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL RAISED TOTAL CHOLESTEROL									
	MALE					FEMALE				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER
Marital Status										
Never married	404	1,034,216	16.1	13.94	18.44	191	586,869	15.1	12.58	18.10
Married/ Living with partner	3,149	5,477,382	38.1	36.24	39.95	1,487	2,806,575	37.8	35.26	40.42
Separated/ Divorced/ Widowed	793	1,061,557	54.5	50.23	58.63	138	209,351	40.7	33.18	48.73
Occupation										
Government employee	338	523,307	31.7	27.76	35.94	178	320,352	35.6	30.21	41.31
Private employee	854	2,018,627	23.8	21.69	26.09	533	1,375,231	24.3	21.70	27.17
Self employed	662	1,272,717	34.5	31.07	38.20	386	812,504	32.7	28.66	37.03
Unpaid worker/ Home-maker/ Caregiver	974	1,636,409	43.3	40.08	46.55	31	69,866	52.8	36.25	68.73
Retiree	529	752,331	61.2	56.60	65.66	343	489,733	59.0	53.30	64.57
Student	33	94,299	8.2	5.34	12.54	9	25,315	4.8	2.28	9.75
Not working ^a	944	1,266,610	46.2	42.59	49.81	330	508,818	40.5	33.99	47.46
Household Income Group										
Less than RM 1000	860	1,303,000	47.1	42.87	51.46	247	407,711	40.6	33.44	48.12
RM 1,000 – RM 1999	754	1,214,850	36.4	32.95	40.00	322	575,938	31.6	26.98	36.60
RM 2,000 – RM 3,999	1,078	1,952,255	32.9	30.40	35.58	480	1,009,070	31.5	27.97	35.23
RM 4,000 – RM 5,999	651	1,157,655	29.4	26.35	32.59	295	611,025	28.2	24.52	32.13
RM 6,000 – RM 7,999	354	671,729	29.3	25.62	33.31	154	312,650	26.1	21.35	31.57
RM 8,000 – RM 9,999	235	438,749	27.4	23.14	32.04	110	220,655	26.3	21.26	32.01
RM 10,000 and above	415	830,199	29.4	25.28	33.93	208	462,736	30.1	24.74	36.01
Household Income Quintile										
Quintile 1	1,194	1,799,041	45.8	42.70	48.93	390	629,018	38.9	33.69	44.46
Quintile 2	889	1,537,323	32.9	29.87	36.14	381	777,129	30.2	26.21	34.61
Quintile 3	799	1,455,482	32.3	29.64	35.15	362	752,914	30.9	27.36	34.78
Quintile 4	779	1,439,841	29.0	26.33	31.89	352	727,367	27.1	23.75	30.72
Quintile 5	686	1,336,749	28.9	25.73	32.26	331	713,357	28.8	24.79	33.26
Household Income Category										
Bottom 40%	2,918	4,853,690	35.7	33.65	37.71	1,144	2,169,678	31.5	28.90	34.25
Middle 40%	975	1,846,163	29.5	27.20	31.91	448	970,204	28.6	25.43	31.91
Top 20%	454	868,583	30.9	26.99	35.02	224	459,904	30.8	26.08	35.93

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.3.2: Prevalence of known hypercholesterolaemia among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,852)

SOCIODEMOGRAPHIC CHARACTERISTICS	KNOWN HYPERCHOLESTEROLAEMIA						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	2,358	3,475,007	15.2	14.24	16.30	1,015	1,602,827	13.6	12.34	14.86	1,343	1,872,180	17.1	15.79	18.44			
State																		
Johor	222	386,266	14.1	11.38	17.23	92	175,284	11.9	8.72	16.06	130	210,981	16.5	13.21	20.47			
Kedah	149	268,979	18.9	14.41	24.37	65	128,994	18.0	12.06	25.99	84	139,985	19.8	15.37	25.15			
Kelantan	118	151,802	13.3	9.97	17.52	40	58,830	10.3	7.32	14.20	78	92,972	16.4	11.89	22.12			
Melaka	172	142,872	19.7	14.79	25.80	82	71,213	18.8	12.80	26.75	90	71,659	20.7	15.56	27.09			
Negeri Sembilan	170	152,310	18.6	14.74	23.12	79	78,167	18.7	14.02	24.54	91	74,143	18.4	14.33	23.34			
Pahang	91	117,922	11.7	8.75	15.57	35	49,677	9.6	6.23	14.56	56	68,245	14.0	10.01	19.21			
Pulau Pinang	151	260,059	20.5	16.18	25.51	70	130,221	20.2	15.01	26.72	81	129,838	20.7	14.53	28.55			
Perak	176	361,680	23.0	19.01	27.57	71	158,595	21.2	16.41	26.95	105	203,085	24.6	18.53	32.00			
Perlis	178	43,915	22.3	18.24	26.92	77	21,387	22.1	15.99	29.82	101	22,528	22.4	18.55	26.82			
Selangor	241	732,820	13.9	11.53	16.56	106	364,894	12.9	10.03	16.52	135	367,926	14.9	12.20	18.09			
Terengganu	108	101,157	13.3	10.56	16.56	37	36,131	9.4	6.12	14.14	71	65,027	17.2	13.60	21.60			
Sabah	104	220,590	9.4	7.37	11.86	42	89,586	7.3	5.04	10.35	62	131,004	11.7	8.89	15.30			
Sarawak	178	325,263	18.0	14.38	22.25	82	147,586	16.2	12.91	20.21	96	177,677	19.7	15.19	25.26			
WP Kuala Lumpur	100	191,553	12.4	9.64	15.79	44	83,262	9.8	6.64	14.27	56	108,291	15.5	11.19	21.18			
WP Labuan	122	7,810	12.1	9.07	15.89	50	3,641	11.3	7.78	16.09	72	4,170	12.8	9.00	18.01			
WP Putrajaya	78	10,008	14.8	11.44	18.82	43	5,359	16.2	11.92	21.73	35	4,649	13.3	8.92	19.50			
Location																		
Urban	1,778	2,728,433	15.3	14.21	16.55	766	1,273,500	13.7	12.25	15.26	1,012	1,454,932	17.2	15.78	18.63			
Rural	580	746,574	14.9	12.84	17.22	249	329,327	13.0	11.17	15.18	331	417,247	16.8	13.76	20.29			
Age Group (Years)																		
18 - 29	12	-	-	-	-	3	-	-	-	-	9	-	-	-	-			
30 - 39	90	256,965	4.4	3.31	5.78	42	141,373	4.5	3.14	6.46	48	115,592	4.2	2.85	6.25			
40 - 49	276	486,650	13.6	11.71	15.64	117	224,682	11.9	9.39	14.96	159	261,968	15.4	13.03	18.11			
50 - 59	562	1,048,429	28.2	25.46	31.15	218	464,676	25.2	21.53	29.36	344	583,753	31.1	27.85	34.63			
60 and above	1,418	1,643,089	45.7	42.91	48.55	635	766,786	43.8	40.21	47.53	783	876,303	47.5	43.95	51.06			
Ethnicity																		
Malay ^a	1,402	1,889,238	15.7	14.48	16.95	607	882,283	14.6	13.03	16.31	795	1,006,955	16.8	15.32	18.31			
Chinese	451	887,856	18	15.81	20.78	208	415,754	16.8	14.19	19.81	243	472,103	19.5	16.31	23.24			
Indian	190	281,984	21.2	17.50	25.55	77	136,380	21.0	15.70	27.48	113	145,604	21.5	17.31	26.38			
Bumiputera Sabah	173	183,669	12.6	9.85	15.91	66	76,067	10.4	7.16	14.87	107	107,602	14.8	11.20	19.20			
Bumiputera Sarawak	101	173,175	18.7	15.07	22.91	48	75,229	16.5	12.93	20.91	53	97,946	20.7	15.59	27.05			
Others	41	59,085	2.8	1.63	4.65	9	17,114	1.2	0.42	3.14	32	41,971	6.3	3.64	10.77			
Education Level																		
No formal education	386	477,599	25.7	21.24	30.66	95	122,271	15.2	11.39	19.98	291	355,328	33.6	27.52	40.38			
Primary education	492	621,109	25.0	21.97	28.22	207	271,962	19.4	15.83	23.49	285	349,147	32.2	27.96	36.77			
Secondary education	1,305	2,055,082	13.7	12.62	14.90	611	1,012,844	12.6	11.28	14.11	694	1,042,238	15.0	13.55	16.54			
Tertiary education	166	307,949	9.1	7.49	11.01	98	190,137	12.4	9.54	15.98	68	117,812	6.4	4.71	8.53			

SOCIODEMOGRAPHIC CHARACTERISTICS	KNOWN HYPERCHOLESTEROLAEMIA						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
Marital Status																		
Never married	86	178,994	2.8	2.06	3.75	42	94,941	2.4	1.60	3.73	44	84,053	3.3	2.20	4.87			
Married/ Living with partner	1,734	2,604,373	18.1	16.80	19.48	882	1,375,598	18.5	16.90	20.28	852	1,228,774	17.6	16.07	19.35			
Separated/ Divorced/ Widowed	536	688,603	35.3	32.06	38.74	90	130,115	25.3	19.46	32.21	446	558,488	38.9	35.34	42.61			
Occupation																		
Government employee	146	205,099	12.4	9.92	15.46	91	136,486	15.2	11.54	19.64	55	68,613	9.2	6.55	12.66			
Private employee	302	603,313	7.1	6.11	8.27	193	410,417	7.3	5.99	8.77	109	192,896	6.8	5.39	8.62			
Self employed	316	517,625	14.1	12.02	16.36	190	319,109	12.8	10.67	15.38	126	198,516	16.5	12.87	21.03			
Unpaid worker/ Home-maker/ Caregiver	496	730,496	19.3	17.27	21.56	18	34,318	25.9	15.46	40.11	478	696,178	19.1	17.02	21.34			
Retiree	391	544,091	44.3	39.59	49.08	268	372,258	44.9	39.03	50.88	123	171,833	43.0	35.36	51.04			
Student	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-			
Not working ^a	692	854,946	31.2	28.31	34.18	248	323,096	25.7	22.15	29.71	444	531,851	35.7	31.99	39.68			
Household Income Group																		
Less than RM 1000	558	755,514	27.3	24.25	30.66	175	241,745	24.1	20.05	28.57	383	513,768	29.2	25.72	32.98			
RM 1,000 – RM 1999	428	549,048	16.5	13.86	19.42	190	263,456	14.5	11.46	18.07	238	285,592	18.9	15.67	22.52			
RM 2,000 – RM 3,999	542	804,011	13.6	12.05	15.24	256	408,819	12.8	10.74	15.08	286	395,191	14.5	12.58	16.71			
RM 4,000 – RM 5,999	328	501,588	12.7	10.82	14.92	149	235,974	10.9	8.75	13.44	179	265,615	15.0	12.27	18.18			
RM 6,000 – RM 7,999	166	257,026	11.2	9.00	13.90	74	125,729	10.5	7.65	14.28	92	131,297	12.0	9.22	15.44			
RM 8,000 – RM 9,999	122	220,970	13.8	10.33	18.16	58	110,596	13.2	9.49	18.00	64	110,374	14.5	9.81	20.78			
RM 10,000 and above	210	373,571	13.2	11.17	15.62	110	207,561	13.5	10.67	16.92	100	166,009	12.9	10.26	16.18			
Household Income Quintile																		
Quintile 1	774	1,017,615	25.9	23.42	28.56	271	361,227	22.4	19.30	25.75	503	656,387	28.4	25.27	31.71			
Quintile 2	461	651,970	14.0	12.14	16.01	205	318,808	12.4	10.15	15.09	256	333,163	15.9	13.54	18.52			
Quintile 3	393	587,255	13.0	11.34	14.97	192	309,174	12.7	10.51	15.29	201	278,081	13.4	11.29	15.95			
Quintile 4	374	578,962	11.7	10.13	13.42	167	273,105	10.2	8.32	12.39	207	305,856	13.4	11.30	15.92			
Quintile 5	352	625,925	13.5	11.64	15.67	177	331,566	13.4	11.08	16.13	175	294,359	13.7	11.25	16.50			
Household Income Category																		
Bottom 40%	1,642	2,302,270	16.9	15.62	18.30	671	996,306	14.5	12.97	16.12	971	1,305,964	19.4	17.71	21.24			
Middle 40%	476	748,921	12.0	10.53	13.57	215	368,106	10.8	9.01	12.98	261	380,815	13.3	11.51	15.34			
Top 20%	236	410,535	15	12.25	17.28	126	229,468	15.4	12.53	18.70	110	181,068	13.7	10.61	17.53			

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.3.3: Prevalence of raised total cholesterol among those not known to have hypercholesterolaemia aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,852)

SOCIODEMOGRAPHIC CHARACTERISTICS	RAISED TOTAL CHOLESTEROL AMONG THOSE WHO WERE NOT KNOWN TO HAVE HYPERCHOLESTEROLAEMIA														
	MALE					FEMALE									
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER	95% CONFIDENCE INTERVAL UPPER					
MALAYSIA	1,995	4,113,337	18.1	16.80	19.37	805	2,009,292	17.0	15.29	18.83	1,190	2,104,045	19.2	17.66	20.81
State															
Johor	206	550,980	20.0	16.52	24.10	78	274,600	18.7	13.22	25.65	128	276,380	21.6	17.72	26.16
Kedah	108	273,191	19.2	15.84	23.05	45	147,406	20.6	14.82	27.81	63	125,785	17.8	13.05	23.81
Kelantan	142	246,229	21.6	16.65	27.47	56	108,417	18.9	12.51	27.54	86	137,812	24.3	18.96	30.51
Melaka	79	91,534	12.6	8.79	17.84	40	54,685	14.4	8.89	22.59	39	36,850	10.7	7.25	15.42
Negeri Sembilan	90	117,323	14.3	10.35	19.43	29	40,912	9.8	6.83	13.85	61	76,410	19.0	12.67	27.43
Pahang	149	250,100	24.9	19.48	31.22	58	113,545	22.0	15.73	29.81	91	136,555	28.0	22.03	34.84
Pulau Pinang	96	215,517	17.0	12.87	22.00	37	96,310	15.0	9.93	21.95	59	119,207	19.0	12.94	26.98
Perak	95	287,739	18.3	13.99	23.58	30	121,342	16.2	10.90	23.46	65	166,397	20.2	15.31	26.15
Perlis	97	36,852	18.7	14.35	23.98	36	15,153	15.7	11.73	20.66	61	21,699	21.6	14.97	30.09
Selangor	206	792,657	15.0	11.94	18.64	100	433,896	15.4	11.29	20.59	106	358,761	14.5	11.28	18.55
Terengganu	120	164,797	21.6	16.86	27.29	42	70,797	18.4	13.30	24.90	78	94,001	24.9	18.66	32.43
Sabah	172	534,059	22.7	19.17	26.68	75	263,734	21.4	17.50	25.80	97	270,325	24.2	18.32	31.22
Sarawak	166	377,731	20.9	16.93	25.47	66	172,269	18.9	13.48	25.97	100	205,461	22.8	17.97	28.55
WP Kuala Lumpur	66	150,971	9.8	6.24	14.98	32	86,156	10.2	6.12	16.38	34	64,815	9.3	5.38	15.62
WP Labuan	103	10,213	15.8	11.79	20.80	40	4,602	14.3	8.63	22.67	63	5,611	17.3	13.02	22.58
WP Putrajaya	100	13,444	19.8	15.32	25.24	41	5,468	16.6	11.90	22.58	59	7,976	22.9	17.92	28.78
Location															
Urban	1,444	3,016,890	17.0	15.55	18.48	581	1,474,676	15.9	13.97	17.93	863	1,542,214	18.2	16.42	20.11
Rural	551	1,096,448	21.9	19.38	24.60	224	534,617	21.2	17.52	25.35	327	561,831	22.6	19.86	25.57
Age Group (Years)															
18 - 29	253	727,678	12.1	10.24	14.16	117	394,383	12.3	9.82	15.20	136	333,295	11.8	9.48	14.69
30 - 39	397	1,123,746	19.2	16.86	21.71	190	629,759	20.1	16.72	23.98	207	493,988	18.1	15.31	21.26
40 - 49	436	774,789	21.6	19.22	24.14	183	394,176	20.9	17.53	24.65	253	380,614	22.4	19.39	25.67
50 - 59	431	873,449	23.5	20.96	26.26	142	347,515	18.9	14.79	23.78	289	525,934	28.1	24.59	31.79
60 and above	478	613,675	17.1	15.07	19.28	173	243,460	13.9	11.56	16.67	305	370,214	20.1	17.40	23.03
Ethnicity															
Malay ^a	1,243	2,282,873	18.9	17.55	20.41	491	1,082,733	17.9	15.96	20.04	752	1,200,140	20.0	18.24	21.83
Chinese	263	755,460	15.5	12.58	18.85	111	367,362	14.9	10.80	20.09	152	388,098	16.1	13.13	19.52
Indian	95	167,171	12.6	9.54	16.46	36	81,629	12.6	8.52	18.15	59	85,541	12.6	8.31	18.75
Bumiputera Sabah	163	260,116	17.8	14.85	21.20	66	123,319	16.9	12.74	21.97	97	136,797	18.8	15.26	22.85
Bumiputera Sarawak	84	185,379	20.0	14.59	26.77	32	77,625	17.1	9.33	29.15	52	107,754	22.8	16.09	31.30
Others	147	462,339	21.6	16.98	27.11	69	276,625	18.8	13.94	24.77	78	185,714	28.0	19.52	38.35
Education Level															
No formal education	203	390,160	21.0	17.46	24.96	70	168,869	21.0	15.89	27.18	133	221,290	21.0	15.61	27.53
Primary education	261	478,403	19.2	16.37	22.46	100	223,731	15.9	12.38	20.29	161	254,672	23.5	19.34	28.22

RAISED TOTAL CHOLESTEROL AMONG THOSE WHO WERE NOT KNOWN TO HAVE HYPERCHOLESTEROLAEMIA															
SOCIODEMOGRAPHIC CHARACTERISTICS	MALE						FEMALE								
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL						
				LOWER	UPPER				LOWER	UPPER					
Secondary education	1,282	2,713,787	18.1	16.72	19.60	546	1,398,563	17.4	15.47	19.59	736	1,315,224	18.9	17.22	20.71
Tertiary education	243	523,551	15.5	12.82	18.53	85	211,430	13.8	10.51	17.90	158	312,121	16.8	13.56	20.72
Marital Status															
Never married	318	855,221	13.3	11.32	15.53	149	491,928	12.7	10.26	15.59	169	363,293	14.2	11.49	17.37
Married/ Living with partner	1,415	2,873,009	20.0	18.53	21.49	605	1,430,977	19.3	17.19	21.55	810	1,442,032	20.7	19.03	22.50
Separated/ Divorced/ Widowed	257	372,954	19.1	16.03	22.68	48	79,236	15.4	10.75	21.61	209	293,717	20.5	16.79	24.71
Occupation															
Government employee	192	318,208	19.3	15.84	23.26	87	183,866	20.4	15.50	26.40	105	134,342	17.9	13.90	22.81
Private employee	552	1,415,313	16.7	14.94	18.62	340	964,814	17.1	14.83	19.58	212	450,499	16.0	13.49	18.79
Self employed	346	755,092	20.5	17.78	23.51	196	493,395	19.9	16.43	23.80	150	261,697	21.8	18.12	26.03
Unpaid worker/ Home-maker/ Caregiver	478	905,912	24.0	21.27	26.89	13	35,548	26.9	13.99	45.31	465	870,364	23.9	21.19	26.76
Retiree	138	208,240	16.9	13.92	20.48	75	117,476	14.2	10.92	18.17	63	90,764	22.7	17.11	29.52
Student	33	94,299	8.2	5.34	12.54	9	25,315	4.8	2.28	9.75	24	68,984	11.2	6.69	18.28
Not working ^b	252	411,664	15.0	12.02	18.58	82	185,723	14.8	9.54	22.25	170	225,941	15.2	12.57	18.23
Household Income Group															
Less than RM 1000	302	547,486	19.8	16.59	23.48	72	165,966	16.5	10.69	24.64	230	381,520	21.7	18.44	25.35
RM 1,000 – RM 1999	326	665,802	20.0	17.15	23.08	132	312,482	17.1	13.72	21.20	194	353,320	23.3	19.39	27.80
RM 2,000 – RM 3,999	536	1,148,244	19.4	17.36	21.56	224	600,251	18.7	15.83	22.02	312	547,994	20.1	17.49	23.07
RM 4,000 – RM 5,999	323	656,066	16.6	14.35	19.23	146	375,051	17.3	14.08	21.05	177	281,015	15.9	13.08	19.10
RM 6,000 – RM 7,999	188	414,704	18.1	15.03	21.64	80	186,921	15.6	11.87	20.31	108	227,782	20.8	16.28	26.18
RM 8,000 – RM 9,999	113	217,778	13.6	10.68	17.13	52	110,059	13.1	9.14	18.45	61	107,720	14.1	10.36	18.92
RM 10,000 and above	205	456,628	16.2	12.55	20.62	98	255,175	16.6	12.12	22.28	107	201,453	15.7	11.77	20.62
Household Income Quintile															
Quintile 1	420	781,426	19.9	17.21	22.87	119	267,790	16.6	12.16	22.18	301	513,636	22.2	19.15	25.59
Quintile 2	428	885,353	19.0	16.65	21.52	176	458,321	17.8	14.73	21.44	252	427,032	20.3	17.42	23.61
Quintile 3	406	868,227	19.3	17.12	21.66	170	443,741	18.2	15.24	21.67	236	424,486	20.5	17.65	23.74
Quintile 4	405	860,879	17.4	15.16	19.79	185	454,262	16.9	14.08	20.20	220	406,617	17.9	15.02	21.13
Quintile 5	334	710,824	15.4	12.75	18.40	154	381,791	15.4	12.11	19.47	180	329,033	15.3	12.38	18.70
Household Income Category															
Bottom 40%	1,276	2,551,420	18.7	17.23	20.36	473	1,173,371	17.0	14.94	19.37	803	1,378,049	20.5	18.55	22.56
Middle 40%	499	1,097,242	17.5	15.61	19.63	233	602,098	17.7	15.02	20.80	266	495,144	17.3	15.02	19.86
Top 20%	218	458,048	16.3	13.12	20.01	98	230,436	15.4	11.77	19.96	120	227,611	17.2	13.36	21.95

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.3.4: Prevalence of overall raised low-density lipoprotein (LDL) among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,852)

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	4,531	9,325,811	40.9	38.94	42.92	1,988	4,602,837	38.9	36.50	41.38	2,543	4,722,974	43.1	40.81	45.35			
State																		
Johor	455	1,186,747	43.2	38.65	47.80	209	671,833	45.6	38.87	52.56	246	514,913	40.3	34.43	46.52			
Kedah	241	604,297	42.4	37.31	47.75	89	268,371	37.4	30.20	45.28	152	335,926	47.5	40.79	54.36			
Kelantan	296	540,925	47.4	40.87	54.01	119	238,230	41.5	33.63	49.91	177	302,694	53.3	46.11	60.37			
Melaka	206	246,869	34.1	25.49	43.86	98	133,838	35.3	24.64	47.73	108	113,030	32.7	25.19	41.23			
Negeri Sembilan	260	342,645	41.8	34.68	49.21	116	170,553	40.8	32.69	49.50	144	172,092	42.7	33.99	51.98			
Pahang	289	507,753	50.5	43.64	57.41	116	242,355	46.9	38.23	55.75	173	265,398	54.4	46.80	61.79			
Pulau Pinang	230	510,506	40.2	33.10	47.65	105	242,284	37.7	29.1	47.10	125	268,222	42.7	34.78	51.03			
Perak	243	680,586	43.3	36.59	50.27	87	297,467	39.8	33.08	46.88	156	383,119	46.5	37.32	55.93			
Perlis	224	86,022	43.6	33.83	53.98	99	40,829	42.3	33.70	51.33	125	45,192	45.0	32.57	58.01			
Selangor	531	2,028,490	38.3	33.07	43.92	242	1,006,904	35.7	29.45	42.43	289	1,021,586	41.4	35.83	47.21			
Terengganu	260	372,073	48.8	41.83	55.87	112	179,898	46.8	37.64	56.10	148	192,174	50.9	43.76	58.07			
Sabah	317	973,080	41.4	36.53	46.37	137	473,355	38.3	33.05	43.92	180	499,725	44.7	37.44	52.22			
Sarawak	342	782,744	43.3	36.39	50.43	161	401,813	44.2	35.67	53.09	181	380,931	42.3	35.52	49.46			
WP Kuala Lumpur	177	406,772	26.3	17.94	36.86	80	207,122	24.4	16.08	35.23	97	199,651	28.7	18.88	40.95			
WP Labuan	230	24,919	38.5	31.65	45.84	108	13,139	40.7	31.37	50.82	122	11,780	36.3	28.81	44.49			
WP Putrajaya	230	31,384	46.3	39.99	52.64	110	14,845	45.0	36.23	54.02	120	16,539	47.5	40.62	54.44			
Location																		
Urban	3,332	7,022,761	39.5	37.16	41.87	1,465	3,496,959	37.6	34.79	40.47	1,867	3,525,802	41.6	39.00	44.21			
Rural	1,199	2,303,050	45.9	42.54	49.39	523	1,105,878	43.8	39.35	48.34	676	1,197,172	48.1	43.53	52.77			
Age Group (Years)																		
18 - 29	700	2,010,007	33.3	30.39	36.38	326	1,014,939	31.5	27.88	35.46	374	995,068	35.3	31.57	39.32			
30 - 39	875	2,474,817	42.2	38.87	45.63	410	1,298,623	41.5	37.01	46.05	465	1,176,194	43.1	39.15	47.11			
40 - 49	902	1,632,518	45.5	42.16	48.82	397	814,772	43.1	38.56	47.83	505	817,746	48.1	44.07	52.08			
50 - 59	884	1,785,205	48.0	44.81	51.30	351	830,339	45.1	40.31	50.00	533	954,866	50.9	46.27	55.57			
60 and above	1,170	1,423,264	39.6	36.77	42.50	504	644,164	36.8	33.33	40.47	666	779,100	42.2	38.30	46.25			
Ethnicity																		
Malay ^a	2,855	5,336,134	44.3	42.06	46.51	1,233	2,537,505	42.0	39.16	44.85	1,622	2,798,628	46.6	44.08	49.10			
Chinese	592	1,699,590	34.8	30.09	39.76	277	841,039	34.0	28.11	40.46	315	858,551	35.5	30.28	41.18			
Indian	261	468,700	35.3	29.79	41.27	91	196,213	30.2	23.50	37.86	170	272,486	40.2	33.01	47.90			
Bumiputera Sabah	351	533,176	36.5	32.23	40.99	155	255,168	34.9	29.21	41.01	196	278,008	38.1	32.42	44.18			
Bumiputera Sarawak	176	389,952	42.1	34.04	50.51	84	193,613	42.6	31.38	54.55	92	196,340	41.6	33.82	49.76			
Others	296	898,260	42.0	35.56	48.74	148	579,299	39.3	31.79	47.32	148	318,961	48.1	38.26	58.00			
Education Level																		
No formal education	426	745,705	40.1	35.30	45.04	148	310,070	38.5	31.53	46.04	278	435,635	41.3	34.30	48.58			
Primary education	586	1,033,652	41.6	37.70	45.50	259	553,071	39.4	34.36	44.69	327	480,581	44.3	39.25	49.53			
Secondary education	2,912	6,167,366	41.2	39.14	43.24	1,331	3,131,572	39.0	36.46	41.69	1,581	3,035,794	43.6	41.31	45.98			
Tertiary education	593	1,352,971	40.0	35.25	44.87	242	588,497	38.4	32.42	44.75	351	764,475	41.2	36.04	46.67			

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
Marital Status																		
Never married	817	2,257,869	35.1	31.89	38.38	415	1,274,048	32.9	29.22	36.71	402	983,821	38.4	34.20	42.76			
Married/ Living with partner	3,136	6,213,986	43.2	41.08	45.34	1,439	3,111,223	41.9	39.17	44.71	1,697	3,102,763	44.6	42.10	47.05			
Separated/ Divorced/ Widowed	572	839,513	43.1	38.62	47.63	130	208,126	40.5	32.85	48.61	442	631,387	44.0	38.76	49.37			
Occupation																		
Government employee	455	750,392	45.5	40.99	50.03	225	431,607	47.9	42.28	53.61	230	318,785	42.5	36.21	49.12			
Private employee	1,291	3,346,932	39.5	36.55	42.52	794	2,187,731	38.7	35.26	42.27	497	1,159,201	41.1	37.22	45.02			
Self employed	730	1,540,550	41.8	38.13	45.60	442	999,234	40.2	35.79	44.81	288	541,316	45.1	40.39	49.96			
Unpaid worker/ Home-maker/ Caregiver	955	1,773,668	46.9	43.53	50.34	25	59,493	44.9	28.65	62.40	930	1,714,175	47.0	43.60	50.42			
Retiree	349	522,022	42.5	37.89	47.22	217	316,345	38.1	33.19	43.36	132	205,677	51.5	43.74	59.18			
Student	103	337,689	29.5	23.70	36.12	38	132,072	24.9	17.17	34.72	65	205,617	33.5	25.71	42.33			
Not working ^a	636	1,037,498	37.8	34.17	41.62	242	470,137	37.5	31.22	44.16	394	567,362	38.1	33.77	42.69			
Household Income Group																		
Less than RM 1000	674	1,165,261	42.2	38.49	45.92	191	362,108	36.0	29.80	42.77	483	803,152	45.7	40.99	50.43			
RM 1,000 – RM 1999	725	1,442,479	43.2	38.86	47.70	308	720,165	39.5	33.03	46.38	417	722,313	47.7	42.61	52.83			
RM 2,000 – RM 3,999	1,156	2,458,466	41.5	38.50	44.53	535	1,285,962	40.1	36.09	44.29	621	1,172,504	43.1	39.65	46.58			
RM 4,000 – RM 5,999	735	1,479,954	37.6	34.00	41.24	356	841,184	38.8	34.16	43.61	379	638,770	36.0	31.61	40.74			
RM 6,000 – RM 7,999	436	960,472	41.9	36.95	47.06	205	475,160	39.7	34.02	45.74	231	485,312	44.3	38.11	50.69			
RM 8,000 – RM 9,999	293	662,417	41.3	35.89	46.97	145	327,789	39.0	32.04	46.54	148	334,629	43.8	36.53	51.38			
RM 10,000 and above	503	1,127,040	39.9	34.23	45.93	246	582,951	37.9	31.58	44.64	257	544,090	42.4	35.79	49.28			
Household Income Quintile																		
Quintile 1	981	1,704,744	43.4	40.12	46.73	316	608,659	37.7	32.51	43.14	665	1,096,086	47.4	43.30	51.52			
Quintile 2	910	1,916,276	41.0	37.61	44.58	412	1,013,049	39.4	34.62	44.46	498	903,226	43.0	39.04	47.11			
Quintile 3	872	1,835,658	40.8	37.56	44.09	405	965,922	39.7	35.61	43.94	467	869,737	42.1	38.04	46.18			
Quintile 4	923	1,979,231	39.9	36.30	43.63	448	1,068,539	39.8	35.56	44.21	475	910,692	40.0	35.73	44.48			
Quintile 5	836	1,860,179	40.2	35.89	44.65	405	939,150	38.0	33.07	43.12	431	921,029	42.8	37.75	47.91			
Household Income Category																		
Bottom 40%	2,834	5,565,833	40.9	38.63	43.19	1,178	2,670,322	38.8	35.72	41.94	1,656	2,895,511	43.0	40.40	45.73			
Middle 40%	1,166	2,582,989	41.3	38.14	44.48	547	1,331,595	39.2	35.44	43.09	619	1,251,394	43.7	39.84	47.69			
Top 20%	522	1,147,267	40.8	35.81	45.91	261	593,402	39.7	34.21	45.52	261	553,865	41.9	36.12	47.98			

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.3.5: Prevalence of lipid profile by gender in Malaysia (n=10,852)

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL						MALE						FEMALE					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
Overall Total Cholesterol	4,353	7,588,344	33.3	31.67	34.95	1,820	3,612,119	30.5	28.46	32.69	2,533	3,976,225	36.3	34.21	38.36			
Overall Triglycerides	2,737	5,295,207	23.2	21.66	24.88	1,426	3,157,387	26.7	24.72	28.76	1,311	2,137,820	19.5	17.68	21.45			
Overall HDL	3,115	6,224,070	27.3	25.98	28.67	1,405	3,219,342	27.2	25.39	29.12	1,710	3,004,728	27.4	25.70	29.17			
Overall LDL	4,531	9,325,811	40.91	38.94	42.92	1,988	4,602,837	38.9	36.50	41.38	2,543	4,722,974	43.1	40.81	45.35			

Table 4.3.6: Age-standardised prevalence of hypercholesterolaemia by states in Malaysia (n=10,852)

NO	STATE	OVERALL RAISED TOTAL CHOLESTEROL (%)	KNOWN HYPERCHOLESTEROLAEMIA (%)	RAISED TOTAL CHOLESTEROL AMONG THOSE WHO WERE NOT KNOWN TO HAVE HYPERCHOLESTEROLAEMIA (%)
1	Johor	31.4	12.9	18.5
2	Kedah	34.2	16.2	18.0
3	Kelantan	33.3	12.6	20.7
4	Melaka	33.5	21.0	12.5
5	Negeri Sembilan	23.9	13.7	10.3
6	Pahang	41.8	13.2	28.5
7	Pulau Pinang	34.0	18.1	15.9
8	Perak	33.3	17.5	15.8
9	Perlis	39.0	21.1	17.8
10	Selangor	27.9	13.5	14.5
11	Terengganu	34.2	13.2	21.0
12	Sabah	33.1	10.5	22.6
13	Sarawak	36.1	16.2	19.9
14	WP Kuala Lumpur	23.3	12.8	10.5
15	WP Labuan	28.0	13.0	15.1
16	WP Putrajaya	34.5	17.9	16.6

NON-COMMUNICABLE DISEASES: OVERWEIGHT AND OBESITY

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HIGHLIGHTS

- The prevalence of overweight among adults in Malaysia was 32.6%
- The prevalence of obesity among adults in Malaysia was 21.8%

INTRODUCTION

Overweight and obesity have emerged as significant public health challenges in Malaysia, mirroring global trends of rising rates of these conditions. Malaysia has undergone rapid urbanisation and modernisation, leading to significant changes in dietary patterns and lifestyle habits. Consequently, there has been a steady increase in the prevalence of overweight and obesity in the country over the past few decades. This phenomenon poses serious health risks and economic burdens on individuals, communities, and the healthcare system. In Malaysia, the prevalence of overweight increased from 29.4% in 2011 to 30.0% in 2015 and 30.4% in 2019 (1–3). Meanwhile, the prevalence of obesity increased from 15.1% in 2011 to 17.7% in 2015 and to 19.7% in 2019 (1–3). Anthropometry is the most portable, generally applicable, affordable, and non-invasive technique, involving the quantitative assessment for determining the size, proportions, and composition of the human body, such as weight, height and waist circumference (4). Body Mass Index (BMI) is an important anthropometric measurement that provides insights into an individual's health, particularly about body composition and distribution of body fat. BMI remains a valuable and easy-to-use tool for quickly assessing the weight status of individuals on a population scale among adults.

OBJECTIVES

General objective:

To determine the body mass index status among adults in Malaysia aged 18 years old and above

Specific objectives:

1. To determine the prevalence of overweight among adults by sociodemographic groups in Malaysia
2. To determine the prevalence of obesity among adults by sociodemographic groups in Malaysia

METHODS

The anthropometric measurements (weight and height) for NHMS 2023 were done by trained data collectors according to the standard protocol. Weight was measured using SECA Electronic Weighing Scale (SECA 813) to the nearest 0.1 kilogram. The standing height was measured without shoes using SECA Portable Stadiometer (SECA 213) to the nearest 0.1 centimetre. All measurements were taken twice and the average value was used for data entry.

BMI was calculated as the ratio of weight in kilogram to the square of height in metres (kg/m^2) and classified using two guidelines for this study as follows:

The World Health Organization (WHO) (1998) (5):

Classified BMI into 6 categories; underweight ($<18.5 \text{ kg}/\text{m}^2$), normal ($18.5\text{--}24.9 \text{ kg}/\text{m}^2$), overweight ($25.0\text{--}29.9 \text{ kg}/\text{m}^2$), obese I ($30.0\text{--}34.9 \text{ kg}/\text{m}^2$), obese II ($35.0\text{--}39.9 \text{ kg}/\text{m}^2$) and obese III ($\geq 40 \text{ kg}/\text{m}^2$).

The Malaysian Clinical Practice Guideline Management of Obesity (2023) (6):

Classified BMI into 6 categories; underweight ($<18.5 \text{ kg}/\text{m}^2$), normal ($18.5 - 22.9 \text{ kg}/\text{m}^2$), overweight ($23.0 - 27.4 \text{ kg}/\text{m}^2$), obese I ($27.5 - 32.4 \text{ kg}/\text{m}^2$), obese II ($32.5 - 37.4 \text{ kg}/\text{m}^2$) and obese III ($\geq 37.5 \text{ kg}/\text{m}^2$).

DEFINITIONS

1. Body Mass Index (BMI):

- BMI is a screening tool and a commonly used measurement to assess an individual's body weight in relation to height.
- The formula for calculating BMI is: $BMI = \text{Weight (kg)} / (\text{Height (m)}^2)$

2. Overweight:

- BMI between 25.0 kg/m² and 29.9 kg/m² (WHO 1998)
- BMI between 23.0 kg/m² and 27.4 kg/m² (CPG 2023)

3. Obesity:

- BMI of 30 kg/m² or greater (WHO 1998)
- BMI of 27.5 kg/m² or greater (CPG 2023)

FINDINGS

Overweight

Based on the WHO classification of BMI (1998), the overall prevalence of overweight was 32.6% (95% CI: 31.18, 34.16). The highest prevalence of overweight was seen in WP Kuala Lumpur [40.6% (95% CI: 35.20, 46.14)]. The prevalence was higher among those who lived in urban areas [33.5% (95% CI: 31.70, 35.26)] than in rural areas. The prevalence of overweight was more common among males [34.5% (95% CI: 32.26, 36.78)], among those aged 40-49 years old [37.9% (95% CI: 34.91, 41.04)], others ethnic group [35.4% (95% CI: 29.32, 42.06)], those who were married/ living with partner [36.8% (95% CI: 34.94, 38.61)], those with tertiary education [35.4% (95% CI: 31.09, 40.05)], retirees [41.8% (95% CI: 36.99, 46.70)] and those from the T20 household income category [33.0% (95% CI: 28.76, 37.51)] (**Table 4.4.2**).

Obesity

The overall prevalence of obesity was 21.8% (95% CI: 20.46, 23.17). The highest prevalence of obesity was found in Perlis (32.8%) (95% CI: 27.12, 39.06), those lived in rural areas [22.9% (95% CI: 20.34, 25.62)], females [26.0% (95% CI: 24.26, 27.78)], those aged 50-59 years old [26.6% (95% CI: 23.91, 29.51)], Indians [28.6% (95% CI: 23.57, 34.27)], those who were married [23.8% (95% CI: 22.26, 25.51)], those with secondary education [23.7% (95% CI: 22.11, 25.39)], unpaid workers/ homemakers/ caregivers [28.5% (95% CI: 25.65, 31.44)], and those from the T20 household income category [22.9% (95% CI: 19.48, 26.65)] (**Table 4.4.3**).

CONCLUSION

In conclusion, overweight and obesity represent significant public health challenges in Malaysia, driven by complex interactions of socio-economic, environmental, and behavioural factors. Addressing

these issues requires a multi-sectoral approach involving government agencies, healthcare professionals, civil society organisations, the private sector, and individuals themselves. By implementing comprehensive strategies to promote healthy lifestyles and prevent obesity, Malaysia can mitigate the adverse health and economic consequences associated with this growing epidemic.

RECOMMENDATIONS

An imperative multi-faceted approach is required to combat obesity. The key target recommendations include:

- Screening with body mass index (BMI) and waist circumference (WC) measurements should be done yearly, especially among high-risk groups, and enforce rigorous non-communicable risk assessments.
- The main preventive actions that should be taken to prevent obesity from starting include encouraging a healthy diet, increasing physical activity, and putting stress management techniques into practice.
- Multicomponent psychological and behavioural therapies approaches should be integrated into managing people with obesity
- Cultivate a culture of well-being and productivity in workplaces to enhance organisational and community prosperity.
- Allocate specific financial and manpower resources strategically for public health interventions, with a primary focus on preventing overweight and obesity.

Table 4.4.1: Trends in the prevalence of overweight and obesity among those aged 18 years and above in Malaysia, 2011-2023

	2011 (%)	2015 (%)	2019 (%)	2023 (%)
Overweight	29.4	30.0	30.4	32.6
Obesity	15.1	17.7	19.7	21.8

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Table 4.4.2: Prevalence of overweight among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,130)

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERWEIGHT (BMI 25.0 - 29.9 KG/m ²) - WHO 1998					OVERWEIGHT (BMI 23.0 - 27.4 KG/m ²) - CPG 2023				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER
MALAYSIA	3,464	6,856,739	32.6	31.18	34.16	3,489	7,104,021	33.8	32.53	35.15
State										
Johor	346	852,760	32.1	28.05	36.43	332	817,943	30.8	27.89	33.84
Kedah	169	396,380	29.8	23.69	36.71	162	408,457	30.7	25.19	36.81
Kelantan	175	301,528	28.2	24.13	32.73	182	309,324	29.0	24.26	34.16
Malaka	205	233,297	33.3	29.09	37.78	219	252,512	36.0	31.41	40.93
Negeri Sembilan	198	261,972	32.9	28.75	37.35	182	237,894	29.9	26.01	34.07
Pahang	194	324,903	34.0	29.02	39.32	167	292,062	30.5	25.30	36.34
Pulau Pinang	164	372,339	34.1	28.41	40.21	176	401,049	36.7	32.31	41.31
Perak	180	485,041	32.2	27.22	37.57	178	485,751	32.2	28.80	35.86
Perlis	162	50,062	27.0	22.05	32.51	164	54,197	29.2	23.99	34.99
Selangor	399	1,565,959	34.0	29.75	38.43	458	1,759,363	38.1	34.81	41.60
Terengganu	174	243,396	34.2	29.89	38.78	186	268,416	37.7	31.85	43.96
Sabah	227	696,716	30.9	27.55	34.46	244	730,023	32.4	28.54	36.47
Sarawak	228	514,982	29.7	24.86	34.97	222	557,890	32.1	27.20	37.52
WP Kuala Lumpur	218	511,897	40.6	35.20	46.14	195	482,352	38.2	32.09	44.73
WP Labuan	255	22,207	34.8	30.24	39.60	263	24,966	39.1	33.82	44.64
WP Putrajaya	170	23,300	35.5	30.87	40.32	159	21,824	33.2	28.98	37.72
Location										
Urban	2,709	5,424,676	33.5	31.70	35.26	2,725	5,606,145	34.6	33.09	36.09
Rural	755	1,432,063	29.9	27.45	32.51	764	1,497,876	31.3	28.67	34.04
Sex										
Male	1,652	3,777,557	34.5	32.26	36.78	1,757	4,020,023	36.7	34.78	38.65
Female	1,812	3,079,182	30.7	28.94	32.42	1,732	3,083,998	30.7	29.04	32.41
Age Group (Years)										
18 - 29	437	1,194,638	21.4	18.99	24.02	70	207,401	23.0	18.19	28.59
30 - 39	670	1,862,226	34.9	32.07	37.84	640	1,741,127	32.6	29.88	35.51
40 - 49	675	1,260,631	37.9	34.91	41.04	651	1,292,380	38.9	36.04	41.80
50 - 59	654	1,326,028	37.6	34.51	40.82	602	1,183,304	33.6	30.33	36.95
60 and above	1,028	1,213,215	37.5	34.93	40.22	1,045	1,316,841	40.7	38.19	43.34
Ethnicity										
Malay ^a	2,044	3,678,179	32.9	31.19	34.70	1,989	3,692,469	33.0	31.42	34.72
Chinese	505	1,408,788	32.1	28.33	36.13	575	1,570,095	35.8	32.50	39.20
Indian	222	379,667	32.5	27.36	38.11	217	399,317	34.2	29.49	39.22
Bumiputera Sabah	335	400,490	28.7	24.72	32.94	355	482,190	34.5	30.45	38.79
Bumiputera Sarawak	127	284,305	32.2	26.28	38.71	121	273,230	30.9	25.72	36.66
Others	231	705,309	35.4	29.32	42.06	232	686,721	34.5	29.66	39.67

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERWEIGHT (BMI 25.0 - 29.9 KG/m ²) - WHO 1998					OVERWEIGHT (BMI 23.0 - 27.4 KG/m ²) - CPG 2023					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		
				LOWER	UPPER				LOWER	UPPER	
Education Level											
No formal education	332	524,430	31.2	26.34	36.41	341	570,716	33.9	29.51	38.60	
Primary education	473	794,806	34.5	30.87	38.33	469	851,597	37.0	33.57	40.51	
Secondary education	2,197	4,430,476	31.8	30.13	33.51	2,197	4,551,020	32.7	31.18	34.17	
Tertiary education	446	1,068,622	35.4	31.09	40.05	473	1,116,226	37.0	32.95	41.29	
Marital Status											
Never married	521	1,412,495	23.4	21.13	25.79	603	1,728,569	28.6	26.06	31.31	
Married/ Living with partner	2,514	4,837,920	36.8	34.94	38.61	2,455	4,754,287	36.1	34.62	37.66	
Separated/ Divorced/ Widowed	425	596,193	33.5	30.02	37.25	426	607,902	34.2	30.83	37.74	
Occupation											
Government employee	345	517,554	34.0	29.60	38.60	323	506,659	33.2	28.82	37.97	
Private employee	963	2,480,780	31.7	29.17	34.26	1,047	2,677,476	34.2	31.88	36.54	
Self employed	555	1,149,579	32.9	29.85	36.11	542	1,176,189	33.7	30.59	36.89	
Unpaid worker/ Homemaker/ Caregiver	699	1,265,569	36.2	33.18	39.28	632	1,158,329	33.1	30.28	36.06	
Retiree	342	487,452	41.8	36.99	46.70	336	490,704	42.0	37.76	46.45	
Student	68	211,044	19.8	15.31	25.31	97	305,733	28.7	23.93	34.09	
Not working ^b	483	735,804	31.1	26.93	35.67	500	773,062	32.7	29.35	36.26	
Household Income Group											
Less than RM 1000	503	849,601	33.6	30.21	37.24	502	843,962	33.4	30.58	36.37	
RM 1,000 – RM 1999	518	979,044	31.3	28.01	34.72	540	1,045,373	33.4	30.29	36.63	
RM 2,000 – RM 3,999	916	1,816,804	33.5	31.11	35.98	918	1,890,198	34.9	32.50	37.28	
RM 4,000 – RM 5,999	564	1,181,048	32.5	29.51	35.66	542	1,148,251	31.6	28.39	35.01	
RM 6,000 – RM 7,999	319	577,443	26.8	22.78	31.18	334	698,600	32.4	28.40	36.65	
RM 8,000 – RM 9,999	213	464,165	31.6	26.04	37.73	238	523,968	35.7	31.27	40.31	
RM 10,000 and above	421	954,226	37.0	31.89	42.43	406	927,561	36.0	31.78	40.38	
Household Income Quintile											
Quintile 1	712	1,215,676	33.7	30.74	36.69	729	1,254,426	34.7	32.26	37.27	
Quintile 2	713	1,370,399	32.0	29.26	34.84	694	1,402,663	32.7	30.21	35.37	
Quintile 3	681	1,399,891	33.6	30.78	36.50	680	1,402,494	33.6	31.02	36.36	
Quintile 4	674	1,372,280	29.7	27.02	32.63	702	1,530,788	33.2	30.39	36.11	
Quintile 5	674	1,464,085	34.5	30.73	38.53	675	1,487,543	35.1	32.02	38.27	
Household Income Category											
Bottom 40%	2,165	4,063,215	32.7	30.96	34.57	2,177	4,211,032	33.9	32.51	35.38	
Middle 40%	877	1,904,866	32.2	29.50	35.00	886	1,980,126	33.5	30.93	36.09	
Top 20%	412	854,249	33.0	28.76	37.51	417	886,755	34.2	30.62	38.07	

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.4.3: Prevalence of obesity among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,130)

SOCIODEMOGRAPHIC CHARACTERISTICS	OBESE (BMI 25.0 - 29.9 KG/m ²) - WHO 1998				OBESE (BMI 23.0 - 27.4 KG/m ²) - CPG 2023			
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER	
MALAYSIA	2,342	4,575,413	21.8	20.46 23.17	3,863	36.3	34.77 37.96	
State								
Johor	257	669,393	25.2	21.40 29.41	409	39.8	34.94 44.89	
Kedah	108	267,384	20.1	15.16 26.14	183	33.3	28.24 38.69	
Kelantan	118	249,819	23.4	18.85 28.64	196	36.6	32.44 41.07	
Melaka	143	176,091	25.1	20.66 30.20	223	37.9	33.81 42.23	
Negeri Sembilan	166	230,233	28.9	24.13 34.24	256	45.4	39.31 51.61	
Pahang	115	203,735	21.3	17.06 26.28	203	36.7	31.28 42.48	
Pulau Pinang	122	244,541	22.4	16.78 29.17	191	35.5	29.09 42.48	
Perak	134	322,550	21.4	18.27 24.90	220	37.2	32.67 42.07	
Perlis	153	60,934	32.8	27.12 39.06	219	42.2	36.00 48.61	
Selangor	241	881,183	19.1	15.69 23.06	410	33.9	29.60 38.46	
Terengganu	111	161,440	22.7	18.45 27.55	188	38.3	32.28 44.76	
Sabah	144	438,742	19.5	16.05 23.38	238	32.7	28.27 37.56	
Sarawak	162	408,999	23.6	18.91 28.95	266	36.7	31.49 42.34	
WP Kuala Lumpur	95	230,172	18.2	13.56 24.07	197	37.4	31.87 43.30	
WP Labuan	148	13,266	20.8	16.14 26.32	255	36.3	32.06 40.84	
WP Putrajaya	125	16,930	25.8	21.83 30.12	209	43.0	38.67 47.51	
Location								
Urban	1,784	3,480,466	21.5	19.93 23.08	2,984	36.4	34.52 38.24	
Rural	558	1,094,946	22.9	20.34 25.62	879	36.3	33.31 39.38	
Sex								
Male	871	1,965,766	17.9	16.32 19.69	1,587	33.2	31.07 35.42	
Female	1,471	2,609,646	26.0	24.26 27.78	2,276	39.8	37.78 41.79	
Age Group (Years)								
18 - 29	379	1,007,043	18.0	15.81 20.50	555	26.9	24.06 29.97	
30 - 39	484	1,250,867	23.4	20.96 26.12	785	39.3	36.28 42.43	
40 - 49	500	819,625	24.7	22.26 27.23	804	40.9	37.90 43.97	
50 - 59	486	938,293	26.6	23.91 29.51	800	46.3	42.51 50.06	
60 and above	493	559,584	17.3	15.50 19.29	919	32.2	29.84 34.75	
Ethnicity								
Malay ^a	1,559	2,902,897	26.0	24.32 27.71	2,490	41.0	39.05 42.88	
Chinese	199	597,497	13.6	10.84 16.97	392	27.3	23.48 31.39	
Indian	171	334,320	28.6	23.57 34.27	267	42.1	37.02 47.29	
Bumiputera Sabah	219	307,295	22.0	17.96 26.62	357	34.0	29.56 38.68	
Bumiputera Sarawak	102	222,178	25.1	19.17 32.24	162	39.8	34.39 45.54	
Others	92	211,225	10.6	7.64 14.55	195	27.3	21.44 34.10	

SOCIODEMOGRAPHIC CHARACTERISTICS	OBese (BMI 25.0 - 29.9 KG/m ²) - WHO 1998					OBese (BMI 23.0 - 27.4 KG/m ²) - CPG 2023				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER
Education Level										
No formal education	181	304,099	18.1	13.98	23.02	323	557,516	33.1	28.34	38.28
Primary education	275	403,477	17.5	14.89	20.50	482	739,507	32.1	28.57	35.86
Secondary education	1,596	3,304,407	23.7	22.11	25.39	2,551	5,239,951	37.6	35.71	39.53
Tertiary education	287	560,919	18.6	15.83	21.74	496	1,069,085	35.5	31.95	39.13
Marital Status										
Never married	399	1,032,951	17.1	15.00	19.42	615	1,621,843	26.8	24.19	29.68
Married/ Living with partner	1,666	3,138,606	23.8	22.26	25.51	2,778	5,321,476	40.4	38.60	42.29
Separated/ Divorced/ Widowed	275	400,374	22.5	19.37	26.03	468	686,377	38.6	35.09	42.26
Occupation										
Government employee	264	428,754	28.1	24.00	32.66	437	682,327	44.8	39.95	49.68
Private employee	646	1,505,657	19.2	17.29	21.29	1,056	2,596,269	33.1	30.59	35.78
Self employed	384	840,881	24.1	20.96	27.48	627	1,348,500	38.6	35.13	42.19
Unpaid worker/ Homemaker/ Caregiver	554	995,503	28.5	25.65	31.44	868	1,582,112	45.2	42.03	48.45
Retiree	146	223,159	19.1	15.90	22.81	291	437,496	37.5	33.22	41.96
Student	54	133,559	12.6	9.05	17.17	79	207,144	19.5	14.85	25.12
Not working ^b	285	433,582	18.3	15.39	21.73	494	763,393	32.3	28.76	36.07
Household Income Group										
Less than RM 1000	324	569,550	22.5	19.40	26.04	538	961,291	38.1	34.47	41.78
RM 1,000 – RM 1999	352	672,351	21.5	18.21	25.14	568	1,078,471	34.4	30.50	38.61
RM 2,000 – RM 3,999	587	1,141,561	21.0	18.92	23.34	980	1,935,951	35.7	33.20	38.27
RM 4,000 – RM 5,999	409	802,886	22.1	19.18	25.33	667	1,368,180	37.7	33.78	41.71
RM 6,000 – RM 7,999	248	506,959	23.5	19.92	27.51	386	728,539	33.8	29.54	38.28
RM 8,000 – RM 9,999	171	351,925	24.0	19.64	28.88	267	566,481	38.6	32.95	44.49
RM 10,000 and above	247	516,770	20.0	16.44	24.19	446	951,665	36.9	32.58	41.45
Household Income Quintile										
Quintile 1	461	806,936	22.3	19.81	25.09	750	1,337,761	37.0	34.13	40.03
Quintile 2	471	911,432	21.3	18.60	24.22	805	1,558,218	36.4	33.03	39.85
Quintile 3	452	919,658	22.1	19.56	24.78	723	1,493,029	35.8	32.88	38.86
Quintile 4	507	999,176	21.7	19.14	24.42	815	1,611,388	34.9	31.74	38.26
Quintile 5	447	924,799	21.8	18.94	24.98	759	1,590,182	37.5	33.99	41.16
Household Income Category										
Bottom 40%	1,428	2,689,057	21.7	20.05	23.37	2,360	4,501,152	36.3	34.39	38.18
Middle 40%	628	1,280,756	21.6	19.36	24.12	1,030	2,143,323	36.2	33.22	39.33
Top 20%	282	592,189	22.9	19.48	26.65	462	946,103	36.5	32.65	40.61

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.4.4: Prevalence of obesity I to III (WHO 1998 Classification) among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,130)

SOCIODEMOGRAPHIC CHARACTERISTICS	OBESITY I (BMI 30.0 - 34.9 kg/m ²)				OBESITY II (BMI 35.0 - 39.9 kg/m ²)				OBESITY III (BMI ≥ 40.0 kg/m ²)						
	COUNT	ESTIMATED PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED PREVALENCE (%)	95% CONFIDENCE INTERVAL				
			LOWER	UPPER			LOWER	UPPER			LOWER	UPPER			
MALAYSIA	1,564	3,044,337	14.5	13.54	15.51	516	1,002,368	4.8	4.26	5.35	262	528,708	2.5	2.09	3.03
State															
Johor	172	468,635	17.6	14.39	21.43	56	130,228	4.9	3.67	6.51	29	70,530	2.7	1.69	4.15
Kedah	71	178,416	13.4	9.84	18.01	22	50,627	3.8	2.27	6.32	15	38,341	2.9	1.48	5.52
Kelantan	80	176,080	16.5	12.61	21.27	24	42,414	4.0	2.49	6.28	14	31,326	2.9	1.62	5.26
Melaka	95	118,777	17.0	13.70	20.78	32	33,290	4.8	3.28	6.83	16	24,024	3.4	1.83	6.33
Negeri Sembilan	106	141,671	17.8	13.78	22.68	44	64,288	8.1	5.55	11.60	16	24,273	3.0	1.93	4.79
Pahang	66	112,347	11.7	8.90	15.36	39	72,172	7.5	5.62	10.06	10	-	-	-	-
Pulau Pinang	86	171,777	15.7	11.69	20.81	23	39,653	3.6	2.04	6.36	13	-	-	-	-
Perak	90	216,410	14.4	11.76	17.41	27	58,728	3.9	2.21	6.78	17	47,411	3.1	1.99	4.93
Perlis	101	39,012	21.0	16.93	25.76	30	10,795	5.8	3.92	8.55	22	11,127	6.0	3.60	9.82
Selangor	162	587,040	12.7	10.48	15.38	50	183,079	4.0	2.93	5.35	29	11,064	2.4	1.30	4.40
Terengganu	67	93,085	13.1	10.44	16.27	27	47,499	6.7	4.67	9.45	17	20,856	2.9	1.84	4.63
Sabah	97	296,764	13.2	10.78	15.97	36	108,221	4.8	3.36	6.82	11	33,756	1.5	0.86	2.58
Sarawak	106	248,120	14.3	11.80	17.22	38	109,181	6.3	4.07	9.60	18	51,698	3.0	1.61	5.44
WP Kuala Lumpur	71	175,568	13.9	10.36	18.43	20	46,022	3.6	2.26	5.83	4	-	-	-	-
WP Labuan	106	8,693	13.6	9.92	18.40	24	-	-	-	-	18	1,647	2.6	1.43	4.60
WP Putrajaya	88	11,942	18.2	14.25	22.87	24	3,245	4.9	3.43	7.06	13	1,743	2.7	1.55	4.49
Location															
Urban	1,197	2,342,483	14.4	13.34	15.63	384	716,823	4.4	3.89	5.01	203	421,160	2.6	2.09	3.23
Rural	367	701,853	14.7	12.89	16.63	132	285,545	6.0	4.68	7.57	59	107,548	2.2	1.60	3.14
Sex															
Male	642	1,447,370	13.2	11.85	14.70	138	296,936	2.7	2.19	3.34	91	221,460	2.0	1.52	2.69
Female	922	1,596,966	15.9	14.62	17.26	378	705,432	7.0	6.16	8.00	171	307,248	3.1	2.49	3.75
Age Group (Years)															
18 - 29	233	648,323	11.6	9.95	13.51	92	211,502	3.8	2.94	4.87	54	147,219	2.6	1.70	4.06
30 - 39	310	793,099	14.9	12.98	16.97	104	288,865	5.4	4.28	6.82	70	168,902	3.2	2.36	4.23
40 - 49	334	555,674	16.7	14.65	19.01	103	172,354	5.2	4.12	6.51	63	91,597	2.8	1.99	3.81
50 - 59	334	649,841	18.4	16.16	20.95	115	215,205	6.1	4.76	7.79	37	73,246	2.1	1.43	3.01
60 and above	353	397,400	12.3	10.87	13.88	102	114,441	3.5	2.76	4.54	38	47,744	1.5	0.97	2.23
Ethnicity															
Malay ^a	1,013	1,862,143	16.7	15.45	17.96	360	680,656	6.1	5.41	6.86	186	360,098	3.2	2.67	3.89
Chinese	144	431,576	9.8	7.78	12.37	40	115,421	2.6	1.56	4.39	15	-	-	-	-
Indian	114	232,669	19.9	15.97	24.57	35	50,980	4.4	2.79	6.77	22	-	-	-	-
Bumiputera Sabah	151	194,394	13.9	11.20	17.14	45	78,490	5.6	3.83	8.17	23	34,411	2.5	1.44	4.16
Bumiputera Sarawak	71	146,145	16.5	12.49	21.57	21	52,021	5.9	3.54	9.64	10	-	-	-	-
Others	71	177,410	8.9	6.24	12.56	15	24,799	1.2	0.63	2.44	6	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	OBESITY I (BMI 30.0 - 34.9 kg/m ²)					OBESITY II (BMI 35.0 - 39.9 kg/m ²)					OBESITY III (BMI ≥ 40.0 kg/m ²)				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER
Education Level															
No formal education	120	213,711	12.7	8.85	17.88	47	68,353	4.1	2.80	5.86	14	22,035	1.3	0.68	2.50
Primary education	187	263,788	11.5	9.40	13.88	63	93,707	4.1	2.98	5.53	25	45,983	2.0	1.18	3.37
Secondary education	1,059	2,175,853	15.6	14.44	16.87	347	732,486	5.3	4.59	6.02	190	396,069	2.8	2.28	3.53
Tertiary education	195	388,475	12.9	10.60	15.58	59	107,823	3.6	2.53	5.03	33	64,621	2.1	1.41	3.25
Marital Status															
Never married	244	639,063	10.6	9.04	12.34	95	236,625	3.9	3.00	5.10	60	157,263	2.6	1.80	3.75
Married/ Living with partner	1,138	2,165,680	16.5	15.25	17.74	354	668,642	5.1	4.45	5.79	174	304,284	2.3	1.89	2.83
Separated/ Divorced/ Widowed	181	237,982	13.4	11.02	16.17	67	97,100	5.5	4.05	7.33	27	65,292	3.7	2.29	5.84
Occupation															
Government employee	172	280,774	18.4	15.16	22.20	64	99,572	6.5	4.68	9.05	28	48,408	3.2	2.00	5.01
Private employee	442	1,038,947	13.3	11.80	14.87	130	305,927	3.9	3.18	4.78	74	160,782	2.1	1.48	2.83
Self employed	246	531,563	15.2	12.89	17.87	87	189,820	5.4	4.13	7.12	51	119,497	3.4	2.41	4.84
Unpaid worker/ Homemaker/ Caregiver	369	658,216	18.8	16.40	21.49	123	226,081	6.5	5.21	7.98	62	111,206	3.2	2.31	4.35
Retiree	104	155,915	13.4	10.90	16.27	25	42,891	3.7	2.22	6.02	17	24,353	2.1	1.18	3.65
Student	33	85,251	8.0	5.28	11.99	11	-	-	-	-	10	20,284	1.9	0.98	3.67
Not working ^b	194	289,235	12.2	10.11	14.75	72	102,506	4.3	3.26	5.76	19	-	-	-	-
Household Income Group															
Less than RM 1000	231	387,323	15.3	13.05	17.93	61	113,662	4.5	3.19	6.32	32	68,564	2.7	1.59	4.59
RM 1,000 – RM 1999	228	462,933	14.8	11.97	18.12	83	145,041	4.6	3.53	6.06	41	64,378	2.1	1.38	3.04
RM 2,000 – RM 3,999	373	711,697	13.1	11.47	14.97	136	272,861	5.0	4.01	6.30	78	157,003	2.9	2.21	3.79
RM 4,000 – RM 5,999	277	534,248	14.7	12.57	17.13	85	162,170	4.5	3.44	5.77	47	106,468	2.9	1.98	4.31
RM 6,000 – RM 7,999	172	336,956	15.6	12.97	18.70	50	105,188	4.9	3.49	6.78	26	64,815	3.0	1.87	4.78
RM 8,000 – RM 9,999	108	229,147	15.6	12.16	19.78	46	93,960	6.4	4.48	9.05	17	28,817	2.0	1.04	3.66
RM 10,000 and above	172	369,016	14.3	11.60	17.53	54	109,091	4.2	2.94	6.06	21	-	-	-	-
Household Income Quintile															
Quintile 1	312	532,787	14.7	12.81	16.93	101	183,546	5.1	3.91	6.57	48	90,603	2.5	1.61	3.88
Quintile 2	302	600,779	14.0	11.80	16.58	102	193,684	4.5	3.55	5.75	67	116,969	2.7	2.02	3.68
Quintile 3	298	588,824	14.1	12.20	16.29	98	194,102	4.7	3.54	6.09	56	136,733	3.3	2.34	4.57
Quintile 4	348	672,304	14.6	12.66	16.73	108	214,920	4.7	3.67	5.90	51	111,951	2.4	1.71	3.44
Quintile 5	301	636,627	15.0	12.91	17.40	106	215,722	5.1	3.98	6.48	40	72,451	1.7	1.00	2.90
Household Income Category															
Bottom 40%	949	1,770,815	14.3	13.04	15.58	311	580,471	4.7	4.09	5.34	168	337,771	2.7	2.17	3.41
Middle 40%	426	870,737	14.7	12.94	16.68	135	272,839	4.6	3.69	5.74	67	137,180	2.3	1.70	3.16
Top 20%	186	389,769	15.1	12.58	17.91	69	148,663	5.7	4.23	7.75	27	53,757	2.1	1.11	3.85

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.4.5: Prevalence of obesity I to III (CPG 2023 Classification) among those aged 18 years and above in Malaysia by sociodemographic characteristics (n=10,130)

SOCIODEMOGRAPHIC CHARACTERISTICS	OBESE I (BMI 27.5 – 32.4 kg/m ²)				OBESE II (BMI 32.5 – 37.4 kg/m ²)				OBESE III (BMI ≥ 37.5 kg/m ²)						
	COUNT	ESTIMATED POPULATION	95% CONFIDENCE INTERVAL		ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
			LOWER	UPPER			LOWER	UPPER			LOWER	UPPER			
MALAYSIA	2,510	5,016,167	23.9	22.63	25.19	895	1,706,065	8.1	7.41	8.90	458	910,944	4.3	3.76	5.00
State															
Johor	262	715,646	26.9	22.59	31.78	101	232,258	8.7	6.60	11.49	46	109,813	4.1	2.94	5.78
Kedah	111	255,099	19.2	15.65	23.27	46	129,961	9.8	6.86	13.73	26	57,465	4.3	2.68	6.89
Kelantan	133	256,786	24.0	20.43	28.07	37	79,594	7.5	4.89	11.21	26	55,008	5.2	3.09	8.47
Melaka	138	161,925	23.1	20.02	26.51	56	67,048	9.6	7.60	11.98	29	36,790	5.3	3.34	8.15
Negeri Sembilan	150	209,813	26.4	22.19	31.00	74	99,075	12.4	9.38	16.33	32	52,435	6.6	3.94	10.82
Pahang	129	220,367	23.0	19.51	27.01	45	76,470	8.0	5.81	10.91	29	54,080	5.7	3.73	8.48
Pulau Pinang	121	243,434	22.3	18.21	26.93	46	93,195	8.5	5.52	12.94	24	51,436	4.7	2.71	8.04
Perak	147	374,363	24.8	20.42	29.85	48	120,328	8.0	5.69	11.08	25	66,735	4.4	2.84	6.83
Perlis	133	42,712	23.0	18.81	27.81	49	18,735	10.1	7.87	12.84	37	16,871	9.1	6.50	12.56
Selangor	276	1,078,690	23.4	20.21	26.90	87	308,458	6.7	5.13	8.68	47	175,932	3.8	2.37	6.09
Terengganu	119	169,325	23.8	19.76	28.36	42	65,623	9.2	7.20	11.73	27	37,856	5.3	3.30	8.46
Sabah	161	516,115	22.9	19.22	27.02	59	161,301	7.2	5.31	9.57	18	60,988	2.7	1.52	4.77
Sarawak	170	385,229	22.2	18.15	26.85	65	151,048	8.7	6.67	11.28	31	101,540	5.9	3.83	8.84
WP Kuala Lumpur	148	352,645	27.9	23.70	32.61	36	91,084	7.2	4.67	11.00	13	-	-	-	-
WP Labuan	174	15,572	24.4	21.50	27.52	55	5,036	7.9	5.26	11.65	26	2,596	4.1	2.35	6.95
WP Putrajaya	138	18,445	28.1	23.94	32.60	49	6,850	10.4	8.04	13.40	22	2,988	4.5	2.82	7.25
Location															
Urban	1,953	3,911,059	24.1	22.70	25.60	677	1,301,321	8.0	7.22	8.92	354	683,565	4.2	3.58	4.96
Rural	557	1,105,109	23.1	20.44	25.96	218	404,744	8.5	7.04	10.12	104	227,379	4.7	3.55	6.33
Sex															
Male	1,122	2,605,685	23.8	21.90	25.78	316	688,463	6.3	5.44	7.24	149	344,273	3.1	2.54	3.89
Female	1,388	2,410,482	24.0	22.49	25.57	579	1,017,602	10.1	9.10	11.26	309	566,671	5.6	4.83	6.58
Age Group (Years)															
18 - 29	317	907,152	16.2	13.95	18.84	151	373,872	6.7	5.43	8.24	87	221,502	4.0	2.88	5.44
30 - 39	496	1,356,767	25.4	22.95	28.07	179	462,206	8.7	7.24	10.33	110	278,691	5.2	4.05	6.71
40 - 49	523	908,970	27.3	24.82	30.03	179	291,859	8.8	7.41	10.37	102	158,707	4.8	3.73	6.10
50 - 59	527	1,110,210	31.5	27.62	35.64	187	355,534	10.1	8.29	12.22	86	165,391	4.7	3.57	6.14
60 and above	647	733,068	22.7	20.70	24.79	199	222,595	6.9	5.77	8.20	73	86,653	2.7	2.00	3.58
Ethnicity															
Malay ^a	1,556	2,807,828	25.1	23.69	26.63	604	1,138,953	10.2	9.20	11.29	330	628,621	5.6	4.87	6.50
Chinese	290	904,575	20.6	17.20	24.51	71	184,947	4.2	3.08	5.74	31	106,336	2.4	1.42	4.11
Indian	172	315,162	27.0	22.04	32.58	59	106,485	9.1	6.20	13.22	36	69,710	6.0	3.26	10.67
Bumiputera Sabah	236	301,789	21.6	18.60	24.92	88	124,469	8.9	6.34	12.37	33	48,575	3.5	2.14	5.59
Bumiputera Sarawak	106	222,577	25.2	20.86	30.08	39	85,926	9.7	6.66	13.98	17	43,434	4.9	3.10	7.72
Others	150	464,236	23.3	17.87	29.83	34	65,285	3.3	2.04	5.23	11	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	OBESE I (BMI 27.5 – 32.4 kg/m ²)					OBESE II (BMI 32.5 – 37.4 kg/m ²)					OBESE III (BMI ≥ 37.5 kg/m ²)				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER
Education Level															
No formal education	213	400,319	23.8	18.89	29.47	83	116,252	6.9	5.08	9.32	27	40,944	2.4	1.52	3.88
Primary education	329	513,682	22.3	19.30	25.63	104	145,951	6.3	4.84	8.26	49	79,873	3.5	2.38	5.03
Secondary education	1,629	3,335,337	23.9	22.47	25.47	592	1,213,176	8.7	7.81	9.69	330	691,438	5.0	4.22	5.83
Tertiary education	328	739,710	24.5	21.59	27.74	116	230,686	7.7	6.01	9.70	52	98,689	3.3	2.29	4.66
Marital Status															
Never married	365	997,190	16.5	14.44	18.80	155	365,649	6.1	4.94	7.39	95	259,004	4.3	3.22	5.68
Married/ Living with partner	1,842	3,591,441	27.3	25.73	28.90	633	1,194,171	9.1	8.14	10.11	303	535,864	4.1	3.46	4.79
Separated/ Divorced/ Widowed	302	425,925	24.0	20.92	27.29	107	146,245	8.2	6.48	10.39	59	114,207	6.4	4.68	8.76
Occupation															
Government employee	286	440,068	28.9	24.89	33.20	96	158,171	10.4	7.82	13.64	55	84,088	5.5	3.79	7.97
Private employee	697	1,784,263	22.8	20.59	25.11	244	549,914	7.0	6.02	8.17	115	262,093	3.3	2.61	4.28
Self employed	402	861,430	24.7	22.03	27.49	133	270,263	7.7	6.19	9.64	92	216,807	6.2	4.74	8.08
Unpaid worker/ Homemaker/ Caregiver	545	997,030	28.5	25.69	31.49	217	393,445	11.2	9.53	13.23	106	191,637	5.5	4.24	7.05
Retiree	201	304,759	26.1	22.35	30.25	66	96,078	8.2	6.26	10.76	24	36,659	3.1	1.96	4.98
Student	46	128,325	12.1	8.58	16.71	19	52,225	4.9	2.87	8.29	14	-	-	-	-
Not working ^b	328	495,064	20.9	17.92	24.33	117	181,374	7.7	6.05	9.69	49	86,955	3.7	2.37	5.66
Household Income Group															
Less than RM 1000	348	602,249	23.8	20.85	27.12	131	238,281	9.4	7.53	11.75	59	120,761	4.8	3.26	6.96
RM 1,000 – RM 1999	357	709,160	22.6	19.18	26.54	144	263,644	8.4	6.76	10.44	67	105,668	3.4	2.44	4.64
RM 2,000 – RM 3,999	627	1,250,349	23.1	21.10	25.13	222	409,432	7.5	6.35	8.95	131	276,169	5.1	4.02	6.43
RM 4,000 – RM 5,999	440	912,542	25.1	22.20	28.28	142	278,914	7.7	6.24	9.41	85	176,724	4.9	3.67	6.43
RM 6,000 – RM 7,999	252	478,803	22.2	18.72	26.11	95	161,182	7.5	5.61	9.89	39	88,554	4.1	2.75	6.09
RM 8,000 – RM 9,999	164	354,981	24.2	19.29	29.82	68	151,301	10.3	7.41	14.14	35	60,199	4.1	2.58	6.45
RM 10,000 and above	314	675,655	26.2	22.83	29.87	91	193,536	7.5	5.65	9.90	41	82,473	3.2	1.90	5.32
Household Income Quintile															
Quintile 1	472	836,172	23.1	20.40	26.14	189	336,857	9.3	7.78	11.14	89	164,731	4.6	3.34	6.20
Quintile 2	527	1,038,787	24.2	21.57	27.14	178	339,165	7.9	6.56	9.53	100	180,266	4.2	3.30	5.36
Quintile 3	454	945,895	22.7	20.32	25.25	173	321,524	7.7	6.29	9.42	96	225,610	5.4	4.05	7.20
Quintile 4	538	1,085,608	23.5	21.07	26.20	184	334,675	7.3	5.95	8.82	93	191,106	4.1	3.20	5.36
Quintile 5	511	1,077,277	25.4	22.57	28.47	169	364,069	8.6	6.93	10.59	79	148,836	3.5	2.47	4.96
Household Income Category															
Bottom 40%	1,524	2,940,754	23.7	22.08	25.39	547	1,001,414	8.1	7.19	9.05	289	558,984	4.5	3.78	5.36
Middle 40%	675	1,442,623	24.4	21.97	26.96	244	463,324	7.8	6.59	9.28	111	237,377	4.0	3.06	5.25
Top 20%	303	600,362	23.2	20.10	26.59	102	231,553	8.9	7.01	11.35	57	114,188	4.4	2.97	6.50

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: ABDOMINAL OBESITY

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HIGHLIGHTS

- The prevalence of abdominal obesity among adults in Malaysia was 54.5%

INTRODUCTION

Abdominal obesity, also known as central obesity or visceral obesity, is a condition characterised by excessive fat accumulation around the abdomen and abdominal organs. Abdominal obesity, measured by waist circumference or waist-to-hip ratio, is associated with an increased risk of various health conditions, including cardiovascular diseases, type 2 diabetes, metabolic syndrome, cancers and other health problems (1). The trend of abdominal obesity has been on the rise, particularly in developed countries, due to factors such as sedentary lifestyles, poor dietary habits and environmental factors. The estimated global prevalence of abdominal obesity is 41.5%, with higher prevalence found in individuals aged more than 40 years, females, and people living in urban regions (2). In Malaysia, prevalence of abdominal obesity increased from 43.0% in 2011 to 48.6% in 2015, and to 52.6% in 2019 (3-5).

OBJECTIVES

General objective:

To determine the abdominal obesity among adults aged 18 years old and above in Malaysia

Specific objectives:

1. To determine the prevalence of abdominal obesity among adults in Malaysia
2. To determine the prevalence of abdominal obesity among adults by sociodemographic groups in Malaysia

METHODS

Waist circumference was measured at the midpoint between the last rib and the iliac crest, in a horizontal plane using a flexible and non-stretchable measuring tape, SECA measuring tape (SECA 201) to the nearest 0.1 centimetre. Waist circumference measurements were taken twice and the average value was used for data entry. Assessment of abdominal obesity was classified using the International Diabetes Institute/ Western Pacific World Health Organization/ International Association for the Study of Obesity/ International Obesity Task Force (WHO/ IASO/ IOTF) (2000) of waist circumference (WC) cut-off values of ≥ 90 cm for men and ≥ 80 cm for women (6).

DEFINITIONS

1. **Waist circumference (WC)** is a practical measurement for assessing excess fat around the abdomen. Its measurement correlates well with abdominal fat content irrespective of the BMI. For those with a BMI >35 kg/m², it is unnecessary to measure WC as it loses its predictive value
2. **Abdominal obesity** is a type of obesity defined as the use of WC cut-off values of ≥ 90 cm for men and ≥ 80 cm for women

FINDINGS

Abdominal obesity

The national prevalence of abdominal obesity was 54.5% (95% CI: 52.50, 56.39). Among the states, WP Labuan [63.8% (95% CI: 59.17, 68.20)] had the highest prevalence of abdominal obesity followed by Negeri Sembilan [62.8% (95% CI: 57.24, 68.13)] and Perak [58.7% (95% CI: 53.76, 63.53)]. The prevalence of abdominal obesity was slightly higher in the urban areas [54.8% (95% CI: 52.50, 57.11)] as compared to the rural areas [53.2% (95% CI: 49.75, 56.69)]. Women showed a significantly higher prevalence of abdominal obesity [65.8% (95% CI: 63.52, 67.98)] than men [44.1% (95% CI: 41.61, 46.60)]. The highest prevalence of abdominal obesity was found among the 60 years and above age group [66.8% (95% CI: 64.47, 69.07)], Indians [68.9% (95% CI: 61.87, 75.15)], those who were separated/ divorced/ widowed [67.2% (95% CI: 62.73, 71.40)], those with

no formal education [58.5% (95% CI: 52.72, 64.06)], unpaid worker/ homemaker/ caregiver [72.6% (95% CI: 69.54, 75.41)], and those from the B40 household income category [55.0% (95% CI: 52.63, 57.25)] (**Table 4.5.2**).

CONCLUSION

The findings from NHMS 2023 showed that the national prevalence of abdominal obesity among adults in Malaysia was 54.5%. The current prevalence of abdominal obesity shows an increase as compared to the previous NHMS in 2011, 2015 and 2019.

RECOMMENDATIONS

An imperative multi-faceted approach is required to combat obesity. The key target recommendations include:

- Secure national commitment to combat obesity, emphasising the pivotal role of country leaders serving as exemplary figures.
- Integrate obesity advocacy into the national agenda, aligning it with economic progress indicators like gross domestic product (GDP) for a holistic approach.
- Allocate specific financial and manpower resources strategically for public health interventions, with a primary focus on preventing overweight and obesity.
- Cultivate a culture of well-being and productivity in workplaces to enhance organisational and community prosperity.
- Prioritise changing eating behaviours by fostering a healthy eating environment.
- Strengthen inter-agency collaboration to create a supportive environment by limiting access to unhealthy foods.
- Empower communities through nutrition literacy initiatives, incorporating technology for self-monitoring and weight management advocacy.
- Increase community health screening, especially among high-risk groups, and enforce rigorous non-communicable risk assessments.

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Table 4.5.1: Trend in the prevalence of abdominal obesity among those aged 18 and above in Malaysia, 2011-2023

	2011 (%)	2015 (%)	2019 (%)	2023 (%)
Abdominal obesity	45.4	48.6	52.6	54.5

Table 4.5.2: Prevalence of abdominal obesity (WHO 2000 Classification) among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,106)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	6,012	11,388,715	54.5	52.50	56.39
State					
Johor	588	1,433,307	53.8	48.53	58.99
Kedah	326	754,974	56.5	48.28	64.32
Kelantan	326	564,476	52.8	46.82	58.71
Melaka	340	382,192	55.0	47.97	61.84
Negeri Sembilan	385	500,571	62.8	57.24	68.13
Pahang	332	543,038	56.7	48.43	64.59
Pulau Pinang	289	557,639	50.9	42.84	58.83
Perak	343	874,384	58.7	53.76	63.53
Perlis	327	106,649	58.6	51.97	64.85
Selangor	669	2,454,048	53.7	48.03	59.31
Terengganu	307	408,259	57.4	50.36	64.08
Sabah	403	1,176,235	52.4	46.75	57.96
Sarawak	377	896,980	51.7	46.40	56.91
WP Kuala Lumpur	283	659,779	53.3	44.43	62.01
WP Labuan	456	40,734	63.8	59.17	68.20
WP Putrajaya	261	35,450	54.2	49.74	58.54
Location					
Urban	4,639	8,842,174	54.8	52.50	57.11
Rural	1,373	2,546,540	53.2	49.75	56.69
Sex					
Male	2,212	4,815,371	44.1	41.61	46.60
Female	3,800	6,573,344	65.8	63.52	67.98
Age Group (Years)					
18 – 29	752	2,050,871	37.0	33.95	40.16
30 – 39	1,085	2,858,141	53.8	50.33	57.14
40 – 49	1,149	2,005,494	60.6	57.44	63.63
50 – 59	1,188	2,306,366	65.9	62.29	69.34
60 and above	1,838	2,167,843	66.8	64.47	69.07
Ethnicity					
Malay ^a	3,634	6,390,159	57.5	55.25	59.69
Chinese	817	2,210,637	50.4	45.92	54.94
Indian	440	798,611	68.9	61.87	75.15
Bumiputera Sabah	608	758,723	54.4	48.73	60.00
Bumiputera Sarawak	214	455,095	51.5	45.64	57.33
Others	299	775,489	39.2	33.64	45.04
Education Level					
No formal education	630	992,981	58.5	52.72	64.06
Primary education	824	1,267,019	55.1	50.92	59.23
Secondary education	3,836	7,546,752	54.4	52.32	56.50
Tertiary education	705	1,557,830	52.1	47.10	57.07
Marital Status					
Never married	854	2,269,498	37.8	34.97	40.71
Married/ Living with partner	4,289	7,907,969	60.3	58.10	62.49
Separated/ Divorced/ Widowed	863	1,195,814	67.2	62.73	71.40
Occupation					
Government employee	566	878,558	57.9	52.94	62.66
Private employee	1,480	3,566,014	45.8	42.82	48.71
Self employed	917	1,869,815	53.8	49.71	57.82
Unpaid worker/ Homemaker/ Caregiver	1,431	2,525,455	72.6	69.54	75.41
Retiree	532	786,036	67.4	62.97	71.55
Student	118	325,929	31.0	25.31	37.26
Not working ^b	949	1,409,437	59.4	55.30	63.34

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	972	1,595,440	63.5	59.45	67.29
RM 1,000 – RM 1999	941	1,689,282	54.2	50.11	58.32
RM 2,000 – RM 3,999	1,506	2,826,846	52.3	49.29	55.28
RM 4,000 – RM 5,999	972	1,933,726	53.4	49.03	57.66
RM 6,000 – RM 7,999	576	1,142,430	53.3	48.31	58.15
RM 8,000 – RM 9,999	390	816,783	55.7	48.97	62.14
RM 10,000 and above	637	1,327,858	51.9	46.17	57.53
Household Income Quintile					
Quintile 1	1,354	2,209,406	61.4	58.17	64.59
Quintile 2	1,233	2,290,869	53.7	50.11	57.24
Quintile 3	1,104	2,179,554	52.4	49.02	55.81
Quintile 4	1,208	2,403,033	52.3	48.91	55.74
Quintile 5	1,095	2,249,502	53.3	48.95	57.67
Household Income Category					
Bottom 40%	3,788	6,796,159	55.0	52.63	57.25
Middle 40%	1,520	3,204,868	54.4	51.27	57.59
Top 20%	686	1,331,338	51.7	47.07	56.26

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: UNDERWEIGHT

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HIGHLIGHTS

- The prevalence of underweight among adults in Malaysia was 5.1%

INTRODUCTION

Underweight in adults is associated with several health factors, such as smoking, poor eating habits, and the presence of chronic illnesses (1). Being underweight in adulthood can lead to increased rates of morbidity and mortality (4). The World Health Organisation (WHO) estimated that around 462 million adults are underweight globally (6). In Malaysia, the prevalence of underweight decreased from 8.3% in 2011 to 6.7% in 2015, and to 6.5 % in 2019.

OBJECTIVES

General objective:

To determine the status of underweight among adults aged 18 years old and above in Malaysia

Specific objectives:

1. To determine the prevalence of underweight among adults in Malaysia
2. To determine the prevalence of underweight among adults by sociodemographic groups in Malaysia

METHODS

Classification of nutritional status was made according to recommendations by the World Health Organisation (1998) (2) and World Health Organisation (2000) (3). The anthropometric measurements for NHMS 2023 were carried out by data collectors according to the standard protocol. Weight was measured using SECA Electronic Weighing Scale (SECA 813) to the nearest 0.1 kilogram. Standing

height was measured without shoes using SECA Portable Stadiometer (SECA 213) to the nearest 0.1 centimetre. All measurements were taken twice, and the average value was used for data entry.

Body Mass Index (BMI) was calculated as the ratio of weight in kilograms to the square of height in metres (kg/m²) and classified using two guidelines for this study as following:

The World Health Organization (1998):

Classified BMI into 6 categories; underweight (<18.5 kg/m²), normal (18.5-24.9 kg/m²), overweight (25.0-29.9 kg/m²), obese I (30.0-34.9 kg/m²), obese II (35.0-39.9 kg/m²) and obese III (\geq 40 kg/m²).

The Malaysian Clinical Practice Guideline Management of Obesity (2023):

Classified BMI into 6 categories; underweight (<18.5 kg/m²), normal (18.5 - 22.9 kg/m²), overweight (23.0 - 27.4 kg/m²), obese I (27.5 - 32.4 kg/m²), obese II (32.5 - 37.4 kg/m²) and obese III (\geq 37.5 kg/m²).

DEFINITIONS

1. Body Mass Index (BMI):

- BMI is a screening tool and a commonly used measurement to assess an individual's body weight in relation to their height.
- The formula for calculating BMI is: $BMI = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$

2. **Underweight** is defined as having a BMI of less than 18.5 kg/m²

FINDINGS

The national prevalence of underweight among adults was 5.1% (95% CI: 4.41, 5.80). Among the states, Kedah had the highest prevalence of underweight [9.0% (95% CI: 5.04, 15.47)]. The results revealed that the prevalence of underweight was more common among those from rural areas [5.3% (95% CI: 4.19, 6.56)], males [5.3% (95% CI: 4.35, 6.51)], aged between 18-29 years old [10.7% (95% CI: 9.11, 12.62)], Bumiputera Sarawak [6.6% (95% CI: 4.22, 10.15)], those with no formal education [6.7% (95% CI: 3.65, 11.94)] those who were never married [10.4% (95% CI: 8.58, 12.47)] students [13.2% (95% CI: 9.12,

18.80)], and among those from the T20 household income category [5.3% (95% CI: 3.63, 7.65)] (**Table 4.6.2**).

CONCLUSION

The findings from NHMS 2023 showed that the national prevalence of underweight among adults aged 18 years and above was 5.1%. The current prevalence of underweight showed a decrease as compared to the previous study in 2019 (6.5%) (3).

RECOMMENDATIONS

- Strengthen health screening initiatives while advocating for a healthy body perception.
- Advocate communities on the health consequences of being underweight.
- Advocate for self-monitoring of healthy body weight and empower communities with nutrition literacy through integrating technology for effective self-monitoring and weight management
- Foster a culture of well-being and productivity in workplaces to enhance both organisational and community prosperity.

Table 4.6.1: Trend in the prevalence of underweight among those aged 18 and above in Malaysia, 2011-2023

	2011 (%)	2015 (%)	2019 (%)	2023 (%)
Underweight	8.3	6.7	6.5	5.1

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Table 4.6.2: Prevalence of underweight among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,130)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	471	1,062,578	5.1	4.41	5.80
State					
Johor	32	122,643	4.6	2.91	7.25
Kedah	28	119,390	9.0	5.04	15.47
Kelantan	35	68,298	6.4	4.08	9.89
Melaka	31	37,976	5.4	3.40	8.52
Negeri Sembilan	25	34,051	4.3	2.66	6.80
Pahang	27	71,148	7.4	4.33	12.50
Pulau Pinang	22	45,131	4.1	2.74	6.18
Perak	32	96,321	6.4	4.29	9.42
Perlis	30	15,898	8.6	5.68	12.71
Selangor	52	201,104	4.4	3.01	6.27
Terengganu	20	31,159	4.4	2.79	6.80
Sabah	25	74,208	3.3	1.94	5.52
Sarawak	47	108,963	6.3	4.75	8.25
WP Kuala Lumpur	14	-	-	-	-
WP Labuan	32	2,782	4.4	2.93	6.43
WP Putrajaya	19	2,974	4.5	2.51	8.02
Location					
Urban	343	811,241	5.0	4.23	5.90
Rural	128	251,337	5.3	4.19	6.56
Sex					
Male	239	583,453	5.3	4.35	6.51
Female	232	479,124	4.8	4.02	5.65
Age Group (Years)					
18 – 29	212	599,644	10.7	9.11	12.62
30 – 39	65	207,620	3.9	2.54	5.92
40 – 49	46	76,450	2.3	1.58	3.34
50 – 59	31	53,375	1.5	0.91	2.50
60 and above	117	125,489	3.9	3.10	4.85
Ethnicity					
Malay ^a	266	541,585	4.8	4.14	5.67
Chinese	80	250,393	5.7	4.19	7.72
Indian	36	66,880	5.7	3.73	8.69
Bumiputera Sabah	40	45,908	3.3	1.80	5.93
Bumiputera Sarawak	21	58,237	6.6	4.22	10.15
Others	28	99,575	5.0	2.52	9.69
Education Level					
No formal education	64	112,567	6.7	3.65	11.94
Primary education	55	105,263	4.6	3.30	6.30
Secondary education	317	745,363	5.3	4.60	6.21
Tertiary education	35	99,385	3.3	2.16	4.99
Marital Status					
Never married	224	626,336	10.4	8.58	12.47
Married/ Living with partner	193	375,948	2.9	2.35	3.47
Separated/ Divorced/ Widowed	53	58,799	3.3	2.31	4.71
Occupation					
Government employee	17	39,133	2.6	1.40	4.65
Private employee	166	421,919	5.4	4.44	6.52
Self employed	57	144,917	4.1	2.52	6.77
Unpaid worker/ Homemaker/ Caregiver	51	102,488	2.9	2.11	4.05
Retiree	20	21,304	1.8	1.05	3.16
Student	46	140,712	13.2	9.12	18.80
Not working ^b	114	192,105	8.1	6.12	10.72
Household Income Group					

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Less than RM 1000	80	148,593	5.9	4.39	7.84
RM 1,000 – RM 1999	79	140,728	4.5	3.35	6.01
RM 2,000 – RM 3,999	132	309,030	5.7	4.54	7.12
RM 4,000 – RM 5,999	69	185,076	5.1	3.30	7.78
RM 6,000 – RM 7,999	41	103,041	4.8	3.15	7.18
RM 8,000 – RM 9,999	23	54,643	3.7	2.07	6.59
RM 10,000 and above	45	113,310	4.4	2.83	6.76
Household Income Quintile					
Quintile 1	114	201,547	5.6	4.39	7.07
Quintile 2	91	202,967	4.7	3.60	6.22
Quintile 3	103	230,322	5.5	4.29	7.09
Quintile 4	86	241,269	5.2	3.68	7.39
Quintile 5	75	178,316	4.2	2.95	5.95
Household Income Category					
Bottom 40%	314	636,172	5.1	4.38	5.99
Middle 40%	100	281,196	4.8	3.47	6.47
Top 20%	55	137,052	5.3	3.63	7.65

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: NUTRITIONAL STATUS AMONG ADOLESCENTS

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HIGHLIGHTS

- The prevalence of stunting among adolescents in Malaysia was 14.7%.
- The prevalence of thinness among adolescents in Malaysia was 9.4%.
- The prevalence of overweight and obesity among adolescents in Malaysia were 16.7% and 10.4%, respectively.

INTRODUCTION

Growth and development in adolescence are life-changing experiences that significantly impact an individual's health later in life. Beyond physical growth, diet has an impact on immunological function, neurodevelopment, and cardiorespiratory fitness in adolescent development (1). In 2016, almost one in five of the world's adolescents was overweight or obese, with a 120% increase from 1990 (2). There are various nutrition assessment tools for adolescents including the World Health Organization (WHO) Growth Reference 2007. The WHO 2007 growth reference provides an age and sex-specific body mass index (BMI) reference which extends from age 5 up to 19 years of age and is presented in the figures for height-for-age, weight-for-age and BMI-for-age, respectively (3). The four growth indicators assessed include stunting, thinness, overweight, and obesity.

OBJECTIVES

General objective

To determine the nutritional status of adolescents aged 15 to 17 years old in Malaysia

Specific Objectives

1. To determine the prevalence of stunting among adolescents aged 15 to 17 years old.

2. To determine the prevalence of thinness among adolescents aged 15 to 17 years old.
3. To determine the prevalence of overweight among adolescents aged 15 to 17 years old.
4. To determine the prevalence of obese among adolescents aged 15 to 17 years old.

METHODS

The nutritional status of adolescent's module was carried out on respondents aged 15 to 17 years old. Data was collected through anthropometry measurements of weight and height by data collectors according to the standard protocol. Weight was measured using SECA Electronic Weighing Scale (SECA 813) to the nearest 0.1 kilogram. Standing height was measured without shoes using SECA Portable Stadiometer (SECA 213) to the nearest 0.1 centimetre. All measurements were taken twice, and the average value was used for data entry. The nutritional status of adolescents was identified based on the WHO Growth Reference 2007 (WHO 2007).

DEFINITIONS

1. Body mass index (BMI)

- An index commonly used to determine weight status. BMI is calculated by dividing a person's weight in kilograms by the square of height in metres.

2. Height-for-age z-score (HAZ) :

- An index used to assess how a child's height compares to the expected height of a healthy child of the same age and sex based on the WHO 2007 Growth reference data for 5-19 years.

3. BMI-for-age z-score (BAZ) :

- An index used to assess BMI is age- and sex-specific compares to the BMI of a healthy child of the same age and sex based on the WHO 2007 Growth reference data for 5-19 years.

4. Stunting

- Those who have their HAZ more than two standard deviations below the WHO Child Growth Standards median(<-2SD).

5. Thinness

- Those who have their BAZ more than two standard deviations below the WHO Child Growth Standards median (<-2SD).

6. Overweight

- Those who have their BAZ more than one standard deviations to two standard deviations above the WHO Child Growth Standards median (>+1SD to ≤+2SD).

7. Obesity

- Those who have their BAZ more than two standard deviations above the WHO Child Growth Standards median (>+2SD).

FINDINGS

Stunting

The national prevalence of stunting among adolescents aged 15 – 17 years old was 14.7% (95% CI: 10.21, 20.70).

Thinness

The national prevalence of thinness among adolescents aged 15 – 17 years old was 9.4% (95% CI: 6.02, 14.29).

Overweight and Obese

The national prevalence of overweight and obese among adolescents aged 15 – 17 years old were 16.7% (95% CI: 13.03, 21.27) and 10.4% (95% CI: 7.14, 14.93) respectively. **(Table 4.7.1).**

CONCLUSION

Malaysia is facing a double burden of malnutrition among adolescents aged 15 to 17 years old. Overweight and obesity (a total of 27.1%) are more prevalent forms of malnutrition compared to stunting (14.7%) and thinness (9.4%) among adolescents aged 15 to 17 years in Malaysia. Therefore, there is a need to broaden the scope of nutrition guidelines, public health policies, and programmes to address malnutrition among adolescents in Malaysia.

RECOMMENDATIONS

- Strengthen school-based nutrition education and integrate into the school curriculum in line with current dietary guidelines.
- Involve parents in monitoring and promoting a holistic approach to adolescent health.
- Mandate the implementation of the “*Program Hidangan Berkhasiat di Sekolah (HiTS)*” to ensure the provision of balanced meals in schools.
- Explore partnerships with local businesses or NGOs to support nutrition interventions in schools, fostering a collaborative approach.

- Develop age-appropriate resources to support adolescents in self-monitoring their health and wellness.
- Utilise technology as a tool for both nutrition education and self-monitoring, making it engaging and accessible for adolescents

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Table 4.7.1: Prevalence of nutritional status among those aged 15 – 17 years old in Malaysia (n=438)

INDICES	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA					
Height for age (HAZ)					
Stunting (HAZ < -2SD)	69	154,445	14.7	10.21	20.70
Normal (HAZ ≥ -2SD to + ≤2SD)	369	896,115	85.3	79.30	89.79
BMI for age (BAZ)					
Thinness (BAZ < -2SD)	37	98,352	9.4	6.02	14.29
Normal (BAZ ≥ -2SD to + ≤1SD)	281	666,909	63.5	56.91	69.59
Overweight (BAZ > +1SD to ≤ 2SD)	73	175,905	16.7	13.03	21.27
Obese (BAZ > +2SD)	46	109,324	10.4	7.14	14.93

NON-COMMUNICABLE DISEASES: PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR

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HIGHLIGHTS

- One in three adults in Malaysia was physically inactive.
- Eight out of ten adults in Malaysia were not physically active in travel-related domains or recreation-related domains.
- Five in ten adults in Malaysia engaged in sedentary behaviour for more than 2 hours a day.

INTRODUCTION

Physical activity (PA) involves a spectrum of bodily movements, such as those involved in work-related tasks, travel, and recreational activities (1). PA is recognised as a critical determinant of health, influencing different aspects of well-being, and the link between regular PA and health is well-established and proven to help prevent the risk of non-communicable diseases (NCDs); such as cardiovascular diseases, diabetes, stroke, and certain cancers (2). It also helps in the prevention of hypertension, overweight, and obesity, as well as improving mental health, quality of life, and overall well-being (3). Globally, 28% of adults and 81% of adolescents were not active enough in 2016 (1). In view of the rising global prevalence of physical inactivity and sedentary lifestyles, it is pivotal to comprehend the prevalence and trends of physical activity within a population in order to achieve the 2030 Sustainable Development Goals (SDGs) (4).

OBJECTIVES

General Objective

To determine the prevalence of physical inactivity and sedentary behaviour among adults in Malaysia.

Specific Objectives

1. To determine the prevalence of physical inactivity among adults in Malaysia.
2. To determine the prevalence of physical inactivity in the work, travel, and recreation domains among adults in Malaysia.
3. To determine the prevalence of sedentary behaviour among adults in Malaysia.

METHODS

Data on physical activity was obtained from adult respondents aged 18 years and above through face-to-face interviews using the validated Global Physical Activity Questionnaire (GPAQ) (5). The total amount of physical activity in three different domains (work-related, travel-related, and recreation-related) in a typical week was calculated using the Metabolic Equivalent of Task (MET) minutes per week (6).

DEFINITIONS

1. According to the GPAQ analysis guidelines (6), overall physical activity from all three domains was calculated, and a person is considered “physically active” if they did at least:
 - 30 minutes of moderate-intensity activity or walking per day on at least five days in a typical week or
 - 25 minutes of vigorous-intensity activity per day on at least three days in a typical week or
 - Five days of any combination of walking and moderate- or vigorous-intensity activities, achieving a minimum total physical activity level of at least 600 MET-minutes per week.
2. **Sedentary behaviour** refers to any waking behaviour characterised by an energy expenditure of 1.5 METS or lower while sitting, reclining or lying (7).

3. **Work-related domains** include paid or unpaid work, household chores, or daily activities that a person has to do.
4. **Travel-related domain** includes walking or cycling activities to travel from one place to another.
5. **Recreation-related domain** includes sports, fitness, and recreational (leisure) activities.

FINDINGS

A total of 10,852 respondents responded to the physical activity module.

The prevalence of physical inactivity among adults in Malaysia, by sociodemographic characteristics

The prevalence of physical inactivity among adults in this survey was [29.9% (95% CI: 28.25, 31.70)]. The state of Selangor [38.4% (95% CI: 34.23, 42.78)] reported the highest prevalence of physical inactivity, followed by Negeri Sembilan [38.2% (95% CI: 29.91, 47.31)] and Johor [36.9% (95% CI: 30.24, 44.03)]. Those who lived in urban areas [31.7% (95% CI: 29.70, 33.83)] reported a significantly higher level of physical inactivity as compared to those who lived in rural areas [23.6 (95% CI: 20.76, 26.76)]. The prevalence of physical inactivity among females was significantly higher [32.9% (95% CI: 30.86, 34.93)] as compared to males [27.2 (95% CI: 25.10, 29.49)]. Physical inactivity was more common among those who did not work [55.1% (95% CI: 51.06, 59.01)], aged 60 years old and above [43.2% (95% CI: 40.13, 46.37)], those who were separated/ widowed/ divorced [42.4% (95% CI: 38.66, 46.26)] and those with tertiary education [32.4% (95% CI: 28.20, 36.88)] (**Table 4.8.2**).

The prevalence of physical inactivity among adults in Malaysia by domains

Among the three different domains, the prevalence of physical inactivity in the travel-related domain among adults was the highest, at 84.3% (95% CI: 82.92, 85.52). Followed by recreation-related domain [83.7% (95% CI: 82.42, 84.92)] and work-related domain [49.9% (95% CI: 47.82, 52.04)] (**Table 4.8.3**).

The prevalence of sedentary behaviour among adults in Malaysia by sociodemographic characteristics

The overall prevalence of sedentary behaviour of more than 2 hours to 4 hours and more than 4 hours among adults were 32.5% (95% CI: 30.66, 34.34) and 17.4% (95% CI: 15.67, 19.18), respectively.

The highest prevalence of sedentary behaviour among those who spent more than 2 hours to 4 hours on sedentary activities, was found in the state of WP Labuan [43.1% (95% CI: 37.26, 49.04)], followed by Pulau Pinang [38.9% (95% CI: 27.29, 51.96)] and Sabah [38.8% (95% CI: 33.15, 44.83)]. The prevalence

of sedentary behaviour of more than 2 hours to 4 hours was higher among urban dwellers [32.6% (95% CI: 30.56, 34.69)], females [32.5% (95% CI: 30.49, 34.58)], individuals aged 18-19 years old [39.6% (95% CI: 32.53, 47.13)], individuals who were separated/ divorced/ widowed [34.0% (95% CI: 29.49, 38.91)], students [36.1% (95% CI: 30.04, 42.56)] and those from B40 household income category [33.6% (95% CI: 31.41, 35.89)].

The highest prevalence of sedentary behaviour among those who spent more than 4 hours on sedentary activities, was found in the state of Selangor [23.7% (95% CI: 19.43, 28.62)] and WP Putrajaya [23.7% (95% CI: 17.43, 31.34)], followed by Terengganu [23.6% (95% CI: 12.35, 40.48)] and Kedah [22.7% (95% CI: 14.95, 32.84)]. The prevalence of sedentary behaviour of more than 4 hours was higher among rural dwellers [17.5% (95% CI: 14.39, 21.17)], females [17.8% (95% CI: 15.92, 19.81)], individuals aged 60 years old and above [21.7% (95% CI: 19.14, 24.58)], Bumiputera Sarawak [21.2% (95% CI: 14.28, 30.16)], individuals with tertiary education [21.5% (95% CI: 17.66, 25.93)], Individuals who were not working [29.6% (95% CI: 25.97, 33.41)] and those from T20 household income category [20.3% (95% CI: 16.04, 25.32)] (**Table 4.8.4**).

CONCLUSION

The overall prevalence of physical inactivity among adults was 29.9%; with an estimated 6,826,861 adults in Malaysia who were physically inactive. In the previous NHMS surveys, a different questionnaire (IPAQ short version) was used; the prevalence of being physically inactive was 33.5% (NHMS 2015) (8) and 25.1% (NHMS 2019) (9). Our findings revealed that about 50% of the adults engaged in sedentary behaviour for more than 2 hours a day; the prolonged sedentary behaviour patterns had positive associations with increased risks of non-communicable diseases and all-cause mortality (10).

RECOMMENDATIONS

Our findings have important implications for health policymakers by highlighting the sociodemographic characteristics of the adult population in Malaysia; who are at greater risk of being physically inactive. Several strategies for improving physical activity levels and reducing sedentary behaviour among adults are recommended, as below:

- Develop effective and feasible physical activity interventions that are targeted to behaviour modification and sustenance such as to increase walking behaviour on a population level; as walking is observed among the most cost-

effective and accessible means of exercise for all people.

- Improve accessibility to high-quality public and green open spaces, recreational areas and exercise facilities as well as nudge people's decision to optimise the utilisation of those spaces and facilities for health benefits.
- Strengthen the integration of urban development and transport planning policies that promote walking, cycling, and other forms of mobility involving the use of public transport in communities.
- Implement best practice communication campaigns, linked with community-based programmes, to increase awareness, knowledge, and understanding of the multiple health benefits of regular physical activity and less sedentary behaviour.
- Enhance policies and promotions to support the reduction of sedentary behaviour especially to break up prolonged sitting hours with physical activity.
- Incentivise physically active populations in order to reinforce their behaviour for long-term maintenance and sustainability.

Table 4.8.1: Prevalence of physical inactivity and sedentary behaviour among adults in Malaysia, 2006 and 2023

	2006 (%)	2023 (%)
Overall physical inactivity	43.7	29.9
Physical inactivity in work-related domain	72.6	49.9
Physical inactivity in travel-related domain	72.1	84.3
Physical inactivity in recreation-related domain	85.7	83.7
Sedentary behaviour (more than 2 hours a day)	-	49.9

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Table 4.8.2: Prevalence of physical inactivity among those aged 18 years old and above by in Malaysia sociodemographic characteristics (n=10,852)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	3,326	6,826,586	29.9	28.25	31.70
State					
Johor	422	1,013,466	36.9	30.24	44.03
Kedah	203	457,392	32.1	26.70	38.09
Kelantan	152	264,250	23.2	16.99	30.72
Melaka	245	265,035	36.6	28.19	45.89
Negeri Sembilan	266	313,605	38.2	29.91	47.31
Pahang	135	228,416	22.7	19.47	26.37
Pulau Pinang	117	235,471	18.5	13.47	24.92
Perak	175	442,697	28.2	22.76	34.29
Perlis	156	49,717	25.2	19.27	32.28
Selangor	536	2,031,987	38.4	34.23	42.78
Terengganu	132	164,946	21.6	15.10	30.02
Sabah	84	264,312	11.2	8.43	14.82
Sarawak	247	548,828	30.3	26.00	35.07
WP Kuala Lumpur	222	517,650	33.5	26.96	40.73
WP Labuan	74	7,262	11.2	8.15	15.26
WP Putrajaya	160	21,552	31.8	25.83	38.36
Location					
Urban	2,642	5,642,256	31.7	29.70	33.83
Rural	684	1,184,330	23.6	20.76	26.76
Sex					
Male	1,424	3,221,902	27.2	25.10	29.49
Female	1,902	3,604,684	32.9	30.86	34.93
Age Group (Years)					
18 – 19	106	292,549	30.5	23.97	37.85
20 – 29	477	1,413,751	27.9	24.95	31.00
30 – 39	538	1,541,971	26.3	23.61	29.19
40 – 49	436	900,970	25.1	22.47	27.89
50 – 59	506	1,123,689	30.3	27.18	33.52
60 and above	1,263	1,553,656	43.2	40.13	46.37
Ethnicity					
Malay ^a	2,096	3,809,326	31.6	29.57	33.71
Chinese	638	1,762,602	36.1	32.07	40.25
Indian	250	501,445	37.8	31.71	44.27
Bumiputera Sabah	120	180,895	12.4	9.24	16.40
Bumiputera Sarawak	116	266,030	28.7	24.84	32.88
Others	106	306,288	14.3	10.65	18.99
Education Level					
No formal education	409	561,133	30.2	25.51	35.24
Primary education	480	749,732	30.1	26.46	34.09
Secondary education	1,994	4,390,242	29.3	27.39	31.31
Tertiary education	426	1,096,661	32.4	28.20	36.88
Marital Status					
Never married	647	1,915,758	29.7	26.80	32.88
Married/ Living with partner	2,100	4,075,150	28.3	26.52	30.21
Separated/ Divorced/ Widowed	576	826,762	42.4	38.66	46.26
Occupation					
Government employee	264	410,982	24.9	21.17	29.05
Private employee	751	2,164,662	25.5	23.03	28.24
Self employed	317	713,783	19.4	16.85	22.18
Unpaid worker/ Homemaker/ Caregiver	559	1,047,957	27.7	24.60	31.06
Retiree	295	434,986	35.4	31.23	39.80
Student	161	486,472	42.5	35.48	49.93
Not working ^b	955	1,510,439	55.1	51.06	59.01

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	669	1,113,015	40.3	36.26	44.42
RM 1,000 – RM 1999	459	774,899	23.2	20.54	26.13
RM 2,000 – RM 3,999	739	1,567,287	26.4	24.00	29.03
RM 4,000 – RM 5,999	524	1,145,148	29.1	26.25	32.03
RM 6,000 – RM 7,999	326	720,629	31.5	27.62	35.56
RM 8,000 – RM 9,999	226	588,219	36.7	30.83	43.06
RM 10,000 and above	371	878,709	31.1	26.14	36.62
Household Income Quintile					
Quintile 1	869	1,404,727	35.8	32.48	39.18
Quintile 2	582	1,148,375	24.6	21.99	27.41
Quintile 3	561	1,210,975	26.9	24.07	29.92
Quintile 4	664	1,488,000	30.0	27.21	32.95
Quintile 5	638	1,535,828	33.2	29.21	37.45
Household Income Category					
Bottom 40%	2,150	4,135,961	30.4	28.38	32.45
Middle 40%	799	1,820,080	29.1	26.21	32.14
Top 20%	365	831,864	29.6	25.57	33.88

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.8.3: Prevalence of physical inactivity among those aged 18 years old and above in Malaysia by domains

PHYSICAL ACTIVITY DOMAIN	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Overall (n=10,852)	3,326	6,826,586	29.9	28.25	31.70
Work-related domain (n=10,850)	5,458	11,378,770	49.9	47.82	52.04
Travel-related domain (n=10,852)	9,088	19,208,127	84.3	82.92	85.52
Recreation-related domain (n=10,852)	9,115	19,081,376	83.7	82.42	84.92

Table 4.8.4: Prevalence of sedentary activity for 2 hours and below, more than 2 hours to 4 hours and more than 4 hours among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,841)

SOCIODEMOGRAPHIC CHARACTERISTICS	2 HOURS AND BELOW					MORE THAN 2 HOURS TO 4 HOURS					MORE THAN 4 HOURS				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL			
				LOWER	UPPER			LOWER	UPPER			LOWER	UPPER		
MALAYSIA	5,441	11,432,857	50.2	47.82	52.52	3,587	7,399,363	32.5	30.66	34.34	1,813	3,954,258	17.4	15.67	19.18
State															
Johor	613	1,605,762	58.5	52.22	64.52	322	844,895	30.8	25.26	36.91	105	294,229	10.7	7.28	15.51
Kedah	244	677,981	47.6	37.89	57.54	151	422,866	29.7	24.19	35.88	129	322,750	22.7	14.95	32.84
Kelantan	342	626,952	55.2	44.89	64.99	161	327,861	28.8	23.10	35.36	102	181,996	16.0	9.08	26.68
Melaka	320	387,720	53.6	47.26	59.80	224	278,866	38.5	31.79	45.77	52	56,909	7.9	4.68	12.92
Negeri Sembilan	302	426,581	52.0	45.68	58.25	256	317,623	38.7	32.55	45.27	60	76,129	9.3	5.48	15.29
Pahang	246	472,976	47.1	36.70	57.71	183	339,318	33.8	27.66	40.48	116	192,434	19.2	13.10	27.13
Pulau Pinang	284	678,317	53.4	39.18	67.01	205	494,838	38.9	27.29	51.96	55	98,202	7.7	5.27	11.19
Perak	345	917,615	58.4	48.23	67.87	170	489,806	31.2	22.10	41.95	68	164,303	10.5	7.10	15.14
Perlis	303	111,504	56.6	44.95	67.65	171	64,381	32.7	23.61	43.33	63	20,950	10.6	7.24	15.39
Selangor	595	2,369,037	44.8	39.37	50.40	447	1,662,706	31.5	27.80	35.36	331	1,253,974	23.7	19.43	28.62
Terengganu	249	356,931	47.0	34.92	59.44	144	222,992	29.4	20.45	40.20	133	179,533	23.6	12.35	40.48
Sabah	333	994,944	42.3	37.08	47.69	285	913,450	38.8	33.15	44.83	144	443,933	18.9	15.33	23.01
Sarawak	439	1,018,920	56.3	50.07	62.39	178	441,330	24.4	21.01	28.14	147	348,616	19.3	14.78	24.74
WP Kuala Lumpur	271	721,825	46.4	36.45	56.74	222	533,132	34.3	28.06	41.15	123	299,063	19.2	12.24	28.94
WP Labuan	316	31,636	48.9	42.72	55.08	342	27,861	43.1	37.26	49.04	66	5,220	8.1	5.75	11.21
WP Putrajaya	239	34,156	50.5	42.26	58.75	126	17,439	25.8	21.85	30.17	119	16,016	23.7	17.43	31.34
Location															
Urban	4,156	8,907,951	50.1	47.41	52.79	2,755	5,795,514	32.6	30.56	34.69	1,370	3,077,059	17.3	15.36	19.44
Rural	1,285	2,524,906	50.4	45.65	55.22	832	1,603,849	32.0	28.11	36.24	443	877,199	17.5	14.39	21.17
Sex															
Male	2,497	5,979,739	50.6	47.68	53.51	1,660	3,835,100	32.4	30.13	34.86	832	2,003,812	17.0	14.96	19.16
Female	2,944	5,453,118	49.7	47.17	52.27	1,927	3,564,263	32.5	30.49	34.58	981	1,950,446	17.8	15.92	19.81
Age Group (Years)															
18 - 19	133	402,890	42.0	34.46	49.86	131	380,187	39.6	32.53	47.13	66	177,045	18.4	13.28	25.02
20 - 29	801	2,285,660	45.0	41.17	48.92	640	1,715,721	33.8	30.54	37.20	338	1,076,095	21.2	18.32	24.39
30 - 39	1,062	3,088,276	52.7	49.17	56.19	682	1,891,630	32.3	29.39	35.30	310	881,345	15.0	12.80	17.58
40 - 49	1,031	1,923,114	53.6	50.13	57.05	610	1,139,639	31.8	28.73	34.97	262	524,459	14.6	12.08	17.59
50 - 59	1,018	2,121,067	57.1	53.25	60.84	546	1,078,612	29.0	26.07	32.18	241	515,946	13.9	11.60	16.54
60 and above	1,396	1,611,851	45.0	41.52	48.45	978	1,193,575	33.3	30.47	36.25	596	779,369	21.7	19.14	24.58
Ethnicity															
Malay ^a	3,254	6,120,885	50.9	48.10	53.62	1,982	3,884,420	32.3	30.31	34.31	1,073	2,028,611	16.9	14.79	19.15
Chinese	800	2,422,771	49.5	44.16	54.80	579	1,524,088	31.1	27.24	35.29	309	950,510	19.4	15.66	23.80
Indian	346	637,376	48.0	41.49	54.64	234	432,409	32.6	27.46	38.16	120	257,292	19.4	14.69	25.14
Bumiputera Sabah	447	647,514	44.3	39.12	49.65	448	525,058	35.9	30.43	41.85	148	288,286	19.7	15.96	24.15
Bumiputera Sarawak	217	474,587	51.2	42.65	59.64	113	256,546	27.7	23.54	32.21	82	196,133	21.2	14.28	30.16
Others	377	1,129,724	52.8	44.64	60.79	231	776,842	36.3	29.13	44.14	81	233,426	10.9	7.85	14.97

SOCIODEMOGRAPHIC CHARACTERISTICS	2 HOURS AND BELOW						MORE THAN 2 HOURS TO 4 HOURS						MORE THAN 4 HOURS					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
Education Level																		
No formal education	517	935,365	50.4	44.77	56.00	329	537,368	28.9	24.24	34.16	242	383,549	20.7	17.06	24.80			
Primary education	695	1,225,749	49.3	45.11	53.59	477	826,613	33.3	29.17	37.65	259	431,704	17.4	14.89	20.19			
Secondary education	3,534	7,568,228	50.6	48.04	53.08	2,345	5,009,652	33.5	31.45	35.55	1,035	2,389,759	16.0	14.16	17.96			
Tertiary education	675	1,647,731	48.5	43.82	53.28	427	1,016,965	30.0	26.29	33.89	270	730,318	21.5	17.66	25.93			
Marital Status																		
Never married	1,000	2,869,631	44.5	40.96	48.13	784	2,135,539	33.1	30.07	36.34	461	1,441,177	22.4	19.52	25.47			
Married/ Living with partner	3,848	7,720,632	53.7	51.16	56.22	2,344	4,589,572	31.9	29.94	33.97	1,049	2,066,499	14.4	12.79	16.11			
Separated/ Divorced/ Widowed	590	834,986	43.0	38.53	47.53	453	661,447	34.0	29.49	38.91	303	446,582	23.0	19.39	27.02			
Occupation																		
Government employee	504	822,662	49.9	45.09	54.63	296	506,361	30.7	26.68	35.01	193	321,014	19.5	15.55	24.06			
Private employee	1,739	4,593,603	54.2	50.78	57.53	1,036	2,633,421	31.1	28.21	34.05	414	1,252,935	14.8	12.68	17.15			
Self employed	901	2,066,282	56.1	52.05	60.05	537	1,144,540	31.1	27.82	34.52	204	473,155	12.8	10.32	15.88			
Unpaid worker/ Homemaker/ Caregiver	1,056	1,907,768	50.4	47.01	53.83	695	1,328,885	35.1	32.19	38.18	279	546,881	14.5	12.29	16.93			
Retiree	427	587,865	47.9	42.56	53.34	280	437,716	35.7	31.23	40.41	127	200,948	16.4	13.12	20.27			
Student	133	402,610	35.2	29.20	41.73	140	412,388	36.1	30.04	42.56	101	328,406	28.7	22.82	35.45			
Not working ^b	658	1,006,209	36.9	32.38	41.62	588	915,729	33.6	29.89	37.45	486	806,360	29.6	25.97	33.41			
Household Income Group																		
Less than RM 1000	761	1,296,302	47.1	42.28	51.91	498	871,753	31.7	27.73	35.86	337	586,052	21.3	17.91	25.09			
RM 1,000 – RM 1999	837	1,679,992	50.3	45.31	55.37	553	1,146,179	34.3	30.21	38.74	287	510,786	15.3	12.76	18.26			
RM 2,000 – RM 3,999	1,400	2,944,141	49.7	46.29	53.13	928	1,914,034	32.3	29.74	35.01	457	1,064,568	18.0	15.46	20.80			
RM 4,000 – RM 5,999	937	2,145,613	54.4	50.38	58.28	612	1,271,936	32.2	28.67	35.99	235	529,738	13.4	11.07	16.18			
RM 6,000 – RM 7,999	568	1,227,621	53.5	48.43	58.58	354	751,261	32.8	28.86	36.93	141	313,888	13.7	10.47	17.71			
RM 8,000 – RM 9,999	355	816,740	51.0	44.94	57.06	240	509,757	31.8	27.02	37.08	115	274,541	17.1	12.82	22.55			
RM 10,000 and above	565	1,266,104	44.9	39.43	50.43	388	881,249	31.2	26.81	36.01	241	674,686	23.9	18.95	29.69			
Household Income Quintile																		
Quintile 1	1,093	1,854,373	47.3	43.25	51.44	711	1,288,182	32.9	29.23	36.73	454	775,886	19.8	16.95	23.00			
Quintile 2	1,108	2,337,043	50.1	45.76	54.45	731	1,570,857	33.7	30.27	37.27	375	756,174	16.2	13.72	19.05			
Quintile 3	1,073	2,307,275	51.3	47.46	55.04	691	1,412,928	31.4	28.26	34.71	317	780,792	17.3	14.59	20.50			
Quintile 4	1,161	2,674,970	53.8	49.94	57.70	773	1,631,267	32.8	29.59	36.26	288	661,392	13.3	11.01	16.01			
Quintile 5	988	2,202,850	47.6	43.39	51.88	667	1,442,936	31.2	27.96	34.63	379	980,014	21.2	17.48	25.43			
Household Income Category																		
Bottom 40%	3,337	6,679,496	49.1	46.30	51.89	2,274	4,573,349	33.6	31.41	35.89	1,190	2,353,594	17.3	15.45	19.31			
Middle 40%	1,457	3,314,530	53.0	49.42	56.51	880	1,911,785	30.6	27.71	33.56	405	1,029,633	16.5	13.94	19.33			
Top 20%	629	1,382,485	49.1	43.92	54.33	419	861,036	30.6	26.91	34.54	218	571,031	20.3	16.04	25.32			

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: INSUFFICIENT SLEEP

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HIGHLIGHTS

- 37.7% or 8.6 million adults in Malaysia were not getting enough sleep.

INTRODUCTION

Adequate sleep is essential for good health outcomes and overall well-being, including mental health (1). Inadequate sleep is prevalent globally and is considered a public health epidemic. It is often unrecognised and under-reported, with high economic costs (1,2). Sleep deprivation has been linked to obesity, cardiovascular disease, type 2 diabetes, hypertension, depression, cognitive dysfunction, vehicular accidents, and workplace accidents (1-3). Moreover, socioeconomic differences in the prevalence of inadequate sleep make this a public health issue (1,2). However, there is limited information on the nationwide prevalence of insufficient sleep in Malaysia.

OBJECTIVES

General Objective

To determine the prevalence of insufficient sleep among adults aged 18 years old and above in Malaysia.

Specific Objective

To determine the prevalence of insufficient sleep among adults aged 18 years old and above in Malaysia by sociodemographic subgroups.

METHOD

This module was carried out on all respondents aged 18 years old and above. Data on short sleep duration was based on responses to the question: "On average, how many hours of sleep do you get in a 24-hour period?" This was adopted from the Behavioural Risk Factor Surveillance System (BRFSS) by the Centers for Disease Control and Prevention (CDC) (3).

DEFINITIONS

1. **Insufficient sleep** was defined as having less than 7 hours of sleep on average within a 24-hour period, based on the American Academy of Sleep Medicine, the Sleep Research Society, and the National Sleep Foundation (4,5).

FINDINGS

Out of 10,851 respondents, 37.7% (95% CI: 35.86, 39.56) had insufficient sleep, which translated to almost 8.6 million adults in Malaysia. Insufficient sleep was more common among males [37.9% (95% CI: 35.34, 40.46)], 50 - 59 years old age group [40.6% (95% CI: 37.49, 43.74)], Malay ethnic group [42.4% (95% CI: 40.13, 44.71)], those who were separated/divorced/ widowed [41.1% (95% CI: 37.69, 44.56)], retirees [43.9% (95% CI: 39.44, 48.37)], those with tertiary education [39.9% (95% CI: 36.06, 43.91)], and T20 household income category [38.8% (95% CI: 35.00, 42.67)] (**Table 4.9.1**).

The prevalence of inadequate sleep was higher in the urban areas [39.2% (95% CI: 37.09, 41.33)]

as compared to rural areas [32.4% (95% CI: 28.71, 36.25)]. There was a large variation between the states, with the highest prevalence of 53.1% (95% CI: 46.97, 59.16) in WP Putrajaya, followed by Johor [50.8% (95% CI: 44.88, 56.74)], and WP Kuala Lumpur [46.4% (95% CI: 39.23, 53.72)]; while the lowest prevalence was reported in Sabah [23.9% (95% CI: 20.11, 28.11)], Sarawak [26.9% (95% CI: 21.66, 32.89)], and WP Labuan [30.4% (95% CI: 24.33, 37.26)] (**Table 4.9.1**).

CONCLUSION

Insufficient sleep is a common issue among the general adult population in Malaysia.

RECOMMENDATION

- Increase the awareness of the adverse health effects of sleep deprivation and promote healthy sleep hygiene practices.
- Incorporate sleep-related elements in health programmes.
- Conduct further sleep-related research in Malaysia, as local data is still limited.

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Table 4.9.1: Prevalence of sleep deprivation (<7 hours) among adults aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,851)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	4,205	8,591,856	37.7	35.86	39.56
State					
Johor	520	1,397,063	50.8	44.88	56.74
Kedah	210	595,374	41.8	34.38	49.65
Kelantan	198	348,505	30.5	22.73	39.65
Melaka	279	318,832	44.0	35.54	52.86
Negeri Sembilan	271	362,925	44.2	35.92	52.90
Pahang	195	354,662	35.4	28.91	42.43
Pulau Pinang	182	465,549	36.6	29.81	44.00
Perak	185	495,224	31.6	27.35	36.18
Perlis	232	75,020	38.1	31.63	44.94
Selangor	552	2,083,401	39.4	35.12	43.85
Terengganu	181	269,008	35.3	26.14	45.69
Sabah	183	561,744	23.9	20.11	28.11
Sarawak	229	486,645	26.9	21.66	32.89
WP Kuala Lumpur	288	722,201	46.4	39.23	53.72
WP Labuan	236	19,666	30.4	24.33	37.26
WP Putrajaya	264	36,037	53.1	46.97	59.16
Location					
Urban	3,354	6,969,525	39.2	37.09	41.33
Rural	851	1,622,332	32.4	28.71	36.25
Sex					
Male	1,952	4,478,266	37.9	35.34	40.46
Female	2,253	4,113,591	37.5	35.59	39.45
Age Group (Years)					
18 – 19	98	302,700	31.5	25.06	38.80
20 – 29	602	1,749,037	34.5	31.28	37.82
30 – 39	800	2,242,253	38.2	34.84	41.76
40 – 49	815	1,453,794	40.5	37.34	43.74
50 – 59	758	1,508,835	40.6	37.49	43.74
60 and above	1,132	1,335,237	37.2	34.28	40.16
Ethnicity					
Malay ^a	2,766	5,108,268	42.4	40.13	44.71
Chinese	528	1,642,280	33.5	30.15	37.09
Indian	253	473,502	35.7	29.86	42.00
Bumiputera Sabah	309	376,102	25.7	21.42	30.61
Bumiputera Sarawak	117	256,342	27.6	21.66	34.56
Others	232	735,364	34.4	26.39	43.39
Education Level					
No formal education	354	601,517	32.3	27.14	37.98
Primary education	475	787,401	31.7	28.26	35.25
Secondary education	2,777	5,829,804	38.9	36.90	41.02
Tertiary education	589	1,355,362	39.9	36.06	43.91
Marital Status					
Never married	764	2,196,247	34.1	31.00	37.30
Married/ Living with partner	2,901	5,586,489	38.8	36.81	40.93
Separated/ Divorced/ Widowed	536	801,758	41.1	37.69	44.56
Occupation					
Government employee	464	714,980	43.4	38.79	48.10
Private employee	1,233	3,234,709	38.1	35.04	41.34
Self employed	662	1,429,973	38.8	35.14	42.62
Unpaid worker/ Homemaker/ Caregiver	748	1,372,896	36.3	33.36	39.35
Retiree	387	538,857	43.9	39.44	48.37
Student	125	406,395	35.5	29.45	42.14
Not working ^b	574	879,581	32.1	28.14	36.38

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	547	986,340	35.7	31.43	40.18
RM 1,000 – RM 1999	555	977,385	29.3	25.52	33.36
RM 2,000 – RM 3,999	1,112	2,416,409	40.8	37.74	43.88
RM 4,000 – RM 5,999	703	1,496,099	37.9	34.49	41.38
RM 6,000 – RM 7,999	445	925,405	40.4	36.06	44.87
RM 8,000 – RM 9,999	298	628,414	39.3	34.02	44.90
RM 10,000 and above	536	1,136,961	40.3	35.69	45.12
Household Income Quintile					
Quintile 1	771	1,330,454	33.9	30.27	37.67
Quintile 2	803	1,646,125	35.3	31.77	38.95
Quintile 3	838	1,814,194	40.3	36.78	43.90
Quintile 4	897	1,936,926	39.0	35.95	42.10
Quintile 5	887	1,839,315	39.8	36.16	43.58
Household Income Category					
Bottom 40%	2588	5,180,592	38.0	35.79	40.33
Middle 40%	1076	2,296,163	36.7	33.64	39.91
Top 20%	532	1,090,259	38.8	35.00	42.67

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: SMOKING AND TOBACCO USE

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HIGHLIGHTS

- The prevalence of tobacco smoking has declined, but the pace is too slow, leaving a big question whether we are able to achieve the targeted 15% or lower smoking prevalence by 2025.
- The use of electronic cigarette/ vape (e-cig/ vape) is increasing; this is a pressing public health concern.
- Sociodemographic disparities were observed. Tobacco smoking was higher among those in middle age groups (35-44 years old), those who lived in rural areas, and those from the B40 household income category; while the e-cig/ vape use was higher among younger age group (15-24 years old), those who lived in urban areas and from T20 household income category.

INTRODUCTION

The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing over 8 million people a year around the world. More than 7 million of those deaths are the result of direct tobacco use, while around 1.3 million are the result of non-smokers being exposed to second-hand smoke (1). Previous data from the national survey showed a decreasing trend for current tobacco smokers (**Table 4.10.1**) (2-4). The prevalence of current electronic cigarette/ vape (e-cig/ vape) was increasing from 2011 to 2019 (2-4). The Malaysian government

is dedicated to implementing tobacco control measures through the enforcement of the Control of Smoking Products For Public Health Act 2024 [Act 852]. This is in alignment with the guidelines of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) and the National Strategic Plan for the Control of Tobacco and Smoking Products 2021-2030 (1,5). The aim is to denormalise smoking culture in order to reduce smoking prevalence in Malaysia to less than 15% by 2025 and below 5% by 2040 (5).

OBJECTIVES

General Objective

To determine the prevalence of smoking and tobacco use by sociodemographic characteristics among adults aged 15 years old and above in Malaysia.

Specific Objectives

1. To determine the prevalence of current smokers by sociodemographic characteristics among adults aged 15 years old and above in Malaysia.
2. To determine the prevalence of current e-cig/ vape users by sociodemographic characteristics among adults aged 15 years old and above in Malaysia.

METHODS

Face-to-face interviews were conducted using adapted questionnaires from the Global Adult Tobacco Survey (6).

DEFINITIONS

1. **Current tobacco smoker (current smoker)** - Currently smoking tobacco, either daily or occasionally, or currently using at least one of any of the following tobacco products: manufactured cigarettes, hand-rolled cigarettes, traditional hand-rolled cigarettes, kretek, cigars/ cigarillos, bidis, shisha/ hookah or tobacco pipes.
2. **Current e-cig/ vape user** - Currently using e-cig/ vape either daily or occasionally.
3. **Current** is referred to a period of time within the past 30 days.

FINDINGS

A total of 11,338 respondents responded to the smoking and tobacco use module.

Current tobacco smokers

The prevalence of the current tobacco smokers was 19.0% (95% CI: 17.82, 20.21). The highest was recorded in Sarawak [28.5% (95% CI: 23.62, 33.98)]; while the lowest was in Selangor [12.5% (95%CI: 10.39, 14.93)], rural areas recorded higher prevalence [26.1% (95% CI: 23.38, 29.01)] as compared to urban locality [17.0% (95% CI: 15.70, 18.32)]. In terms of gender, prevalence in males was higher [35.7% (95% CI: 33.65, 37.86)] as compared to females [0.9% (95% CI: 0.65, 1.23)]. The highest prevalence of current tobacco smokers was also recorded among the 35 - 44 years age group [25.0% (95% CI: 22.47, 27.62)], Bumiputera Sarawak [26.8% (95% CI: 21.63, 32.77)], those with primary education [25.4% (95% CI: 22.06, 29.06)], those who were self-employed [32.5% (95% CI: 29.24, 35.96)] and those from the B40 household income category [20.3% (95% CI: 19.01, 21.72)] (**Table 4.10.2**).

Current e-cig/ vape users

The prevalence of the current e-cig/ vape users in Malaysia was 5.0% (95% CI: 4.42, 5.70). The highest prevalence was recorded in WP Putrajaya [9.7% (95% CI: 7.12, 13.02)]; while the lowest was in Pulau Pinang 3.0% (95% CI:1.49, 5.81)]; urban area recorded higher prevalence as compared to rural locality [5.5% (95% CI: 4.83, 6.35) vs. 3.2% (95% CI: 2.26, 4.48)]. In terms of gender, prevalence was higher among males [9.1% (95% CI: 7.97, 10.29)] as compared to females [0.7% (95% CI: 0.42, 1.02)]. The highest prevalence of current e-cig/ vape users was recorded among the 15 - 24 years age group [9.7% (95% CI: 7.91, 11.85)], Bumiputera Sarawak [8.7% (95% CI: 5.29, 14.07)], those with secondary education [6.3% (95% CI: 5.53, 7.26)], government and private employees [8.1% (95% CI: 5.59, 11.67) and 8.2% (95% CI: 6.92, 9.59) respectively] and those from the T20 household income category [7.8% (95% CI: 6.03, 910.15)] (**Table 4.10.3**).

CONCLUSION

The prevalence of current tobacco smoking among adults aged 15 years old and above in Malaysia in 2023 was lower than the previous household nationwide surveys in 2019. Nonetheless, the declining rate is much too inert to achieve the target of lower than 15% prevalence by 2025. Meanwhile, the prevalence of e-cig/ vape users among adults aged 15 years old and above did not show changes in 2023. This trend presents a pressing public health concern that demands immediate attention, especially regarding e-cig/ vape. Smoking was very prevalent among

males in rural areas, while e-cig/ vape use was slightly higher in urban areas. More current smokers were of lower socioeconomic backgrounds as compared to e-cig/ vape users. The majority of both current smokers and e-cig/ vape users were of productive ages. This will undoubtedly affect productivity among population in Malaysia due to the detrimental health effects and lower health quality associated with the use of tobacco products. Curbing the smoking and e-cig/ vape - using epidemic demands intensified efforts across all sectors. Enactment of the new Act 852 provides stronger jurisdiction for tobacco control activities, including robust interventions, enforcement, and health education.

RECOMMENDATION

Empower communities): Focus on community empowerment initiatives to support effective tobacco control.

Foster multi-sectoral collaboration: Engage various sectors to work together in denormalising tobacco use.

Strengthen smoking cessation services: Enhance programs like 'mQuit' to ensure accessibility for all tobacco users.

Advocate against smoking and vaping: Promote awareness of the harmful effects of smoking and vaping through family and educational channels, starting from an early age.

Collaborate with professional bodies and private companies: Work with these entities to improve quit-smoking services and provide essential support for individuals attempting to quit.

Prioritise enforcement of legislation: Ensure the immediate and widespread enforcement of laws like the Control of Smoking Product for Public Health Act 2024 to reduce smoking prevalence, including e-cigarette and vape use.

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Table 4.10.1: Trends in the prevalence of current smokers and e-cigarette among those aged 15 and above in Malaysia, 2011 – 2023

	2011 (%)	2015 (%)	2019 (%)	2023 (%)
Current smokers	23.1	22.8	21.3	19.0
E-cigarette	-	-	4.9	5.0

Table 4.10.2: Prevalence of current smokers among those aged 15 years old and above in Malaysia by sociodemographic characteristics (n=11,272)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,951	4,542,171	19.0	17.82	20.21
State					
Johor	195	596,077	20.7	16.93	25.00
Kedah	94	328,067	21.7	16.81	27.55
Kelantan	128	265,593	21.4	17.42	25.95
Melaka	103	137,544	17.8	12.32	25.13
Negeri Sembilan	94	149,355	17.1	13.26	21.89
Pahang	106	241,165	21.6	18.14	25.48
Pulau Pinang	70	196,558	15.2	10.78	21.02
Perak	114	351,414	21.5	17.93	25.53
Perlis	117	54,466	26.4	20.40	33.36
Selangor	159	685,594	12.5	10.39	14.93
Terengganu	88	146,846	17.9	14.67	21.75
Sabah	163	611,774	24.9	20.63	29.73
Sarawak	208	539,752	28.5	23.62	33.98
WP Kuala Lumpur	76	211,062	13.3	10.09	17.29
WP Labuan	164	16,636	24.6	21.75	27.69
WP Putrajaya	72	10,268	13.9	10.88	17.63
Location					
Urban	1,351	3,161,943	17.0	15.70	18.32
Rural	600	1,380,229	26.1	23.38	29.01
Sex					
Male	1,895	4,439,050	35.7	33.65	37.86
Female	56	103,121	0.9	0.65	1.23
Age Group (Years)					
15-24	196	556,878	12.0	10.11	14.29
25-34	367	1,138,576	21.0	18.45	23.84
35-44	489	1,241,276	25.0	22.47	27.62
45-54	365	822,311	24.0	21.51	26.60
55-64	337	558,005	17.3	14.97	20.00
65-74	162	187,130	11.3	9.30	13.57
75 and above	35	37,996	6.4	4.31	9.39
Ethnicity					
Malay ^a	1,183	2,506,170	19.6	18.24	20.98
Chinese	193	637,115	12.6	10.12	15.57
Indian	85	199,798	14.5	11.50	18.03
Bumiputera Sabah	228	360,496	23.6	19.78	27.88
Bumiputera Sarawak	106	260,922	26.8	21.63	32.77
Others	156	577,671	26.5	21.23	32.59
Education Level					
No formal education	176	380,122	20.4	16.56	24.88
Primary education	317	722,374	25.4	22.06	29.06
Secondary education	1,363	3,221,835	20.4	19.07	21.89
Tertiary education	88	205,152	6.1	4.84	7.60
Marital Status					
Never married	443	1,299,103	17.1	14.84	19.54
Married/ Living with partner	1,377	3,005,838	21.0	19.65	22.36
Separated/ Divorced/ Widowed	130	235,918	12.1	9.80	14.82

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Occupation					
Government employee	170	287,060	17.4	14.35	20.96
Private employee	869	2,319,793	27.4	25.09	29.78
Self employed	499	1,201,931	32.5	29.24	35.96
Unpaid worker/ Homemaker/ Caregiver	35	87,787	2.3	1.48	3.65
Retiree	142	203,434	16.6	13.57	20.17
Student	17	57,037	2.6	1.54	4.30
Not working ^b	213	372,587	13.3	10.96	15.98
Household Income Group					
Less than RM 1000	188	359,778	12.3	10.24	14.78
RM 1,000 – RM 1999	356	821,940	23.3	20.56	26.21
RM 2,000 – RM 3,999	618	1,480,710	23.6	21.54	25.81
RM 4,000 – RM 5,999	349	908,768	22.2	19.31	25.43
RM 6,000 – RM 7,999	207	433,655	18.1	15.39	21.26
RM 8,000 – RM 9,999	89	197,504	11.9	9.21	15.15
RM 10,000 and above	143	332,424	11.3	8.95	14.13
Household Income Quintile					
Quintile 1	311	616,817	14.9	12.87	17.12
Quintile 2	499	1,174,705	23.6	21.32	26.04
Quintile 3	451	1,123,427	23.9	21.51	26.56
Quintile 4	420	1,034,493	20.0	17.58	22.67
Quintile 5	269	585,338	12.1	10.28	14.27
Household Income Category					
Bottom 40%	1,283	2,916,985	20.3	19.01	21.72
Middle 40%	489	1,204,908	18.5	16.31	20.99
Top 20%	178	412,887	13.9	11.58	16.66

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Note:

Definition: Currently smoking tobacco daily or less than daily, or currently smoking at least one of any of the following tobacco products: manufactured cigarette, hand-rolled cigarette, traditional hand-rolled leave cigarette, kretek, cigar/ cigarillo, bidi, shisha/ hookah or tobacco pipe.

Table 4.10.3: Prevalence of current e-cig/ vape users among those aged 15 years old and above in Malaysia by sociodemographic characteristics (n=11,264)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	466	1,201,768	5.0	4.42	5.70
State					
Johor	45	156,773	5.4	3.99	7.36
Kedah	13	51,704	3.4	1.80	6.40
Kelantan	3	-	-	-	-
Melaka	23	33,790	4.4	2.74	6.96
Negeri Sembilan	29	52,939	6.1	3.74	9.79
Pahang	29	74,244	6.6	4.88	8.98
Pulau Pinang	13	38,271	3.0	1.49	5.81
Perak	17	69,788	4.3	2.25	7.98
Perlis	15	-	-	-	-
Selangor	75	322,519	5.9	4.48	7.67
Terengganu	15	28,131	3.4	1.86	6.27
Sabah	25	121,158	4.9	2.97	7.99
Sarawak	48	137,552	7.3	4.87	10.73
WP Kuala Lumpur	28	86,076	5.4	3.43	8.42
WP Labuan	39	4,294	6.4	4.21	9.47
WP Putrajaya	49	7,131	9.7	7.12	13.02
Location					
Urban	395	1,033,401	5.5	4.83	6.35
Rural	71	168,368	3.2	2.26	4.48

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Sex					
Male	436	1,126,165	9.1	7.97	10.29
Female	30	75,604	0.7	0.42	1.02
Age Group (Years)					
15-24	146	448,875	9.7	7.91	11.85
25-34	164	448,482	8.3	6.82	9.99
35-44	104	203,942	4.1	3.18	5.27
45-54	33	66,348	1.9	1.27	2.94
55-64	15	27,213	0.8	0.45	1.58
65-74	3	-	-	-	-
75 and above	1	-	-	-	-
Ethnicity					
Malay ^a	333	813,314	6.4	5.56	7.27
Chinese	26	115,679	2.3	1.51	3.44
Indian	17	39,304	2.9	1.55	5.20
Bumiputera Sabah	47	73,792	4.8	2.94	7.84
Bumiputera Sarawak	28	84,844	8.7	5.29	14.07
Others	15	-	-	-	-
Education Level					
No formal education	5	-	-	-	-
Primary education	25	66,384	2.3	1.38	3.94
Secondary education	389	997,741	6.3	5.53	7.26
Tertiary education	45	122,996	3.6	2.62	5.05
Marital Status					
Never married	221	633,834	8.3	6.88	10.02
Married/ Living with partner	229	529,110	3.7	3.12	4.37
Separated/ Divorced/ Widowed	16	38,824	2.0	1.07	3.67
Occupation					
Government employee	68	133,894	8.1	5.59	11.67
Private employee	260	690,252	8.2	6.92	9.59
Self employed	65	172,867	4.7	3.57	6.08
Unpaid worker/ Homemaker/ Caregiver	5	-	-	-	-
Retiree	8	-	-	-	-
Student	31	114,926	5.2	3.44	7.81
Not working ^b	26	58,848	2.1	1.25	3.50
Household Income Group					
Less than RM 1000	18	57,551	2.0	1.01	3.84
RM 1,000 – RM 1999	43	105,823	3.0	1.97	4.56
RM 2,000 – RM 3,999	114	281,232	4.5	3.55	5.65
RM 4,000 – RM 5,999	98	280,335	6.8	5.30	8.78
RM 6,000 – RM 7,999	64	135,911	5.7	4.17	7.74
RM 8,000 – RM 9,999	44	118,169	7.1	4.65	10.75
RM 10,000 and above	85	222,749	7.5	5.81	9.72
Household Income Quintile					
Quintile 1	27	83,547	2.0	1.12	3.59
Quintile 2	71	173,348	3.5	2.60	4.68
Quintile 3	105	265,242	5.6	4.40	7.19
Quintile 4	121	318,581	6.2	4.91	7.71
Quintile 5	142	361,050	7.5	6.03	9.24
Household Income Category					
Bottom 40%	227	572,449	4.0	3.33	4.78
Middle 40%	156	396,293	6.1	4.95	7.47
Top 20%	83	233,026	7.8	6.03	10.15

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Note:

Definition: Currently using e-cig/ vape either daily or less daily

NON-COMMUNICABLE DISEASES: HEALTH SCREENING

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HIGHLIGHTS

- 57.2% of adults in Malaysia had undergone health screening.
- The top three reasons for not going for a health screening were “feeling healthy,” “no symptoms,” and “time constraint.”
- 12.8% of females aged 40 years old and above underwent mammogram examination.
- 34.9% of females aged 20 years old and above underwent pap smear examination.
- 6.8% of adults aged 50 years old and above had undergone a faecal occult blood test.

INTRODUCTION

Health screening is defined as using a test or a series of tests to detect preclinical disease in apparently healthy populations to facilitate prevention and timely intervention (1). It is an essential component of health promotion programs. Prevention and earlier recognition of disease and treatment can greatly improve health outcomes (2).

This screening module in NHMS 2023 includes cardiovascular disease risk screening (diabetes, hypertension, and hypercholesterolaemia) and

screening for breast, cervical, and colorectal cancer. According to the Malaysia National Cancer Registry Report 2012-2016, these were the most common cancers in Malaysia (3). Early detection of these cancers allows for less invasive treatments, reduces the number of incidences, and lowers morbidity, mortality and treatment costs (4).

In spite of all the benefits, the health screening uptake in our population was still relatively low as reported in NHMS 2019 (4). Information on this can be used to evaluate the effectiveness of current programs, future planning of health policies and resource allocation. Towards achieving the *Sustainable Development Goals (SDG) 3: Good Health and Well-being* is to promote well-being and ensure healthy lives for all at all ages. This module focused on investigating the medical check-up or health screening uptake by sociodemographic characteristics in Malaysia.

OBJECTIVES

General Objective

To determine the prevalence of health screening uptake in Malaysia.

Specific Objectives

1. To determine the prevalence of health screening/ medical check-ups (blood pressure, blood cholesterol or diabetes screening) among adults aged ≥ 18 years old in Malaysia.
2. To determine the prevalence of breast self-examination practice among female adults aged ≥ 18 years old in Malaysia.
3. To determine the prevalence of mammogram screening examinations among female adults aged ≥ 40 years old in Malaysia.
4. To determine the prevalence of pap smear practice among female adults aged ≥ 20 years old in Malaysia.
5. To determine the level of awareness about the availability of self-sampling tests as a cervical cancer screening tool among female adults aged ≥ 20 years old in Malaysia.
6. To determine the interest level in using the self-sampling test as a cervical cancer screening

tool among female adults aged ≥ 20 years old in Malaysia.

- To determine the prevalence of faecal occult blood tests among adults aged ≥ 50 years old in Malaysia.

METHODS

The target population consisted of respondents aged 18 years old and above in Malaysia. Data was obtained through self-administered questionnaires. For validation purposes, the face validity process was conducted in three stages among the experts, researchers, stakeholders, and the technical team to ensure each item in the questionnaire was a valid measure of the domain being assessed. The questionnaire contained 15 questions covering topics such as cardiovascular health screening (diabetes, hypertension, and hypercholesterolaemia) and cancer screenings (mammogram, pap smear and faecal occult blood test).

DEFINITIONS

- Health screening** is defined as a health screening examination or medical check-up for diabetes, hypertension or hypercholesterolaemia in the past 12 months.
- Awareness of self-sampling tests for cervical cancer screening** is defined as having prior knowledge of the availability of the Human Papillomavirus (HPV) self-sampling test in Malaysia as a method for cervical cancer screening.

FINDINGS

Health screenings/ medical check-up

In total, 10,828 adults responded to this submodule. The prevalence of health screening within the past 12 months was 57.2% (95% CI: 55.24, 59.08%) (**Table 4.11.2**), which was higher as compared to NHMS 2019 (49.0%). The prevalence was higher among older age groups, with 80.9% (95% CI: 78.33%, 83.16%) among adults aged 60 years and above. Females [60.8% (95% CI: 58.69, 62.93)] also reported having a higher prevalence compared to males [53.8% (95% CI: 51.26, 56.26)]. Those who were separated/widowed/ divorced [70.2% (95% CI: 66.34, 73.87)] had a higher uptake of medical check-ups, as well as among retirees [82.9% (95% CI: 78.75, 86.31)]. Among those who did not undergo screening, the three main reasons were: “feeling healthy” (89.8%), “had no symptoms” (83.8%), and “due to time constraints” (39.4%) (**Table 4.11.4**). Similar top reasons were reported between the genders.

Breast cancer

Breast self-examination

Overall, there were 5,797 females aged 18 years old and above who responded to this submodule. The prevalence of breast self-examination practice was 53.9% (95% CI: 51.73%, 56.10%) (**Table 4.11.5**); which was higher as compared to NHMS 2019 (49.0 %). Married respondents exhibited a higher prevalence of practicing breast self-examination [61.0% (95% CI: 58.47%, 63.39%)]. Retirees also showed a higher prevalence [72.8% (95%CI: 65.40%, 79.05%)], compared to other occupation categories. Conversely, respondents with no formal education showed the lowest prevalence [28.8% (95%CI: 23.69%, 34.49%)] compared to other education levels.

Mammogram

A total of 3,637 females aged 40 years old and above responded to this submodule. The prevalence of women who had done mammogram screening in the past three years was 12.8% (95%CI: 11.00%, 14.82%) (**Table 4.11.6**), marking a decrease from NHMS 2019 (21.0%). There was a higher prevalence among those aged between 50 and 59 years old, of Chinese ethnicity, with tertiary education, married/ living with partner, and private employees, as compared to other categories in their respective groups. Among all states, Kedah and Perlis showed the lowest prevalence at 7.3% (Perlis: 95% CI: 3.81, 13.48; Kedah: 95%CI: 4.30, 12.09). The prevalence of women who had ever had a mammogram screening was 28.8% (95%CI: 26.35, 31.41), also lower as compared to NHMS 2019 (25.0%). Most mammogram screenings were conducted in public health facilities, accounting for [62.9% (95%CI: 53.86, 71.10)]. (**Table 4.11.7**).

Cervical cancer

Pap smear examination

The total number of respondents was 5,643. The prevalence of pap smear examination in the last three years among women aged 20 years old and above was 34.9% (95% CI: 32.93, 37.00) (Table 12.7); indicating a slight decrease as compared to NHMS 2019 (36.0%). The prevalence of ever-done pap smear examination among women was 26% in NHMS II (1996) and 43.7% in NHMS III (2006) (5). Only 12.8% of women had a pap smear examination in the past 12 months, according to the NHMS 2011 survey. Pahang recorded the highest prevalence of pap smear examination at 54.8% (95% CI: 47.79, 61.63). The prevalence was highest among women aged 40 to 49 years old, Bumiputera Sarawak, married women, those with at least secondary education, retirees, and in the T20 household income category, as compared to the other categories in their respective group (**Table 4.11.8**).

Majority of the women were informed of their pap smear results [87.8% (95% CI: 85.03, 90.05)]. In addition, majority of the cervical screening was performed by a health personnel [95.3% (95% CI: 9.91,96.97)] (**Table 4.11.9**).

The prevalence of pap smear examination in the last three years among women aged 30 and 65 years old was [(43.2% (95% CI: 40.70, 45.64)]. The prevalence was highest among women aged 40 to 49 years, Bumiputera Sarawak, married women, and in the T20 household income category (**Table 4.11.10**).

Awareness of self-sampling for cervical cancer screening

In Malaysia, 18.6% (95% CI: 16.84, 20.45) of respondents were aware that the Human Pappilomavirus (HPV) self-sampling test is available as a cervical cancer screening method (**Table 4.11.8**). This represents a decline from 24.7% in NHMS 2019. Women in WP Putrajaya had the highest awareness level at 42.3% (95% CI: 36.53, 48.28). The awareness was also highest among women in the age group of 30 to 39 years old, Bumiputera Sabah ethnicity, married/ living with partner, those with tertiary education, government employees, and in the T20 household income category, as compared to the other categories in their respective group.

Interest in using self-sampling screening for cervical cancer (HPV screening)

Interest in using the HPV self-sampling test as a cervical cancer screening tool was observed among 36.0% (95% CI: 33.53, 38.57) of women aged 20 years old and above, which showed a decrease as compared to NHMS 2019 (41.7%). Women in WP Putrajaya demonstrated the highest interest level at 68.5% (95% CI: 62.50, 74.02). The interest was highest among women aged 30 to 39 years old, Indian ethnicity, married/ living with a partner, those with tertiary education, government employees, and in the M40 household income category, as compared to the other variables in their respective categories.

Faecal occult blood test for colorectal cancer screening

A total of 4,765 respondents aged 50 years old and above responded to this submodule. The prevalence of colorectal cancer screening using faecal occult blood tests (FOBT) was 6.8% (95% CI: 5.76, 8.06) (**Table 4.11.11**), which was lower than the prevalence in NHMS 2019 measured for the past 12 months (10.8%). The highest prevalence was observed among adults aged 60 years old and above and retirees. Most FOBT were conducted in public health facilities, accounting for 77.5% (95%CI: 69.46, 83.91).

CONCLUSION

Health screening or periodic medical check-up is still relatively low in Malaysia. Although the prevalence of health screening/ medical check-up had increased in NHMS 2023 as compared to NHMS 2019; the prevalence of other cancer screening were lower as compared to NHMS 2019. This could be due to the COVID-19 pandemic that saw services at the hospital more geared towards acute case management rather than preventive services. Thus, we hope to see an increase in all screening activities in the next NHMS NCD surveys in the upcoming years.

A healthy lifestyle combined with routine health screening check-ups can be an effective combination to prevent chronic diseases such as diabetes, hypertension, etc. Continuous efforts are needed to make sure that health screening is continuously encouraged, especially among younger adults, who are increasingly at risk of getting chronic disease, and cancer screening for those who are at high risk.

RECOMMENDATIONS

- **General health screening:**
 - a. The National Health Screening Initiative (NHSI), introduced in July 2022, has increased the number of individuals screened for diabetes, hypertension and hypercholesterolaemia. NHSI should be continued and strengthened.
 - b. Advocacy should focus on reducing the recommended age for health screening to 18 years.
 - c. More cost-benefit analyses should be conducted to enhance our national screening programs.
- **Cancer screening**
 - a. **Enhance public health literacy on cancer prevention.**
 - Conduct widespread campaigns to increase public awareness about the importance of cancer screening.
 - Leverage media channels, social platforms, and community events to disseminate information about the benefits of early detection through screening.
 - b. **Development of a National Cancer Screening Registry.**
 - This is fundamental in monitoring and evaluating the program as well as enhancing the program's components.
 - This will enhance the current centralised data compilation.
 - Data can represent the national cancer screening coverage of adults in Malaysia.

c. Enhancing access to cancer screening.

- Building alliances and collaboration with key stakeholders are vital strategies for improving access to cancer screening services.
- This will also help to manage the long waiting times at primary care facilities.
- This collaboration aims to reach the marginalized population and enable the sharing of expertise, knowledge, and technology.

d. Ensure coordinated and enhanced service delivery.

- Building strong partnerships with the other healthcare providers involved in cancer screening.
- It is essential to map the existing screening, diagnosis, and precancer and cancer treatment services at all health system levels. This strategy will reduce delays in diagnosis and treatment and mitigate the risk of patients being lost to follow-up due to long waiting times and multiple facility visits.

3. Transformation to Primary HPV Testing nationwide, replacing cytology screening.

- A paradigm shift in cervical cancer screening has added the advantage of affording an option for self-collection of the screening sample.
- As self-sampling does not require a speculum examination for the primary screen, more women can be screened at primary care facilities and through community health campaigns.
- This modality can also eliminate the fear and embarrassment of a pap smear examination.

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Table 4.11.1: Prevalence of health screening, mammogram, pap smear and faecal occult blood among adults in Malaysia, 2019-2023

	2019 (%)	2023 (%)
Health screening* (past 1 year), 18 years and above	49.0	57.2
Mammogram (past 3 years), 40 years and above	21.0	12.8
Pap smear (past 3 years), 20 years and above	36.6	34.9
Faecal occult blood (past 2 years), 50 years and above	10.8	6.8

*In 2023, the health screening is defined as NCD (diabetes, hypertension, high cholesterol) health screening

Table 4.11.2: Prevalence of medical check-up/ health screenings in the past 12 months among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,828)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	6,815	12,983,733	57.2	55.24	59.08
State					
Johor	549	1,307,269	47.5	40.94	54.17
Kedah	395	961,893	67.8	59.75	74.83
Kelantan	384	613,990	53.8	44.86	62.49
Melaka	374	416,990	57.6	45.91	68.44
Negeri Sembilan	391	455,920	55.6	50.71	60.34
Pahang	340	536,870	53.4	44.53	62.13
Pulau Pinang	407	877,191	69.0	59.34	77.24
Perak	392	969,471	61.9	57.39	66.30
Perlis	397	129,417	65.7	56.93	73.45
Selangor	847	3,139,751	59.7	55.78	63.52
Terengganu	326	413,236	54.2	46.47	61.78
Sabah	444	1,234,512	52.6	46.15	58.87
Sarawak	446	960,952	53.2	47.60	58.76
WP Kuala Lumpur	371	883,591	58.6	50.30	66.49
WP Labuan	446	40,900	63.3	56.58	69.47
WP Putrajaya	306	41,781	61.6	55.85	67.01
Location					
Urban	5,252	10,321,389	58.3	56.03	60.53
Rural	1,563	2,662,344	53.2	49.71	56.66
Sex					
Male	3,004	6,328,715	53.8	51.26	56.26
Female	3,811	6,655,017	60.8	58.69	62.93
Age Group (Years)					
18 - 19	82	230,819	24.0	18.57	30.52
20 - 29	681	1,884,679	37.5	34.08	40.99
30 - 39	1,148	3,179,478	54.3	50.98	57.63
40 - 49	1,197	2,159,971	60.6	57.38	63.75
50 - 59	1,290	2,626,176	70.7	67.60	73.62
60 and above	2,417	2,902,610	80.9	78.33	83.16
Ethnicity					
Malay ^a	3,987	6,882,090	57.2	54.88	59.50
Chinese	1,122	2,976,778	61.2	57.07	65.16
Indian	498	875,115	65.9	60.14	71.31
Bumiputera Sabah	620	797,482	54.7	48.11	61.15
Bumiputera Sarawak	260	533,394	57.7	51.32	63.87
Others	328	918,874	43.6	35.76	51.78
Education Level					
No formal education	728	1,114,659	60.3	54.42	65.94
Primary education	982	1,474,969	59.9	55.40	64.25
Secondary education	4,162	8,116,435	54.3	52.23	56.37
Tertiary education	918	2,217,402	65.7	61.76	69.52
Marital Status					
Never married	880	2,411,195	37.7	34.64	40.91
Married/ Living with partner	4,935	9,191,467	64.0	61.87	66.15
Separated/ Divorced/ Widowed	995	1,369,246	70.2	66.34	73.87
Occupation					
Government employee	698	1,080,202	65.5	60.59	70.02
Private employee	1,787	4,545,093	54.0	50.88	57.04
Self employed	938	1,906,511	51.9	48.21	55.60
Unpaid worker/ Homemaker/ Caregiver	1,319	2,292,590	60.8	57.43	64.03
Retiree	705	1,015,043	82.9	78.75	86.31
Student	113	365,856	32.0	25.86	38.83
Not working ^b	1,221	1,713,265	62.6	58.82	66.26

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	1,112	1,730,152	62.7	58.48	66.76
RM 1,000 – RM 1999	1,041	1,772,975	53.5	49.01	57.85
RM 2,000 – RM 3,999	1,670	3,260,629	55.3	52.53	58.06
RM 4,000 – RM 5,999	1,126	2,220,563	56.6	52.38	60.64
RM 6,000 – RM 7,999	624	1,249,114	54.7	49.73	59.57
RM 8,000 – RM 9,999	443	919,721	57.4	51.59	62.96
RM 10,000 and above	785	1,785,583	63.3	58.24	68.10
Household Income Quintile					
Quintile 1	1,560	2,370,727	60.4	56.90	63.86
Quintile 2	1,313	2,498,438	53.9	50.36	57.34
Quintile 3	1,273	2,496,348	55.8	52.56	59.05
Quintile 4	1,354	2,765,480	55.9	52.03	59.73
Quintile 5	1,301	2,807,743	60.7	56.71	64.54
Household Income Category					
Bottom 40%	4,285	7,680,427	56.7	54.52	58.91
Middle 40%	1,682	3,515,244	56.3	52.95	59.51
Top 20%	834	1,743,066	61.9	57.29	66.30

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.11.3: Prevalence of medical check-up/ health screenings in the past 12 months among adults by specific age groups in Malaysia (n=10,828)

AGE GROUP (YEARS)	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
18-19	82	729,302	24.0	18.57	30.52
20-59	4,316	8,310,590	54.2	52.11	56.35
60 and above	2,417	687,003	80.9	78.33	83.16

Table 4.11.4: Proportion of reasons for not going for medical check-up/ health screenings in the past 12 months among those aged 18 years old and above in Malaysia (n=4,013)

REASONS	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Feeling healthy	3,572	8,731,963	89.8	87.86	91.41
No symptoms	3,343	8,150,690	83.8	81.60	85.78
Time constraint	1,466	3,835,323	39.4	36.29	42.66
No family history of chronic disease (hypertension, hypercholesterolaemia, or diabetes disease.)	1,470	3,660,345	37.6	34.57	40.79
I am aware of my risk factors	1,055	2,282,795	23.5	21.02	26.11

Table 4.11.5: Prevalence of breast self-examination in the past 12 months among females aged 18 years old and above in Malaysia by sociodemographic characteristics (n=5,797)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	3,029	5,850,163	53.9	51.73	56.10
State					
Johor	250	577,651	45.8	40.42	51.24
Kedah	142	363,190	52.1	43.50	60.60
Kelantan	159	265,389	47.1	37.54	56.85
Melaka	151	170,227	49.8	41.93	57.62
Negeri Sembilan	133	171,755	43.1	34.45	52.27
Pahang	168	278,562	57.1	49.48	64.38
Pulau Pinang	172	380,942	61.7	48.78	73.08
Perak	143	353,443	42.9	36.72	49.40
Perlis	164	51,639	52.1	43.82	60.22
Selangor	454	1,587,249	65.4	60.36	70.10
Terengganu	137	173,846	46.6	38.25	55.08
Sabah	248	668,052	60.1	50.94	68.64
Sarawak	147	316,544	35.6	29.59	42.08
WP Kuala Lumpur	191	453,345	65.7	57.99	72.59
WP Labuan	226	18,443	57.0	47.97	65.58
WP Putrajaya	144	19,885	57.3	53.07	61.43
Location					
Urban	2,370	4,617,069	55.0	52.49	57.59
Rural	659	1,233,094	50.1	45.89	54.27
Age Group (Years)					
18 - 19	41	111,684	24.7	17.17	34.13
20 - 29	412	1,056,697	45.1	40.91	49.35
30 - 39	667	1,714,677	63.3	59.30	67.13
40 - 49	646	1,080,846	64.6	60.80	68.22
50 - 59	604	1,084,815	58.7	54.17	63.12
60 and above	659	801,444	43.9	39.88	48.08
Ethnicity					
Malay ^a	1,865	3,412,499	57.3	54.75	59.88
Chinese	405	1,182,064	49.6	43.82	55.44
Indian	206	364,727	54.5	47.52	61.32
Bumiputera Sabah	356	471,313	65.2	58.52	71.36
Bumiputera Sarawak	85	191,454	41.0	33.04	49.39
Others	112	228,106	34.8	26.10	44.58
Education Level					
No formal education	205	299,739	28.8	23.69	34.49
Primary education	283	428,583	40.5	35.67	45.58
Secondary education	2,017	3,847,152	55.7	53.24	58.21
Tertiary education	519	1,265,277	68.9	64.38	73.04
Marital Status					
Never married	380	1,001,831	39.4	35.19	43.76
Married/ Living with partner	2,205	4,193,369	61.0	58.47	63.39
Separated/ Divorced/ Widowed	441	649,096	45.7	41.99	49.42
Occupation					
Government employee	345	525,979	70.5	64.78	75.64
Private employee	638	1,587,625	56.8	52.57	60.89
Self employed	314	646,358	54.6	48.97	60.19
Unpaid worker/ Homemaker/ Caregiver	1,110	2,043,359	56.5	52.89	60.06
Retiree	183	284,116	72.8	65.40	79.05
Student	74	217,614	36.1	28.39	44.63
Not working ^b	352	521,357	35.5	31.20	40.00

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	448	766,708	44.4	40.21	48.61
RM 1,000 – RM 1999	406	658,542	44.0	39.01	49.16
RM 2,000 – RM 3,999	773	1,508,038	55.9	52.32	59.48
RM 4,000 – RM 5,999	521	982,309	55.8	50.44	61.03
RM 6,000 – RM 7,999	312	648,539	59.7	53.76	65.42
RM 8,000 – RM 9,999	207	458,346	60.3	52.66	67.39
RM 10,000 and above	353	793,229	62.7	56.66	68.33
Household Income Quintile					
Quintile 1	609	985,110	43.2	39.48	46.94
Quintile 2	562	1,044,292	50.5	45.78	55.12
Quintile 3	600	1,169,326	57.1	52.98	61.13
Quintile 4	657	1,321,254	58.5	53.90	62.88
Quintile 5	592	1,295,728	60.7	56.10	65.19
Household Income Category					
Bottom 40%	1,885	3,476,957	52.4	49.78	54.96
Middle 40%	779	1,553,996	54.6	50.55	58.51
Top 20%	356	784,758	60.1	54.06	65.88

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.11.6: Prevalence of mammogram examination in the past 3 years and ever done mammogram among females aged 40 years old and above in Malaysia by sociodemographic characteristics (n=3,637)

SOCIODEMOGRAPHIC CHARACTERISTICS	MAMMOGRAM EXAMINATION IN THE PAST 3 YEARS						EVER DONE MAMMOGRAM EXAMINATION					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL			
				LOWER	UPPER				LOWER	UPPER		
MALAYSIA	411	687,697	12.8	11.00	14.82	1,018	1,549,527	28.8	26.35	31.41		
State												
Johor	38	102,513	15.6	8.26	27.43	102	211,182	32.1	22.34	43.70		
Kedah	16	25,745	7.3	4.30	12.09	44	70,527	20.0	15.04	26.00		
Kelantan	25	30,627	11.4	7.59	16.89	50	60,388	22.6	15.28	31.99		
Melaka	22	22,622	13.8	6.95	25.50	49	44,298	27.0	19.24	36.47		
Negeri Sembilan	22	21,945	11.1	6.05	19.37	62	59,519	30.0	21.53	40.10		
Pahang	36	49,575	20.4	15.57	26.32	75	99,922	41.2	32.64	50.25		
Pulau Pinang	33	60,609	19.3	11.48	30.53	84	122,561	39.0	29.32	49.56		
Perak	23	42,156	9.2	5.80	14.37	49	84,739	18.5	12.90	25.93		
Perlis	13	3,693	7.3	3.81	13.48	62	15,225	30.0	22.07	39.40		
Selangor	57	174,146	14.3	10.84	18.67	137	407,403	33.5	28.27	39.14		
Terengganu	20	18,081	10.4	6.30	16.59	49	45,154	25.9	18.17	35.46		
Sabah	19	35,094	7.9	4.77	12.86	47	73,827	16.7	11.65	23.23		
Sarawak	23	43,077	9.5	5.38	16.13	59	112,547	24.7	18.16	32.75		
WP Kuala Lumpur	29	53,864	15.3	9.51	23.76	66	134,160	38.2	28.16	49.28		
WP Labuan	17	1,122	8.3	4.52	14.64	48	2,998	22.1	15.83	29.94		
WP Putrajaya	18	2,829	17.2	9.51	29.14	35	5,076	30.9	21.93	41.56		
Location												
Urban	326	540,901	13.0	11.27	15.04	799	1,248,889	30.1	27.51	32.85		
Rural	85	146,796	11.9	7.49	18.50	219	300,638	24.5	18.53	31.54		
Age Group (Years)												
40 - 49	128	233,686	13.8	11.19	16.90	236	425,834	25.1	21.81	28.80		
50 - 59	137	285,178	15.3	11.48	20.15	334	615,559	33.1	28.56	37.90		
60 and above	146	168,834	9.3	7.68	11.14	448	508,134	27.9	24.71	31.31		
Ethnicity												
Malay ^a	237	334,481	11.7	10.12	13.56	607	824,829	28.9	26.31	31.69		
Chinese	92	246,385	17.3	12.64	23.30	213	488,271	34.3	28.28	40.97		
Indian	37	55,222	15.6	10.17	23.20	86	112,966	31.9	24.69	40.14		
Bumiputera Sabah	25	25,195	8.4	4.90	13.91	63	48,822	16.2	10.86	23.49		
Bumiputera Sarawak	8	-	-	-	-	27	54,492	23.1	13.97	35.76		
Others	12	10,343	4.9	2.43	9.45	22	20,147	9.5	5.45	15.91		
Education Level												
No formal education	49	96,480	11.8	5.98	22.08	129	198,243	24.3	16.45	34.41		
Primary education	46	65,304	8.0	5.84	10.86	134	162,217	19.9	16.06	24.30		
Secondary education	263	423,567	13.4	11.44	15.61	633	943,685	29.8	27.11	32.69		
Tertiary education	53	102,346	17.9	12.86	24.35	122	245,381	42.9	35.92	50.18		

SOCIODEMOGRAPHIC CHARACTERISTICS	MAMMOGRAM EXAMINATION IN THE PAST 3 YEARS					EVER DONE MAMMOGRAM EXAMINATION						
	COUNT	ESTIMATED POPULATION	95% CONFIDENCE INTERVAL			COUNT	ESTIMATED POPULATION	95% CONFIDENCE INTERVAL				
			PREVALENCE (%)	LOWER	UPPER			PREVALENCE (%)	LOWER	UPPER		
Marital Status												
Never married	18	29,522	10.6	5.77	18.76	35	57,906	20.8	13.39	30.95		
Married/ Living with partner	314	553,254	14.5	12.25	17.12	745	1,171,973	30.8	27.98	33.68		
Separated/ Divorced/ Widowed	79	104,922	8.2	6.15	10.80	237	316,514	24.7	20.98	28.78		
Occupation												
Government employee	35	52,996	17.6	11.75	25.46	71	95,857	31.8	24.46	40.17		
Private employee	82	170,991	19.8	15.39	24.99	148	291,579	33.7	29.05	38.67		
Self employed	40	60,769	10.0	7.06	13.95	100	139,752	23.0	18.50	28.17		
Unpaid worker/ Homemaker/ Caregiver	140	256,114	12.1	8.98	16.21	371	594,122	28.2	24.17	32.51		
Retiree	46	69,509	17.6	12.44	24.21	123	173,354	43.8	35.20	52.81		
Not working ^a	65	75,349	7.0	5.29	9.27	197	246,587	23.0	19.40	27.02		
Household Income Group												
Less than RM 1000	78	109,929	9.2	6.95	12.18	193	266,362	22.4	18.45	26.87		
RM 1,000 – RM 1999	57	105,982	12.5	6.58	22.40	158	227,221	26.8	20.11	34.63		
RM 2,000 – RM 3,999	71	116,742	9.7	7.48	12.38	207	291,126	24.1	20.80	27.68		
RM 4,000 – RM 5,999	78	123,210	15.9	12.27	20.29	170	271,156	34.9	29.40	40.91		
RM 6,000 – RM 7,999	43	76,458	18.1	13.17	24.34	85	138,934	32.9	26.21	40.29		
RM 8,000 – RM 9,999	36	68,968	21.9	15.66	29.67	77	132,748	42.1	33.55	51.13		
RM 10,000 and above	48	86,408	14.9	10.76	20.38	126	214,406	37.1	31.61	42.90		
Household Income Quintile												
Quintile 1	108	144,639	9.4	7.36	11.97	267	350,198	22.8	19.28	26.74		
Quintile 2	56	111,241	11.1	6.03	19.60	168	255,131	25.5	19.69	32.34		
Quintile 3	66	110,650	12.0	9.29	15.48	167	241,872	26.3	22.39	30.68		
Quintile 4	91	156,829	16.5	13.01	20.74	201	335,648	35.3	29.94	41.15		
Quintile 5	90	164,338	17.5	13.80	22.04	213	359,104	38.3	33.92	42.94		
Household Income Category												
Bottom 40%	240	400,947	11.1	8.96	13.69	622	926,034	25.7	22.73	28.82		
Middle 40%	122	214,658	18.6	15.28	22.45	265	418,294	36.2	32.04	40.67		
Top 20%	49	72,092	12.5	9.09	16.86	129	197,625	34.2	29.00	39.77		
Family history of breast cancer												
No	350	568,022	11.4	9.9	13.16	891	1,333,975	26.9	24.59	29.30		
Yes	60	118,905	31.0	19.1	46.06	125	214,296	55.9	44.05	67.05		

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.11.7: Proportion of mammogram examination in the past 3 years and ever done mammogram among females aged 40 years old and above in Malaysia by examination facility (n=1,018)

CHARACTERISTICS	MAMMOGRAM EXAMINATION IN THE PAST 3 YEARS				EVER DONE MAMMOGRAM EXAMINATION			
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER
Mammogram Examination Facility								
Public Health Facility	300	432,493	62.9	53.86 71.10	761	1,035,701	67.0	61.84 71.74
Private Health Facility	104	2,49,186	36.2	27.97 45.40	238	492,369	31.8	27.06 37.05
Other facilities (includes NGO's facility such as MAKNA or NSCM)	7	-	-	- -	17	-	-	- -

Table 4.11.8: Prevalence of pap smear examination in the last 3 years, awareness and interest to use self-sampling screening (HPV Screening) for cervical cancer among females aged 20years old and above in Malaysia by sociodemographic characteristics (n=5,643)

SOCIODEMOGRAPHIC CHARACTERISTICS	PAP SMEAR EXAMINATION IN THE PAST 3 YEARS						AWARENESS ON SELF-SAMPLING SCREENING (HPV SCREENING) FOR CERVICAL CANCER						INTEREST TO USE SELF-SAMPLING SCREENING (HPV SCREENING) FOR CERVICAL CANCER					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	2,006	3,633,989	34.9	32.93	37.00	1,070	1,947,819	18.6	16.84	20.45	1,986	3,680,774	36.0	33.53	38.57			
State																		
Johor	138	362,592	29.6	22.50	37.81	39	90,863	7.4	5.00	10.83	159	411,044	34.2	26.82	42.35			
Kedah	68	157,162	23.6	17.46	31.09	32	75,531	11.0	7.40	16.09	70	181,459	27.2	18.62	37.97			
Kelantan	121	189,528	34.6	28.11	41.68	58	89,278	16.3	10.37	24.58	66	110,980	20.8	14.29	29.16			
Melaka	79	87,004	26.6	21.80	32.02	33	39,525	12.0	7.61	18.41	82	100,825	31.1	22.68	41.01			
Negeri Sembilan	86	98,414	25.9	19.45	33.69	39	41,776	11.0	6.36	18.29	82	109,175	28.7	22.47	35.88			
Pahang	151	247,729	54.8	47.79	61.63	77	123,187	27.1	17.38	39.73	142	234,644	54.5	43.06	65.54			
Pulau Pinang	129	251,589	41.5	32.67	50.87	83	184,557	30.3	20.58	42.18	113	243,628	40.6	31.49	50.41			
Perak	107	226,346	29.1	23.23	35.85	67	152,685	19.5	14.54	25.76	118	302,126	39.3	31.10	48.18			
Perlis	123	36,916	38.9	32.38	45.77	65	22,905	24.1	16.14	34.42	111	40,367	43.1	32.28	54.62			
Selangor	247	859,549	36.9	32.43	41.51	145	504,973	21.4	17.31	26.21	255	885,618	39.3	33.48	45.44			
Terengganu	99	125,019	35.0	27.08	43.94	67	77,606	21.7	13.74	32.54	62	80,349	23.9	16.33	33.64			
Sabah	159	423,374	39.9	33.34	46.78	76	222,579	20.6	15.36	26.96	120	375,016	35.1	26.17	45.18			
Sarawak	143	316,212	37.5	30.74	44.87	48	91,923	10.9	6.91	16.87	128	267,739	31.8	25.10	39.31			
WP Kuala Lumpur	95	225,449	33.8	25.30	43.51	81	210,212	31.4	24.35	39.51	118	299,251	45.7	34.94	56.78			
WP Labuan	169	14,809	47.4	38.82	56.06	52	5,811	18.6	11.98	27.61	192	15,705	50.2	39.94	60.50			
WP Putrajaya	92	12,298	36.6	30.42	43.15	108	14,405	42.3	36.53	48.28	168	22,848	68.5	62.50	74.02			
Location																		
Urban	1,518	2,746,234	34.2	31.97	36.41	853	1,593,896	19.7	17.62	21.89	1,562	2,908,010	36.7	33.90	39.64			
Rural	488	887,756	37.6	32.93	42.52	217	353,923	14.9	12.01	18.26	424	772,764	33.6	28.53	39.00			
Age Group (Years)																		
20 - 29	158	380,293	16.3	13.76	19.18	136	350,254	14.9	12.32	17.84	369	838,290	36.7	32.65	40.95			
30 - 39	462	1,123,410	41.6	37.80	45.43	270	656,545	24.1	20.60	28.02	511	1,198,857	45.2	41.00	49.45			
40 - 49	507	830,993	49.1	45.01	53.17	256	392,061	23.1	19.76	26.89	453	704,157	42.0	37.70	46.48			
50 - 59	438	803,698	43.2	38.51	48.02	196	317,812	17.0	14.11	20.35	317	557,189	30.7	26.57	35.15			
60 and above	441	495,595	27.4	24.22	30.77	212	231,147	12.5	10.32	15.16	336	382,281	21.3	17.97	25.09			
Ethnicity																		
Malay ^a	1,164	1,931,183	33.8	31.58	36.10	694	1,125,705	19.6	17.49	21.85	1,196	2,097,916	37.5	34.39	40.72			
Chinese	300	845,224	36.7	31.65	42.06	140	432,260	18.6	14.27	23.95	245	728,376	32.0	26.74	37.75			
Indian	137	225,728	35.6	28.87	43.00	79	124,721	19.7	14.68	25.82	141	242,066	40.1	33.42	47.21			
Bumiputera Sabah	240	301,108	43.6	37.49	49.86	98	166,798	23.7	18.38	29.97	235	224,936	32.6	24.59	41.69			
Bumiputera Sarawak	98	208,519	47.2	36.58	58.10	40	78,635	17.8	10.36	28.88	84	176,151	39.9	32.24	48.06			
Others	67	122,226	19.7	13.63	27.64	19	19,699	3.1	1.73	5.49	85	211,330	34.4	25.78	44.15			

SOCIODEMOGRAPHIC CHARACTERISTICS	PAP SMEAR EXAMINATION IN THE PAST 3 YEARS					AWARENESS ON SELF-SAMPLING SCREENING (HPV SCREENING) FOR CERVICAL CANCER					INTEREST TO USE SELF-SAMPLING SCREENING (HPV SCREENING) FOR CERVICAL CANCER				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER
Education Level															
No formal education	156	258,603	25.5	18.42	34.11	50	64,132	6.2	4.05	9.39	125	201,560	20.1	14.56	27.09
Primary education	231	359,855	34.7	30.07	39.61	78	112,567	10.6	8.07	13.87	161	234,669	22.8	18.76	27.48
Secondary education	1,330	2,364,340	36.3	34.09	38.66	716	1,244,655	19.0	17.06	21.20	1,278	2,323,447	36.4	33.61	39.35
Tertiary education	283	644,698	35.2	30.48	40.18	223	523,846	28.5	23.80	33.62	419	918,488	51.0	45.73	56.17
Marital Status															
Never married	44	103,841	4.9	3.19	7.33	116	290,147	13.5	10.57	17.05	288	642,825	30.8	26.62	35.35
Married/ Living with partner	1,676	3,127,397	45.7	43.27	48.08	807	1,465,565	21.3	19.18	23.49	1,452	2,689,944	40.0	37.19	42.97
Separated/ Divorced/ Widowed	286	402,752	28.5	24.72	32.70	147	192,107	13.4	10.97	16.28	246	348,005	24.6	20.84	28.88
Occupation															
Government employee	214	293,463	39.2	33.52	45.12	201	270,122	36.1	30.86	41.72	277	350,872	47.4	40.71	54.15
Private employee	389	917,907	33.8	30.01	37.85	211	539,421	19.8	16.54	23.50	468	1,094,938	41.2	36.99	45.50
Self employed	231	432,483	37.1	32.26	42.31	105	217,788	18.4	14.14	23.51	203	384,017	33.2	28.24	38.57
Unpaid worker/ Homemaker/ Caregiver	851	1,564,820	43.8	40.43	47.31	366	632,621	17.6	15.09	20.37	711	1,305,000	37.2	33.76	40.74
Retiree	115	174,366	44.2	36.29	52.40	79	97,542	24.7	18.56	31.95	108	148,688	38.6	30.29	47.54
Student	5	-	-	-	-	20	60,886	16.8	10.33	26.05	48	130,879	37.4	27.38	48.63
Not working ^b	191	224,102	16.0	13.17	19.28	87	127,429	9.0	6.73	11.84	163	251,805	18.3	14.54	22.80
Household Income Group															
Less than RM 1000	314	503,982	30.2	26.09	34.66	136	205,418	12.1	9.67	15.09	267	474,672	29.0	24.53	33.92
RM 1,000 – RM 1999	314	530,315	37.3	31.76	43.12	132	192,895	13.5	10.58	16.96	252	400,771	28.4	24.17	33.09
RM 2,000 – RM 3999	492	854,884	32.9	29.54	36.50	249	451,067	17.2	14.49	20.21	511	985,748	38.4	34.41	42.58
RM 4,000 – RM 5999	301	539,419	32.3	28.13	36.66	188	344,437	20.5	16.78	24.81	354	607,138	36.9	31.90	42.27
RM 6,000 – RM 7,999	198	365,064	34.8	29.67	40.35	116	243,674	23.1	17.76	29.50	211	380,366	37.5	31.37	43.98
RM 8,000 – RM 9,999	138	289,707	40.4	33.35	47.88	103	229,751	32.1	25.44	39.60	129	289,820	41.6	33.50	50.11
RM 10,000 and above	240	518,351	42.4	37.33	47.59	141	261,043	21.3	17.16	26.14	258	529,880	44.2	36.94	51.64
Household Income Quintile															
Quintile 1	438	677,600	30.8	27.15	34.74	198	286,518	12.8	10.43	15.70	364	622,175	28.8	24.98	32.87
Quintile 2	397	712,149	35.8	31.43	40.45	175	303,674	15.1	12.38	18.33	360	640,920	32.4	28.18	37.03
Quintile 3	367	645,635	33.1	29.22	37.18	196	356,841	18.1	14.92	21.76	398	755,859	39.5	35.23	44.03
Quintile 4	396	731,377	33.7	29.85	37.88	239	470,818	21.6	17.98	25.81	449	791,481	37.3	32.76	41.99
Quintile 5	399	834,961	40.9	36.70	45.17	257	510,435	25.0	21.35	28.99	411	857,960	43.0	37.66	48.48
Household Income Category															
Bottom 40%	1,238	2,127,603	33.3	30.76	35.93	628	1,058,227	16.4	14.54	18.38	1,224	2,183,922	34.8	32.06	37.55
Middle 40%	512	964,922	35.7	31.96	39.65	291	568,017	21.0	17.73	24.66	533	1,019,079	38.5	34.34	42.75
Top 20%	247	509,197	40.5	35.6	45.57	146	302,042	23.9	19.63	28.83	225	465,394	37.6	31.28	44.47

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.11.9: Proportion of pap smear examination in the last 3 years among females aged 20 years old and above in Malaysia by pap smear results and method used (n=2,006)

PAP SMEAR EXAMINATION	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Pap Smear Result					
Informed	1,772	3,175,599	87.8	85.03	90.05
Not informed	224	442,920	12.2	9.95	14.97
Pap smear method					
By a health personnel	1,934	3,464,762	95.3	92.91	96.97
Using a self-test kit	72	169,227	4.7	3.03	7.09

Table 4.11.10: Prevalence of pap smear examination in the last 3 years among females aged 30 – 65 Years old in Malaysia by sociodemographic characteristics (n=3,815)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,661	3,052,981	43.2	40.70	45.64
State					
Johor	111	306,871	39.2	31.34	47.71
Kedah	61	138,252	31.1	22.72	40.84
Kelantan	99	153,509	46.6	36.02	57.56
Melaka	68	73,635	34.7	28.54	41.35
Negeri Sembilan	68	84,256	32.4	23.81	42.34
Pahang	127	210,073	63.4	54.27	71.63
Pulau Pinang	102	207,984	46.3	34.94	58.04
Perak	86	187,199	38.5	30.60	47.06
Perlis	102	31,327	49.3	42.02	56.53
Selangor	210	736,493	43.1	37.67	48.77
Terengganu	77	101,880	41.6	31.85	51.98
Sabah	135	354,618	49.7	42.17	57.17
Sarawak	111	250,495	47.4	39.97	54.87
WP Kuala Lumpur	77	192,097	40.7	29.60	52.88
WP Labuan	139	12,549	60.1	48.26	70.83
WP Putrajaya	88	11,741	43.9	36.41	51.62
Location					
Urban	1,259	2,326,654	42.2	39.50	45.04
Rural	402	726,327	46.3	41.12	51.66
Age Group (Years)					
30 - 39	462	1,123,410	41.6	37.80	45.43
40 - 49	507	830,993	49.1	45.01	53.17
50 - 59	438	803,698	43.2	38.51	48.02
60 and above	254	294,879	36.0	31.21	41.13
Ethnicity					
Malay ^a	980	1,613,666	41.3	38.57	44.14
Chinese	236	729,562	46.4	40.53	52.29
Indian	109	192,198	44.1	35.06	53.46
Bumiputera Sabah	197	243,727	51.1	43.84	58.29
Bumiputera Sarawak	80	169,327	60.7	49.48	70.87
Others	59	104,501	25.8	17.20	36.90
Education Level					
No formal education	95	198,121	38.0	27.85	49.29
Primary education	167	279,188	41.2	35.27	47.34
Secondary education	1,143	2,022,940	44.1	41.26	46.97
Tertiary education	251	548,277	42.8	37.16	48.58
Marital Status					
Never married	27	58,255	8.3	4.83	13.98
Married/ Living with partner	1,425	2,688,650	49.0	46.26	51.66
Separated/ Divorced/ Widowed	209	306,076	34.8	29.89	39.97

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Occupation					
Government employee	205	266,598	44.3	38.04	50.78
Private employee	345	803,654	44.5	39.66	49.47
Self employed	207	400,355	41.7	36.32	47.30
Unpaid worker/ Homemaker/ Caregiver	719	1,321,034	46.5	42.82	50.27
Retiree	86	135,951	47.4	38.01	57.01
Not working ^b	93	116,540	21.1	16.39	26.62
Household Income Group					
Less than RM 1000	244	391,173	37.2	31.92	42.84
RM 1,000 – RM 1999	253	446,997	47.0	39.96	54.24
RM 2,000 – RM 3,999	407	716,304	40.1	35.94	44.34
RM 4,000 – RM 5,999	242	447,147	39.8	34.38	45.51
RM 6,000 – RM 7,999	167	299,923	42.7	35.62	50.00
RM 8,000 – RM 9,999	126	269,311	49.5	41.10	57.92
RM 10,000 and above	213	449,858	51.9	46.02	57.76
Household Income Quintile					
Quintile 1	322	600,411	43.5	37.76	49.32
Quintile 2	302	529,403	40.3	35.56	45.25
Quintile 3	327	606,242	41.5	36.40	46.73
Quintile 4	357	740,875	50.4	45.53	55.25
Quintile 5	592	1,295,728	60.7	56.10	65.19
Household Income Category					
Bottom 40%	1,004	1,759,748	40.6	37.60	43.76
Middle 40%	430	821,480	44.9	40.11	49.87
Top 20%	218	439,485	50.6	44.64	56.53

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.11.11: Prevalence of faecal occult-blood test in the past 2 years and ever done occult-blood test among those aged 50 years old and above in Malaysia by sociodemographic characteristics (n=4,765)

SOCIODEMOGRAPHIC CHARACTERISTICS	FAECAL OCCULT BLOOD TEST IN THE PAST 2 YEARS				EVER DONE FAECAL OCCULT BLOOD TEST			
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER
MALAYSIA	372	496,059	6.8	5.76 8.06	666	852,623	11.7	10.27 13.34
State								
Johor	23	49,392	5.3	3.23 8.54	39	75,669	8.1	5.44 11.92
Kedah	18	28,394	5.8	3.25 10.25	34	52,241	10.7	7.42 15.27
Kelantan	14	16,937	4.6	2.68 7.71	23	30,126	8.1	4.34 14.75
Melaka	19	12,889	5.7	3.20 10.00	40	26,842	11.9	7.48 18.43
Negeri Sembilan	13	9,949	3.8	2.11 6.79	33	23,627	9.0	5.87 13.71
Pahang	25	32,537	10.6	6.40 17.07	46	56,785	18.5	12.98 25.70
Pulau Pinang	43	69,160	15.7	9.86 24.13	59	88,771	20.2	13.92 28.33
Perak	33	58,238	9.4	5.63 15.20	50	90,647	14.6	9.48 21.79
Perlis	29	6,734	10.1	6.68 14.99	64	13,362	20.0	15.70 25.22
Selangor	31	90,792	5.6	3.29 9.34	52	157,280	9.7	6.67 13.85
Terengganu	21	19,959	8.4	5.52 12.68	27	24,521	10.4	7.06 14.96
Sabah	9	-	-	- -	22	38,121	6.5	3.72 11.01
Sarawak	23	50,186	7.9	4.36 13.94	45	106,582	16.8	9.99 26.85
WP Kuala Lumpur	19	31,447	7.0	4.09 11.66	33	60,382	13.4	9.30 18.93
WP Labuan	31	1,836	10.5	6.73 15.97	72	4,216	24.1	17.18 32.65
WP Putrajaya	21	2,552	25.1	16.04 37.10	27	3,450	34.0	25.61 43.48
Location								
Urban	289	389,298	7.0	5.70 8.46	518	669,728	12.0	10.38 13.74
Rural	83	106,761	6.4	4.70 8.60	148	182,895	10.9	7.81 15.08
Sex								
Male	191	256,604	7.2	5.79 8.84	313	425,101	11.9	10.09 13.92
Female	181	239,455	6.5	5.26 7.96	353	427,522	11.6	9.80 13.62
Age Group (Years)								
50 - 59	136	226,316	6.1	4.74 7.85	221	368,845	10.0	8.19 12.06
60 and above	236	269,743	7.6	6.27 9.08	445	483,778	13.5	11.66 15.68
Ethnicity								
Malay ^a	214	237,752	6.3	5.27 7.48	374	413,687	10.9	9.40 12.69
Chinese	85	193,114	9.4	6.81 12.88	150	318,130	15.5	11.93 19.94
Indian	27	30,232	6.7	4.32 10.17	46	49,027	10.8	7.42 15.53
Bumiputera Sabah	32	-	-	- -	73	33,218	8.3	4.62 14.30
Bumiputera Sarawak	13	-	-	- -	20	38,261	12.2	7.05 20.41
Others	1	-	-	- -	3	-	-	- -

SOCIODEMOGRAPHIC CHARACTERISTICS	FAECAL OCCULT BLOOD TEST IN THE PAST 2 YEARS					EVER DONE FAECAL OCCULT BLOOD TEST						
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL			
				LOWER	UPPER				LOWER	UPPER		
Education Level												
No formal education	51	72,438	6.7	4.54	9.86	103	118,594	11.0	8.08	14.84		
Primary education	61	61,303	4.6	3.22	6.50	124	135,525	10.2	7.53	13.56		
Secondary education	219	289,121	7.0	5.73	8.47	370	464,953	11.2	9.65	13.00		
Tertiary education	39	70,978	10.2	5.80	17.33	67	131,332	18.9	13.20	26.24		
Marital Status												
Never married	11	16,510	4.9	2.45	9.60	20	23,739	7.1	4.06	11.99		
Married/ Living with partner	289	387,820	7.1	5.80	8.60	498	650,665	11.9	10.12	13.87		
Separated/ Divorced/ Widowed	72	91,729	6.3	4.75	8.40	148	178,219	12.3	10.07	14.95		
Occupation												
Government employee	19	18,950	6.3	3.12	12.23	31	44,018	14.6	8.98	22.82		
Private employee	51	88,784	7.1	4.96	10.09	86	133,845	10.7	8.12	14.02		
Self employed	55	74,608	6.2	4.39	8.75	97	132,518	11.0	8.22	14.68		
Unpaid worker/ Homemaker/ Caregiver	77	100,197	6.5	4.69	9.03	128	163,951	10.7	8.09	13.99		
Retiree	85	105,397	8.8	6.60	11.76	148	182,848	15.4	12.46	18.77		
Not working ^a	84	107,004	6.1	4.62	7.98	172	190,722	10.9	8.95	13.10		
Household Income Group												
Less than RM 1000	72	82,306	5.1	3.79	6.89	133	142,169	8.8	6.88	11.30		
RM 1,000 – RM 1999	69	95,674	7.8	5.69	10.65	134	161,068	13.2	9.55	17.86		
RM 2,000 – RM 3,999	80	109,932	6.5	4.69	8.95	143	176,663	10.4	8.18	13.26		
RM 4,000 – RM 5,999	49	76,574	7.8	5.10	11.85	91	137,311	14.0	10.55	18.46		
RM 6,000 – RM 7,999	35	52,641	9.3	6.11	13.82	56	86,127	15.2	10.95	20.64		
RM 8,000 – RM 9,999	23	21,774	5.1	2.94	8.84	42	54,847	12.9	9.05	18.17		
RM 10,000 and above	44	57,158	7.8	4.91	12.27	67	94,437	12.9	9.13	18.01		
Household Income Quintile												
Quintile 1	108	125,188	5.9	4.62	7.53	196	215,681	10.2	8.10	12.72		
Quintile 2	67	95,390	6.7	4.75	9.34	129	156,545	11.0	8.58	13.94		
Quintile 3	61	90,331	7.1	4.91	10.20	109	143,895	11.3	8.51	14.95		
Quintile 4	64	102,147	8.5	5.98	12.02	118	183,146	15.3	11.86	19.50		
Quintile 5	72	83,004	6.9	4.75	9.81	114	153,355	12.7	9.83	16.19		
Household Income Category												
Bottom 40%	253	347,395	7.0	5.80	8.45	455	569,266	11.5	9.78	13.44		
Middle 40%	73	88,861	5.8	4.23	7.91	132	179,758	11.7	9.44	14.51		
Top 20%	46	59,803	8.2	5.20	12.59	79	103,599	14.1	10.20	19.27		

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.11.12: Proportion of faecal occult-blood test in the past 2 years and ever done occult-blood test among those aged 50 years old and above in Malaysia by examination facility and results (n=666)

SOCIODEMOGRAPHIC CHARACTERISTICS	FAECAL OCCULT BLOOD TEST IN THE PAST 2 YEARS				EVER DONE FAECAL OCCULT BLOOD TEST			
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL LOWER UPPER
Faecal occult blood test (FOBT) Examination Facility								
Public Health Facility	312	384,433	77.5	69.46 83.91	565	663,111	77.8	71.36 83.09
Private Health Facility	57	110,594	22.3	15.90 30.33	96	182,508	21.4	16.20 27.74
FOBT Result								
Positive	30	40,080	8.3	4.88 13.64	50	74,699	8.9	6.17 12.78
Negative	331	445,122	91.7	86.36 95.12	597	761,126	91.1	87.22 93.83
Proceeded with colonoscopy *(if FOBT positive)								
Yes	14	19,174	49.9	29.64 70.13	23	34,148	46.7	31.17 62.96
No	16	19,277	50.1	29.87 70.36	27	38,923	53.3	37.04 68.83

NON-COMMUNICABLE DISEASES: DIETARY PRACTICES: FRUITS, VEGETABLES, AND PLAIN WATER INTAKE

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HIGHLIGHTS

- 88.3% of adults in Malaysia did not consume adequate fruits daily
- 90.7% of adults in Malaysia did not consume adequate vegetables daily
- 95.1% of adults in Malaysia did not consume adequate fruits and/ or vegetables daily
- 22.2% of adults in Malaysia did not drink adequate plain water daily

INTRODUCTION

Balance and complete nutrition provide essential nutrients for overall well-being and optimal body functions. Over time, urbanisation has altered dietary practices, leading to a rapid transition in food consumption. More meals are consumed outside the house with a greater intake of fatty and convenience foods (1,2). The Malaysian Dietary Guidelines (MDG) 2020 recommends at least five servings of fruits and/ or vegetables per day (3) with at least three or more servings of vegetables and two servings of fruits. However, most adults in Malaysia do not consume adequate fruits and/ or vegetables with a low consumption trend observed over the years (4,5). Apart from fruits and vegetables, plain water intake also plays a vital role in ensuring eloquent body metabolism. Inadequate water intake may influence the risk of chronic disease and cognitive function (6). Research revealed that increased plain water consumption is associated with reduced daily total energy intake, sugar-sweetened beverages, discretionary foods, total fat, saturated fat, sugar, sodium and cholesterol (7). Thus, the MDG recommends drinking six to eight glasses (1.5 - 2.0 litre) of plain water daily to meet healthy eating requirements.

OBJECTIVES

General Objective

To determine the dietary practices among adults in Malaysia

Specific Objectives

1. To determine the prevalence of inadequate fruits and/ or vegetables intake among adults in Malaysia
2. To determine the prevalence of inadequate plain water intake among adults in Malaysia

METHODS

Data on the dietary practices of adults aged 18 years old and above in Malaysia were collected using face-to-face interviews. A set of questionnaires adapted from WHO STEPS Instrument was used to evaluate the amount and frequency of the daily intake of fruits and vegetables for the preceding week and the amount of plain water consumed in a day. In addition, a picture card of fruits, vegetables and plain water serving sizes was used to guide the respondents' recall.

DEFINITIONS

1. Fruits, vegetables, and fruits and/ or vegetables intake
 - Inadequate fruits intake: consumed less than two servings of fruits per day
 - Inadequate vegetables intake: consumed less than three servings of vegetables per day
 - Inadequate fruits and/ or vegetables intake: consumed less than five servings of fruits and/ or vegetables per day
2. Plain water intake
 - Inadequate plain water intake: drink less than six glasses per day

FINDINGS

Fruits and vegetables intake

The prevalence of inadequate fruits intake among respondents in NHMS 2023 was 88.3% (95% CI: 87.14, 89.46) (**Table 4.12.3**). On average, the respondents consumed 0.83% (95% CI: 0.81, 0.86) servings of fruits in a day, while 3.6% (95% CI: 2.97, 4.30) did not consume fruits at all. Pulau Pinang state recorded the highest prevalence of inadequate fruits intake at 96.3% (95% CI: 92.93, 98.05) and those who were separated/ divorced/ widowed showed the highest prevalence at 88.9% (95% CI: 86.25, 91.05). A decreasing trend in inadequate fruits consumption was observed to be paralleled with age group whereby, respondents aged 50 years old and above have the lowest inadequate fruits intake prevalence, while 18-19 years age group recorded the highest inadequate intake [92.9% (95% CI: 89.18, 95.40)].

On the other hand, 90.7% (95% CI: 89.29, 91.90) of adults in Malaysia consumed less than three servings of vegetables daily. The average daily intake of vegetables in this survey was 1.35% (95% CI: 1.30, 1.39) servings; and 2.0% (95% CI: 1.70, 2.47) reported not consuming vegetables at all. Pulau Pinang state recorded the highest prevalence of inadequate vegetables intake [98.6% (95% CI: 96.98, 99.32)]. Bumiputra Sarawak had the highest prevalence of inadequate vegetables intake at 96.9% (95% CI: 94.78, 98.21) compared to other ethnic groups (**Table 4.12.3**).

Overall, 95.1% (95% CI: 94.29, 95.83) of adults in Malaysia did not take adequate fruits and/ or vegetables as recommended by the MDG (3) with an average intake of 2.18% (95% CI: 2.12, 2.24) servings per day. By state, Pulau Pinang recorded the highest prevalence of inadequate fruit and/ or vegetable intake at 99.9% (95% CI: 99.14, 99.98). Those who lived in urban areas [95.4% (CI: 94.47, 96.11)], 18-19 years old age group [98.0% (CI: 95.61, 99.10)] and those from M40 household income category [96.2% (CI: 94.99, 97.09)] had the highest prevalence of inadequate fruits and/ or vegetables intake (**Table 4.12.3**). In addition, 6.1% of the respondents practiced a vegetarian diet.

Table 4.12.1: Trend in the prevalence of inadequate fruits and/ or vegetables intake among adults in Malaysia, 2011 – 2023

	2011 (%)	2015 (%)	2019 (%)	2023 (%)
Inadequate fruits and/ or vegetables intake (%)	92.5	94.0	94.9	95.1

Table 4.12.2: Mean serving size of fruits and/ or vegetables intake among adults in Malaysia

	Fruits	Vegetables	Fruits and vegetables
Serving size	0.83 (95% CI: 0.81, 0.86)	1.35 (95% CI: 1.30, 1.39)	2.18 (95% CI: 2.12, 2.24)

Plain water intake

The overall prevalence of adults with inadequate plain water intake (six glasses/day) was 22.2% (95% CI: 20.83, 23.71) (**Table 4.12.4**). Johor state recorded the highest prevalence of inadequate plain water intake at 34.1% (95% CI: 29.82, 38.70). Findings also revealed a higher prevalence of inadequate plain water intake among the rural population [25.6% (95% CI: 22.52, 29.04)], females [24.0% (95% CI: 22.23, 25.92)], those aged ≥ 60 years old [30.8% (95% CI: 28.06, 33.74)], and Malays [26.8% (95% CI: 24.90, 28.71)]. In term of socio-economic characteristics, those with secondary education [29.5% (95% CI: 26.08, 33.19)], those not working [37.5% (95% CI: 34.12, 40.94)] and those from B40 household income category [23.5% (95% CI: 21.82, 25.32)] had the highest prevalence of inadequate plain water intake.

CONCLUSION

A high prevalence of adults in Malaysia did not consume adequate fruits and/ or vegetables daily as recommended by the MDG (3), particularly those from urban areas, younger adults and those from middle-income category. Adults with secondary education status, not working, and in the lowest income category consumed inadequate plain water, i.e. less than six glasses daily.

RECOMMENDATIONS

- Strengthen collaborations with various stakeholders, including governmental bodies, private enterprises, and community organisations, to expand outlets like traditional markets, hypermarkets, supermarkets, and equivalents for increased accessibility to affordable fruits and vegetables.
- Collaborate with relevant ministries and agencies to enhance national self-sufficiency in fruits and vegetables, aiming to stabilise and lower prices, thereby ensuring a sustainable and cost-effective supply chain.
- Promote and empower home farming practices to cultivate self-sufficiency in fresh produce, encouraging individuals to engage in home gardening for personal well-being and contributing to community resilience and sustainability.
- Reinforce nutrition advocacy initiatives emphasising a balanced diet, particularly empowering communities to achieve daily

recommended intakes of fruits and vegetables while discouraging sugary beverage intake; tailored to resonate with diverse demographic groups and foster healthier eating habits.

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Table 4.12.3: Prevalence of inadequate fruit and vegetable daily intake among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=9,436)

SOCIODEMOGRAPHIC CHARACTERISTICS	INADEQUATE INTAKE OF FRUITS (n=10,785)						INADEQUATE INTAKE OF VEGETABLES (n=10,788)						INADEQUATE INTAKE OF FRUITS AND/ OR VEGETABLES (n=10,764)					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER			
MALAYSIA	9,436	19,990,244	88.3	87.14	89.46	9,713	20,518,103	90.7	89.29	91.90	10,205	21,467,805	95.1	94.29	95.83			
State																		
Johor	872	2,303,695	83.8	78.83	87.77	840	2,162,549	78.7	71.46	84.51	962	2,522,971	91.9	87.56	94.82			
Kedah	467	1,255,656	88.3	79.97	93.45	513	1,382,228	97.8	95.16	99.04	512	1,387,048	98.3	96.24	99.22			
Kelantan	495	922,037	80.8	72.79	86.85	526	1,006,220	88.2	81.67	92.66	570	1,069,210	93.8	88.72	96.63			
Malaka	525	642,326	89.1	84.38	92.56	514	624,268	86.8	79.30	91.90	563	685,430	95.6	92.45	97.44			
Negeri Sembilan	558	730,100	89.2	83.21	93.19	550	734,686	89.6	81.25	94.44	591	775,958	94.8	88.16	97.78			
Pahang	435	800,122	79.8	72.83	85.36	448	837,004	83.3	75.21	89.14	483	898,438	89.6	82.17	94.17			
Pulau Pinang	523	1,222,847	96.3	92.93	98.05	535	1,251,261	98.6	96.98	99.32	541	1,267,063	99.9	99.14	99.98			
Perak	495	1,351,791	86.1	80.29	90.33	543	1,476,023	94.2	89.54	96.80	549	1,487,747	94.9	90.96	97.18			
Perlis	457	168,460	85.5	76.99	91.24	510	187,495	95.7	92.52	97.60	510	188,341	96.2	93.24	97.91			
Selangor	1,243	4,810,449	92.2	90.10	93.90	1,281	4,927,137	94.3	91.55	96.20	1,312	5,053,140	97.4	95.84	98.37			
Terengganu	418	623,413	81.8	75.60	86.71	436	648,302	85.2	76.28	91.18	468	688,285	90.5	84.73	94.21			
Sabah	673	2,079,468	88.5	84.43	91.64	657	2,035,168	86.6	81.87	90.30	697	2,165,009	92.2	89.18	94.38			
Sarawak	702	1,667,194	92.8	90.57	94.48	736	1,747,080	97.1	95.27	98.22	739	1,756,761	97.8	96.47	98.64			
WP Kuala Lumpur	507	1,294,383	87.7	83.89	90.65	548	1,382,040	93.1	89.95	95.36	549	1,395,058	94.6	92.17	96.24			
WP Labuan	626	56,570	87.5	83.08	90.89	646	56,512	87.3	83.07	90.62	695	62,408	96.5	93.32	98.22			
WP Putrajaya	440	61,732	92.2	89.18	94.42	430	60,131	89.2	85.85	91.76	464	64,938	97.0	95.33	98.06			
Location																		
Urban	7,199	15,640,150	88.7	87.47	89.91	7,373	15,974,195	90.6	88.88	92.01	7,772	16,771,261	95.4	94.47	96.11			
Rural	2,237	4,350,094	87.0	83.68	89.65	2,340	4,543,908	91.1	88.74	92.98	2,433	4,696,544	94.3	92.01	95.93			
Sex																		
Male	4,361	10,470,639	89.3	87.92	90.56	4,450	10,639,519	90.6	88.83	92.11	4,700	11,164,138	95.4	94.50	96.18			
Female	5,075	9,519,605	87.3	85.71	88.75	5,263	9,878,584	90.8	89.25	92.08	5,505	10,303,667	94.8	93.63	95.77			
Age Group (Years)																		
18 - 19	300	873,186	92.9	89.18	95.40	308	896,566	94.4	90.11	96.89	317	921,189	98.0	95.61	99.10			
20 - 29	1,614	4,589,085	91.0	89.05	92.58	1,637	4,657,771	92.5	90.27	94.19	1,709	4,864,275	96.6	95.23	97.64			
30 - 39	1,803	5,153,401	88.6	86.38	90.46	1,834	5,231,238	89.9	87.61	91.81	1,928	5,488,589	94.6	92.94	95.83			
40 - 49	1,647	3,109,663	87.3	85.11	89.20	1,682	3,228,048	90.4	88.20	92.29	1,777	3,354,685	94.4	92.70	95.66			
50 - 59	1,524	3,171,826	86.1	83.50	88.32	1,602	3,281,394	88.9	86.05	91.16	1,692	3,468,485	94.2	91.76	95.98			
60 and above	2,548	3,093,084	86.5	84.37	88.32	2,650	3,223,087	90.5	88.59	92.19	2,782	3,370,582	94.8	93.60	95.77			
Ethnicity																		
Malay ^a	5,447	10,439,531	87.1	85.55	88.55	5,700	10,994,342	91.8	90.32	93.02	5,953	11,394,229	95.3	94.26	96.17			
Chinese	1,444	4,251,444	88.2	84.96	90.75	1,477	4,338,118	89.9	86.64	92.42	1,564	4,563,884	94.9	92.51	96.60			
Indian	624	1,195,868	91.0	87.49	93.54	623	1,201,525	91.7	87.85	94.37	658	1,260,115	96.3	93.56	97.86			
Bumiputera Sabah	907	1,276,861	87.6	81.79	91.75	908	1,231,960	84.5	79.50	88.49	975	1,333,843	91.5	87.91	94.11			
Bumiputera Sarawak	383	864,360	93.7	90.52	95.90	398	896,047	96.9	94.78	98.21	402	901,062	97.8	96.00	98.80			
Others	631	1,962,181	92.2	88.08	95.03	607	1,856,112	87.2	79.70	92.18	653	2,014,672	95.1	91.02	97.34			

SOCIODEMOGRAPHIC CHARACTERISTICS	INADEQUATE INTAKE OF FRUITS (n=10,785)					INADEQUATE INTAKE OF VEGETABLES (n=10,788)					INADEQUATE INTAKE OF FRUITS AND/ OR VEGETABLES (n=10,764)				
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER
Education Level															
No formal education	2,034	5,829,892	91.3	89.66	92.76	2,051	5,871,755	91.9	89.88	93.58	2,144	6,149,268	96.6	95.45	97.43
Primary education	6,226	12,467,070	87.3	85.72	88.66	6,457	12,896,631	90.3	88.80	91.59	6,786	13,482,998	94.6	93.56	95.50
Secondary education	1,169	1,678,176	86.7	84.07	88.87	1,197	1,732,439	89.3	86.24	91.82	1,267	1,818,260	94.0	91.72	95.66
Tertiary education	997	1,697,409	91.2	86.48	94.41	995	1,655,463	89.4	83.88	93.22	1,041	1,739,121	94.0	88.88	96.79
Marital Status															
Never married	1,267	2,192,731	88.4	85.14	91.03	1,282	2,223,223	89.6	86.85	91.89	1,359	2,359,934	95.3	93.28	96.70
Married/ Living with partner	5,962	13,068,015	87.9	86.51	89.17	6,175	13,501,997	90.8	89.25	92.09	6,501	14,144,505	95.4	94.45	96.14
Separated/ Divorced/ Widowed	1,180	2,968,630	88.9	86.25	91.05	1,231	3,072,225	91.9	89.32	93.92	1,273	3,158,614	94.8	93.00	96.18
Occupation															
Government employee	864	1,411,082	85.8	81.60	89.09	882	1,485,244	90.2	86.98	92.76	926	1,525,429	92.7	88.91	95.27
Private employee	2,888	7,727,829	91.9	90.45	93.18	2,868	7,678,923	91.3	89.19	93.03	3,042	8,088,237	96.4	95.54	97.12
Self employed	1,380	3,122,845	85.4	82.56	87.90	1,479	3,332,574	91.2	88.82	93.05	1,536	3,448,650	94.6	92.64	96.04
Unpaid worker/ Homemaker/ Caregiver	1,728	3,171,671	84.5	81.22	87.23	1,813	3,320,051	88.3	85.55	90.56	1,903	3,505,070	93.4	90.79	95.33
Retiree	686	1,056,916	86.1	82.43	89.06	713	1,074,128	87.8	83.57	91.04	760	1,146,046	93.7	91.18	95.50
Student	332	1,012,672	90.8	86.81	93.69	339	1,035,007	92.4	88.48	95.05	352	1,073,126	96.6	94.08	98.12
Not working ^b	1,519	2,409,721	88.2	85.96	90.15	1,576	2,506,373	92.1	89.92	93.86	1,643	2,596,211	95.7	94.40	96.64
Household Income Group															
Less than RM 1000	1,388	2,381,978	86.5	83.55	88.92	1,439	2,471,886	90.1	87.17	92.35	1,504	2,581,442	94.2	92.20	95.65
RM 1,000 – RM 1999	1,462	2,931,185	88.4	84.84	91.15	1,524	2,975,852	89.5	85.66	92.36	1,580	3,128,086	94.5	91.16	96.60
RM 2,000 – RM 3999	2,418	5,212,509	88.7	86.68	90.43	2,488	5,394,380	91.6	89.81	93.13	2,624	5,615,919	95.6	94.39	96.51
RM 4,000 – RM 5999	1,578	3,520,047	89.8	87.31	91.82	1,603	3,596,364	91.8	89.57	93.59	1,696	3,759,448	96.1	94.55	97.24
RM 6,000 – RM 7,999	923	2,030,743	89.5	86.33	92.04	955	2,057,788	91.2	87.20	94.02	1,005	2,167,597	96.1	93.60	97.60
RM 8,000 – RM 9,999	608	1,391,904	87.6	83.89	90.58	633	1,459,990	91.9	88.33	94.50	660	1,495,986	94.4	91.51	96.41
RM 10,000 and above	1,034	2,434,032	86.9	83.65	89.57	1,039	2,452,305	87.7	83.73	90.75	1,107	2,621,684	93.9	91.36	95.75
Household Income Quintile															
Quintile 1	1,970	3,418,437	87.2	84.81	89.28	2,039	3,516,622	90.1	87.57	92.12	2,132	3,687,181	94.5	92.94	95.77
Quintile 2	1,899	4,055,558	87.6	84.89	89.91	1,993	4,206,692	90.6	87.83	92.78	2,073	4,385,110	94.8	92.41	96.44
Quintile 3	1,828	3,998,458	89.5	87.07	91.55	1,851	4,087,519	91.3	89.18	93.10	1,968	4,271,108	95.6	94.11	96.80
Quintile 4	1,959	4,420,750	89.8	87.60	91.70	2,004	4,489,792	91.5	88.83	93.57	2,109	4,710,660	96.1	94.55	97.24
Quintile 5	1,755	4,009,194	87.3	84.91	89.36	1,794	4,107,940	89.5	86.90	91.68	1,894	4,316,103	94.3	92.47	95.67
Household Income Category															
Bottom 40%	5,941	11,999,467	88.8	87.30	90.17	6,107	12,267,488	90.8	89.25	92.18	6,413	12,830,823	95.2	94.22	96.07
Middle 40%	2,400	5,541,265	89.1	87.01	90.86	2,473	5,682,772	91.4	89.26	93.15	2,607	5,972,224	96.2	94.99	97.09
Top 20%	1,070	2,361,666	84.4	81.04	87.31	1,101	2,458,304	88.0	84.36	90.86	1,156	2,567,115	92.1	89.27	94.18

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.12.4: Prevalence of daily intake of plain water less than six glasses among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,855)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	2,645	5,071,360	22.2	20.83	23.71
State					
Johor	390	938,881	34.1	29.82	38.70
Kedah	137	360,545	25.3	19.13	32.72
Kelantan	187	340,986	29.9	23.81	36.74
Melaka	192	227,035	31.3	26.42	36.72
Negeri Sembilan	182	229,203	27.9	23.08	33.38
Pahang	150	242,889	24.2	19.52	29.53
Pulau Pinang	74	113,829	9.0	6.24	12.70
Perak	166	394,281	25.1	19.59	31.52
Perlis	115	39,717	20.2	16.14	24.86
Selangor	268	934,560	17.7	14.78	20.98
Terengganu	172	238,769	31.3	26.54	36.56
Sabah	67	220,549	9.4	6.56	13.26
Sarawak	221	493,821	27.3	21.96	33.39
WP Kuala Lumpur	123	269,615	17.3	12.64	23.26
WP Labuan	66	7,111	11.0	7.59	15.65
WP Putrajaya	135	19,571	28.8	23.72	34.57
Location					
Urban	1,941	3,786,065	21.3	19.72	22.92
Rural	704	1,285,295	25.6	22.52	29.04
Sex					
Male	1,117	2,435,684	20.6	18.85	22.42
Female	1,528	2,635,675	24.0	22.23	25.92
Age Group (Years)					
18 - 19	90	229,810	23.9	18.95	29.75
20 - 29	412	1,112,096	21.9	19.53	24.48
30 - 39	400	1,097,707	18.7	16.53	21.12
40 - 49	369	662,224	18.4	16.11	21.02
50 - 59	425	861,731	23.2	20.44	26.16
60 and above	949	1,107,792	30.8	28.06	33.74
Ethnicity					
Malay ^a	1,792	3,226,015	26.8	24.90	28.71
Chinese	351	837,061	17.1	14.10	20.58
Indian	181	291,686	22.0	17.88	26.64
Bumiputera Sabah	97	140,442	9.6	6.39	14.28
Bumiputera Sarawak	108	243,791	26.3	20.73	32.72
Others	116	332,365	15.5	11.96	19.93
Education Level					
No formal education	530	1,366,646	21.2	19.08	23.47
Primary education	1,673	3,122,643	21.7	20.08	23.43
Secondary education	439	575,901	29.5	26.08	33.19
Tertiary education	368	529,389	28.4	23.69	33.74
Marital Status					
Never married	402	632,773	25.4	22.32	28.82
Married/ Living with partner	1,607	3,342,434	22.3	20.71	24.00
Separated/ Divorced/ Widowed	259	552,890	16.3	13.25	19.85
Occupation					
Government employee	188	279,345	16.9	13.81	20.59
Private employee	589	1,534,223	18.1	16.30	20.02
Self employed	335	699,700	19.0	16.28	22.04
Unpaid worker/ Homemaker/ Caregiver	539	979,388	25.9	23.32	28.69
Retiree	227	322,967	26.3	22.36	30.62
Student	81	212,089	18.5	14.34	23.65
Not working ^b	677	1,028,643	37.5	34.12	40.94

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	526	854,393	30.9	27.20	34.89
RM 1,000 – RM 1999	436	753,745	22.6	19.38	26.16
RM 2,000 – RM 3,999	622	1,292,867	21.8	19.53	24.25
RM 4,000 – RM 5,999	419	889,133	22.5	19.64	25.66
RM 6,000 – RM 7,999	244	468,599	20.5	17.20	24.17
RM 8,000 – RM 9,999	148	303,403	18.9	15.21	23.30
RM 10,000 and above	245	489,387	17.3	14.10	21.14
Household Income Quintile					
Quintile 1	712	1,133,136	28.8	25.61	32.32
Quintile 2	525	1,031,957	22.1	19.52	24.92
Quintile 3	456	964,326	21.4	18.94	24.13
Quintile 4	517	1,073,025	21.6	19.14	24.28
Quintile 5	430	849,083	18.3	15.74	21.28
Household Income Category					
Bottom 40%	1,738	3,205,145	23.5	21.82	25.32
Middle 40%	654	1,332,731	21.3	19.17	23.61
Top 20%	248	513,651	18.2	15.08	21.92

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: ALCOHOL CONSUMPTION

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HIGHLIGHTS

- 1 in 10 adults in Malaysia drank alcohol for the past 12 months.
- Alcohol consumption was more prevalent among men and those aged between 20 and 39 years old.
- Among the current drinkers:
 - a. 1 in 2 were binge drinkers
 - b. Hazardous drinking was more prevalent among the younger adults aged between 20 and 29 years old, with an estimated 136,550 individuals.

INTRODUCTION

Alcohol is a toxic substance with dependence-producing properties that has a causal relationship with a multitude of mental and behavioural disorders, noncommunicable diseases, injuries and fetomaternal complications. It also worsens the outcomes of infectious diseases (1). This relationship is also related to the total volume and pattern of alcohol consumed. This is concerning as the global adult per-capita consumption of alcohol is estimated to increase to 7.6L by 2030 (2).

Alcohol consumption contributes to 3 million deaths per year, and harmful use contributes to 5.1% of the global burden of disease. The burden of alcohol-attributed disease is higher among younger age group, males, and those in lower to middle income bracket. Alcohol-attributable deaths was 7.7% in

males compared to 2.6% in females, highest in people aged 20–39 years old and more likely among those with lower socioeconomic status (1,3).

In Southeast Asia, alcohol consumption increased by 34% from 2010 to 2017, with Vietnam and Laos experiencing the highest increases of 89.4% and 50.0% respectively (2). In Malaysia, the National Health and Morbidity Surveys (NHMS) reported the prevalence of current drinker among those aged 18 years old and above at 12.8% in 2011, 8.4% in 2015 and 11.8% in 2019 (4,5). In 2019, the proportions of binge drinkers, heavy episodic drinkers and probable alcohol dependence were 45.8%, 8.4% and 0.9% respectively (6).

The Global Alcohol Action Plan 2022-2030 provides guidance on policies to reduce the burden of alcohol, especially in marketing and advertising targeting at-risk groups. It is also pertinent to improve public policies and interventions to reduce alcohol harm at all levels of leadership, health service and community (1).

OBJECTIVES

General Objective

To determine the prevalence of alcohol drinkers in Malaysia.

Specific Objectives

1. To determine the prevalence of current alcohol drinkers in Malaysia by sociodemographic subgroups.
2. To determine the prevalence of ever alcohol drinkers in Malaysia by sociodemographic subgroups.
3. To determine the proportion of binge drinking among current drinkers (≥ 18 years old) in Malaysia.
4. To determine the proportion of heavy episodic drinking among current drinkers (≥ 18 years old) in Malaysia.
5. To determine types of drinkers (≥ 18 years old) according to the AUDIT risk stratification score among current drinkers (low risk, risky and probable dependence).

METHODS

Data on alcohol consumption was obtained from all eligible respondents aged 13 years old and above using a self-administered questionnaire. The questionnaire was prepared in four major languages in Malaysia that included Bahasa Malaysia, English, Mandarin and Tamil. The questionnaire had 15 items; which was adapted from a validated 10 - item Alcohol Use Disorder Identification Test (AUDIT) questionnaire, developed by the WHO to assess alcohol consumption, drinking behaviours and alcohol related problems (7). Two screening questions were asked on 'ever alcohol use' and 'current alcohol use for the past 12 months'. Those who drank alcohol for the past 12 months were required to respond to all the subsequent questions including the 10-item AUDIT questionnaire with an additional three questions: one question on the most common type of alcoholic beverage consumed, and two questions asking about alcohol drinking pattern for the past one month. Score from the AUDIT was calculated and categorised according to the AUDIT risk stratification category: low risk drinkers (AUDIT Score: 0 to 7), risky drinkers (AUDIT score: 8 to 19) and probable alcohol dependence (AUDIT score: \geq 20).

DEFINITIONS

1. **Current drinkers:** Those who had consumed any alcoholic beverage in the past 12 months.
2. **Ever drinkers:** Those who had consumed any alcoholic beverage in their lifetime.
3. **Binge drinking:** Those who consumed 6 or more standard alcoholic drinks at one sitting.
4. **Heavy Episodic Drinking (HED):** Those who consumed 6 or more standard alcoholic drinks at one sitting at least weekly.
5. **Lifetime abstainers:** Those who have never consumed alcohol.
6. **Abstainers in the past 12 months:** Those who did not drink any alcohol in the past 12 months.
7. **Hazardous drinkers:** Those who have an AUDIT score \geq 8.
8. **One standard drink** or one alcoholic drink equivalent to any beverage containing percentages of pure alcohol by volume, varies within and across beverage types (8).

FINDINGS

Alcohol consumption among those aged 13 years old and above

11,607 respondents responded to the alcohol consumption questionnaire.

The prevalence of current drinkers among those aged 13 years old and above was 9.6% (95% CI: 8.26,

11.17). Current drinkers were more common in urban areas [9.9% (95% CI: 8.33, 11.62)] than rural areas [8.8% (95% CI: 6.14, 12.46)]. The prevalence among males was higher [12.9% (95% CI: 11.07, 14.93)] as compared to females [6.1% (95% CI: 4.92, 7.58)]. The highest prevalence of current drinkers was recorded among those aged 20 to 29 years old [13.1% (95% CI: 10.42, 16.42)], Bumiputera Sarawak [36.8% (95% CI: 24.75, 50.67)], followed by Chinese [24.0% (95% CI: 20.33, 28.15)] and Indians [17.1% (95% CI: 13.18, 21.96)]. Among the current drinkers, alcohol consumption was significantly higher among those with tertiary education [14.2% (95% CI: 10.82, 18.30)], never married [10.4% (95% CI: 8.47, 12.71)], private employees [14.4% (95% CI: 12.21, 16.98)], those with a household income of RM10,000 and above [18.4% (95% CI: 13.88, 24.07)], those with a household income of quintile 5 [15.7% (95% CI: 12.41, 19.70)], and those from the T20 household income category [18.2% (95% CI: 14.19, 23.08)] (**Table 4.13.2**).

The prevalence of ever drinkers among those aged 13 years old and above was 15.3% (95% CI: 13.54, 17.31). While the prevalence of lifetime abstainers was 84.7% (95% CI: 82.68, 86.46). Ever drinkers were more common in urban areas [15.8% (95% CI: 13.70, 18.18)] than rural areas [13.6% (95% CI: 10.69, 17.27)]. The prevalence among males was higher [19.4% (95% CI: 17.24, 21.80)] as compared to females [10.9% (95% CI: 9.16, 13.02)]. The highest prevalence of ever drinkers was recorded among those aged 40-49 years old [18.9% (95% CI: 15.61, 22.76)], Bumiputera Sarawak [54.2% (95% CI: 42.52, 65.43)], followed by Chinese [38.6% (95% CI: 33.62, 43.75)] and Indians [24.7% (95% CI: 19.46, 30.73)]. Among ever drinkers, higher alcohol consumption rates were observed among those with tertiary education [19.8% (95% CI: 15.43, 25.03)], married/ living with partner [16.2% (95% CI: 14.09, 18.59)], self-employed [22.0% (95% CI: 18.51, 26.01)], and those from the T20 household income category [24.5% (95% CI: 19.62, 30.06)] (**Table 4.13.2a**).

Alcohol consumption among those aged 18 years old and above

10,751 responded to the alcohol consumption questionnaire.

The prevalence of current drinkers among those aged 18 years old and above was 10.4% (95% CI: 8.96, 12.08) while the prevalence of abstainers in the past 12 months was 89.6% (95% CI: 87.9, 91.0). Alcohol consumption among current drinkers was significantly higher among males [13.9% (95% CI: 11.97, 16.09)] as compared to females [6.7% (95% CI: 5.36, 8.27)] and higher among those who lived in urban areas [10.7% (95% CI: 9.02, 12.54)] and Bumiputera Sarawak [39.3% (95% CI: 26.68, 53.45)].

Current drinkers were more common among those with tertiary education [14.2% (95% CI: 10.82, 18.30)], those aged 20-29 years old [13.1% (95% CI: 10.42, 16.42)], those who were never married [13.5% (95% CI: 11.02, 16.43)], and those from the T20 household income category [19.6% (95% CI: 15.33, 24.69)] (**Table 4.13.3**).

Binge drinking and Heavy Episodic Drinking (HED) among adults aged 18 years old and above

The prevalence of binge drinking among those aged 18 years old and above was 4.4% (95% CI: 3.58, 5.39), with an estimated population of 988,196 individuals.

The prevalence of HED among those aged 18 years old and above was 1.1% (95% CI: 0.77, 1.52), with an estimated 244,343 individuals.

Binge drinking among current drinkers aged 18 years old and above

The percentage of binge drinkers among current drinkers was 45.1% (95% CI: 39.51, 50.73). Binge drinking among current drinkers was significantly higher among males [50.6% (95% CI: 44.08, 57.08)] as compared to females [32.4% (95% CI: 24.76, 41.16)]. It was also more common among those who were rural residents [52.3% (95% CI: 44.08, 60.36)] and Bumiputera Sarawak [62.1% (95% CI: 50.39, 72.62)], those with primary education [47.6% (95% CI: 35.88, 59.59)] and those from the M40 household income category [53.2% (95% CI: 44.84, 61.34)] (**Table 4.13.4**).

Heavy Episodic Drinkers (HED) among current drinkers aged 18 years old and above

The percentage of HED among current drinkers aged 18 years old and above was 11.1% (95% CI: 8.26, 14.86)]. HED was more common among rural dwellers [15.7% (95% CI: 8.67, 26.63)], males [13.5% (95% CI: 9.77, 18.28)], and those with a T20 household income category [17.1% (95% CI: 10.23, 27.20)] (**Table 4.13.5**).

AUDIT Risk stratification category related to pattern of drinking

In general, most of the current drinkers aged 18 years old and above were categorized as low risk drinkers [79.1% (95% CI: 74.11, 83.32)]. The percentage of risky drinkers was 19.1% (95% CI: 15.34, 23.62); while the percentage of drinkers with probable alcohol dependence was 1.8% (95% CI: 0.79, 3.94) (**Table 4.13.6**).

Global status report on alcohol and health indicators

The prevalence of current drinkers among the population in Malaysia aged 15 years old and above was 10.0% (95% CI: 8.59, 11.62). The prevalence was significantly higher in males [13.4% (95% CI: 11.48, 15.51)] than females [6.4% (95% CI: 5.12, 7.90)]. The

prevalence of heavy episodic drinking among those aged 15 years old and above in Malaysia was 1.0% (95% CI: 0.74, 1.46). The prevalence was significantly higher among males [1.7% (95% CI: 1.17, 2.37)] than females [0.4% (95% CI: 0.20, 0.65)]. The percentage of heavy episodic drinkers among the current drinkers was 11.1% (95% CI: 8.30, 14.80). The percentage was higher among males [13.3% (95% CI: 9.65, 18.02)] as compared to females [6.2% (95% CI: 3.52, 10.68)]. The prevalence of lifetime abstainers among the population in Malaysia aged 15 years old and above was 84.1% (95% CI: 81.99, 85.93); and the prevalence was found to be significantly higher among females [88.6% (95% CI: 86.42, 90.46)] than males [79.9% (95% CI: 77.37, 82.14)]. The prevalence of abstainers for the past 12 months was 90.0% (95% CI: 88.38, 91.41); which was significantly higher among females [93.6% (95% CI: 92.10, 94.88)] than males [86.6% (95% CI: 84.49, 88.52)] (**Table 4.13.7**).

CONCLUSIONS

Alcohol use was primarily observed among males, which correlated with the elevated percentages of binge drinking and heavy episodic drinking among men. The harmful use of alcohol was strikingly prevalent among middle-aged individuals, particularly among those aged 20-39 years old. Individuals of Bumiputera Sarawak ethnicity exhibited the highest prevalence of binge drinking and heavy episodic drinking in Malaysia. Binge and heavy episodic drinking are not limited to specific areas; both urban and rural localities demonstrated a high prevalence of binge and heavy episodic drinking among the current drinkers.

RECOMMENDATIONS

- Given no substantial change since 2011 in alcohol use based on risk stratification patterns and drinking patterns, identifying at-risk populations is a critical initial measure in facilitating health education and intervention. Advocacy leadership and continuous health education are required to raise public awareness of healthy lifestyles and “Healthy Without Alcohol”.
- Awareness of the adverse health and social outcomes of the harmful use of alcohol should target schools and institutions of higher learning as harmful alcohol use is prevalent among young adults.
- Empowering the community as an agent of change and conducting interventions for at risk community (peer education) is required both in urban and rural localities.
- Health services should aim at prevention and harm reduction at the individual level by focusing on screening, intervention, and treatment services.

Health education for low-risk drinkers about the consequences of alcohol consumption is needed. Health counselling is required for medium-risk drinkers, while referral to an alcohol intervention clinic should be mandatory for high-risk drinkers.

- The quantity and pattern of alcohol use are influenced by knowledge and awareness of alcohol-related products, availability and access to alcohol, advertisement and marketing. The World Health Organisation) suggests three population-based strategies to decrease alcohol consumption by implementing a significant excise duty on alcoholic drinks, regulating marketing and advertising, and controlling premises for the sale of alcoholic beverages. These strategies need further supporting evidence for implementation in Malaysia.

Table 4.13.1: Trends in the percentage of harmful alcohol consumption among those aged 18 and above in Malaysia, 2011-2023

	2011 (%)	2015 (%)	2019 (%)	2023 (%)
Binge drinkers	50.2	59.4	45.8	45.1
Heavy episodic drinkers	18.3	10.8	8.4	11.1
Risky drinkers	21.2	28.4	17.6	19.1

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Table 4.13.2: Prevalence of current drinkers among those aged 13 years old and above in Malaysia by sociodemographic characteristics (n=11,603)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	833	2,376,136	9.6	8.26	11.17
Location					
Urban	650	1,891,213	9.9	8.33	11.62
Rural	183	484,923	8.8	6.14	12.46
Sex					
Male	553	1,646,986	12.9	11.07	14.93
Female	280	729,150	6.1	4.92	7.58
Age Group (Years)					
13 – 19	23	78,245	2.5	1.43	4.23
20 – 29	178	653,893	13.1	10.42	16.42
30 – 39	201	686,471	11.9	9.64	14.56
40 – 49	170	433,689	12.2	9.78	15.21
50 – 59	132	349,864	9.5	7.39	12.09
60 and above	129	173,976	4.9	3.76	6.38
Ethnicity					
Malay	38	81,097	0.6	0.37	1.02
Chinese	376	1,248,816	24.0	20.33	28.15
Indian	106	241,556	17.1	13.18	21.96
Bumiputera Sabah	102	210,742	13.0	7.88	20.62
Bumiputera Sarawak	151	376,808	36.8	24.75	50.67
Others	60	217,118	10.0	6.13	15.96
Education Level					
No formal education	46	93,269	4.9	3.23	7.46
Primary education	110	297,413	7.9	5.86	10.69
Secondary education	537	1,512,942	9.6	8.12	11.41
Tertiary education	137	466,939	14.2	10.82	18.30
Marital Status					
Never married	246	889,350	10.4	8.47	12.71
Married/ Living with partner	525	1,333,592	9.4	7.90	11.13
Separated/ Divorced/ Widowed	59	146,044	7.6	5.33	10.60
Occupation					
Government employee	58	136,157	8.3	5.44	12.39
Private employee	375	1,205,317	14.4	12.21	16.98
Self employed	165	466,671	12.7	9.98	16.09
Unpaid worker/ Homemaker/ Caregiver	82	192,001	5.1	3.57	7.28
Retiree	43	80,568	6.6	4.26	10.08
Student	28	95,570	3.0	1.83	4.91
Not working	81	196,080	7.0	4.97	9.80
Household Income Group					
Less than RM 1000	72	165,905	5.4	3.74	7.75
RM 1,000 – RM 1999	105	258,001	7.1	4.91	10.21
RM 2,000 – RM 3,999	174	427,265	6.6	5.18	8.28
RM 4,000 – RM 5,999	144	461,022	11.1	8.37	14.49
RM 6,000 – RM 7,999	98	309,422	12.7	8.97	17.64
RM 8,000 – RM 9,999	64	177,150	10.4	7.27	14.79
RM 10,000 and above	174	570,460	18.4	13.88	24.07
Household Income Quintile					
Quintile 1	103	232,866	5.4	3.91	7.34
Quintile 2	147	344,899	6.8	4.99	9.11
Quintile 3	134	369,219	7.5	5.72	9.90
Quintile 4	193	633,377	12.1	9.52	15.13
Quintile 5	254	788,861	15.7	12.41	19.70
Household Income Category					
Bottom 40%	386	982,428	6.6	5.47	8.04
Middle 40%	250	820,760	12.3	9.95	15.00
Top 20%	195	566,034	18.2	14.19	23.08

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.13.2a: Prevalence of ever drinkers among those aged 13 years old and above in Malaysia by sociodemographic characteristics (n=11,607)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,403	3,789,757	15.3	13.54	17.31
Location					
Urban	1,087	3,037,778	15.8	13.70	18.18
Rural	316	751,979	13.6	10.69	17.27
Sex					
Male	892	2,485,500	19.4	17.24	21.80
Female	511	1,304,257	10.9	9.16	13.02
Age Group (Years)					
13 – 19	38	153,413	4.8	3.30	7.03
20 – 29	224	799,316	16.0	13.16	19.43
30 – 39	294	1,079,946	18.7	15.59	22.23
40 – 49	266	670,605	18.9	15.61	22.76
50 – 59	232	603,361	16.3	13.37	19.79
60 and above	349	483,116	13.6	11.33	16.28
Ethnicity					
Malay	131	280,597	2.1	1.59	2.80
Chinese	638	2,007,720	38.6	33.62	43.75
Indian	161	348,339	24.7	19.46	30.73
Bumiputera Sabah	156	311,897	19.1	12.68	27.78
Bumiputera Sarawak	235	555,588	54.2	42.52	65.43
Others	82	285,616	13.2	8.95	18.98
Education Level					
No formal education	117	199,362	10.5	7.88	13.96
Primary education	229	541,655	14.5	11.59	17.91
Secondary education	864	2,386,474	15.2	13.30	17.32
Tertiary education	188	654,349	19.8	15.43	25.03
Marital Status					
Never married	332	1,208,101	14.1	11.98	16.55
Married/ Living with partner	929	2,302,606	16.2	14.09	18.59
Separated/ Divorced/ Widowed	139	271,899	14.1	11.24	17.43
Occupation					
Government employee	86	210,436	12.8	9.11	17.65
Private employee	547	1,732,884	20.7	17.84	23.94
Self employed	289	808,026	22.0	18.51	26.01
Unpaid worker/ Homemaker/ Caregiver	159	361,151	9.6	7.36	12.50
Retiree	95	163,012	13.3	9.88	17.77
Student	38	150,034	4.7	3.17	6.95
Not working	186	356,351	12.7	10.14	15.85
Household Income Group					
Less than RM 1000	155	309,921	10.1	7.98	12.71
RM 1,000 – RM 1999	188	425,559	11.7	8.70	15.65
RM 2,000 – RM 3,999	327	794,547	12.2	10.29	14.40
RM 4,000 – RM 5,999	263	781,534	18.8	15.21	22.90
RM 6,000 – RM 7,999	137	419,456	17.2	12.87	22.60
RM 8,000 – RM 9,999	99	290,161	17.1	12.57	22.81
RM 10,000 and above	231	756,022	24.4	19.02	30.81
Household Income Quintile					
Quintile 1	222	431,577	10.0	7.97	12.39
Quintile 2	257	586,274	11.5	9.15	14.35
Quintile 3	260	701,566	14.3	11.76	17.33
Quintile 4	310	952,105	18.1	14.78	22.00
Quintile 5	351	1,105,678	22.0	17.95	26.70
Household Income Category					
Bottom 40%	734	1,745,662	11.8	10.16	13.65
Middle 40%	412	1,270,854	19.0	15.93	22.44
Top 20%	254	760,682	24.5	19.62	30.06

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.13.3: Prevalence of current drinkers among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,751)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	823	2,342,605	10.4	8.96	12.08
Location					
Urban	642	1,862,774	10.7	9.02	12.54
Rural	181	479,831	9.6	6.71	13.52
Sex					
Male	545	1,618,548	13.9	11.97	16.09
Female	278	724,058	6.7	5.36	8.27
Age Group (Years)					
13 – 19	13	44,713	4.7	2.53	8.52
20 – 29	178	653,893	13.1	10.42	16.42
30 – 39	201	686,471	11.9	9.64	14.56
40 – 49	170	433,689	12.2	9.78	15.21
50 – 59	132	349,864	9.5	7.39	12.09
60 and above	129	173,976	4.9	3.76	6.38
Ethnicity					
Malay	38	81,097	0.7	0.41	1.13
Chinese	370	1,228,065	25.6	21.68	30.03
Indian	106	241,556	18.8	14.48	24.09
Bumiputera Sabah	102	210,742	14.4	8.86	22.61
Bumiputera Sarawak	147	364,028	39.3	26.68	53.45
Others	60	217,118	10.4	6.41	16.56
Education Level					
No formal education	46	93,269	5.1	3.35	7.69
Primary education	104	277,695	11.4	8.36	15.31
Secondary education	533	1,499,129	10.1	8.51	11.94
Tertiary education	137	466,939	14.2	10.82	18.30
Marital Status					
Never married	236	855,819	13.5	11.02	16.43
Married/ Living with partner	525	1,333,592	9.4	7.90	11.13
Separated/ Divorced/ Widowed	59	146,044	7.6	5.33	10.60
Occupation					
Government employee	58	136,157	8.3	5.44	12.39
Private employee	375	1,205,317	14.5	12.24	17.02
Self employed	164	464,124	12.8	10.02	16.16
Unpaid worker/ Homemaker/ Caregiver	82	192,001	5.1	3.58	7.28
Retiree	43	80,568	6.6	4.26	10.08
Student	19	64,585	5.7	3.30	9.81
Not working	81	196,080	7.3	5.16	10.13
Household Income Group					
Less than RM 1000	70	162,016	5.9	4.08	8.51
RM 1,000 – RM 1999	103	250,314	7.6	5.20	10.86
RM 2,000 – RM 3,999	173	427,131	7.3	5.77	9.18
RM 4,000 – RM 5,999	142	454,020	11.8	8.92	15.36
RM 6,000 – RM 7,999	98	309,422	13.7	9.73	18.99
RM 8,000 – RM 9,999	64	177,150	11.3	7.89	16.05
RM 10,000 and above	171	555,638	19.8	14.82	25.90
Household Income Quintile					
Quintile 1	101	228,978	5.9	4.27	8.05
Quintile 2	145	337,212	7.3	5.37	9.83
Quintile 3	133	369,085	8.4	6.34	10.94
Quintile 4	191	626,376	12.8	10.16	16.04
Quintile 5	251	774,040	16.9	13.35	21.22
Household Income Category					
Bottom 40%	381	970,719	7.2	5.97	8.75
Middle 40%	247	813,734	13.2	10.72	16.12
Top 20%	193	551,239	19.6	15.33	24.69

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.13.4: Percentage of binge drinkers among current drinkers aged 18 years old and above in Malaysia by sociodemographic characteristics (n=768)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	337	988,196	45.1	39.51	50.73
Location					
Urban	256	763,497	43.3	36.80	50.03
Rural	81	224,699	52.3	44.08	60.36
Sex					
Male	252	771,597	50.6	44.08	57.08
Female	85	216,599	32.4	24.76	41.16
Age Group (Years)					
13 – 19	6	-	-	-	-
20 – 29	87	327,917	54.0	43.26	64.41
30 – 39	98	329,338	53.0	43.91	61.97
40 – 49	64	151,203	36.0	26.87	46.36
50 – 59	51	123,623	36.8	26.89	48.02
60 and above	31	38,223	23.1	15.22	33.51
Ethnicity					
Malay	15	30,658	42.2	22.33	64.92
Chinese	116	445,615	37.7	30.56	45.44
Indian	51	102,218	45.4	33.13	58.26
Bumiputera Sabah	50	95,736	51.4	38.51	64.09
Bumiputera Sarawak	77	199,872	62.1	50.39	72.62
Others	28	114,097	55.4	32.64	76.15
Education Level					
No formal education	13	34,078	40.9	21.91	63.06
Primary education	39	120,030	47.6	35.88	59.59
Secondary education	229	650,402	46.1	39.53	52.80
Tertiary education	55	179,915	40.8	28.67	54.13
Marital Status					
Never married	114	403,537	50.1	39.99	60.23
Married/ Living with partner	204	543,667	43.4	37.59	49.45
Separated/ Divorced/ Widowed	19	40,993	30.8	15.93	51.10
Occupation					
Government employee	34	77,015	60.4	40.20	77.60
Private employee	168	512,068	45.2	37.93	52.72
Self employed	68	219,486	51.2	40.89	61.35
Unpaid worker/ Homemaker/ Caregiver	25	53,101	29.4	17.37	45.23
Retiree	16	32,762	42.0	26.63	59.15
Student	5	-	-	-	-
Not working	20	69,503	38.4	20.86	59.67
Household Income Group					
Less than RM 1000	16	39,267	28.1	15.96	44.67
RM 1,000 – RM 1999	43	114,954	47.7	32.43	63.45
RM 2,000 – RM 3,999	70	180,781	45.9	35.27	56.95
RM 4,000 – RM 5,999	57	179,132	43.3	31.80	55.54
RM 6,000 – RM 7,999	49	149,559	51.2	37.29	65.01
RM 8,000 – RM 9,999	29	82,024	48.2	32.44	64.33
RM 10,000 and above	72	240,305	44.8	33.75	56.41
Household Income Quintile					
Quintile 1	32	72,864	35.4	22.82	50.29
Quintile 2	58	145,513	45.8	33.32	58.81
Quintile 3	50	135,587	41.2	29.60	53.86
Quintile 4	86	285,777	48.5	38.61	58.49
Quintile 5	110	346,284	46.5	37.41	55.92
Household Income Category					
Bottom 40%	134	331,892	37.2	29.06	46.23
Middle 40%	118	403,948	53.2	44.84	61.34
Top 20%	84	250,183	46.7	35.99	57.75

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.13.5: Percentage of heavy episodic drinkers among current drinkers aged 18 years old and above in Malaysia by sociodemographic characteristics (n=768)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	91	244,343	11.1	8.26	14.86
Location					
Urban	66	177,057	10.0	7.09	14.03
Rural	25	67,286	15.7	8.67	26.63
Sex					
Male	75	205,360	13.5	9.77	18.28
Female	16	38,983	5.8	3.23	10.33
Household Income Category					
Bottom 40%	35	63,171	7.1	4.26	11.57
Middle 40%	26	89,574	11.8	7.16	18.82
Top 20%	30	91,598	17.1	10.23	27.20

Table 4.13.6: Percentage of AUDIT risk stratification score among current drinkers aged 18 years old and above in Malaysia (n=659)

AUDIT RISK STRATIFICATION	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Low Risk	523	1,511,195	79.1	74.11	83.32
Risky Drinker	123	365,724	19.1	15.34	23.62
Probable Alcohol Dependence	13	-	-	-	-

Table 4.13.7: Global status report on alcohol and health indicators among those aged 15 years old and above in Malaysia

AUDIT RISK STRATIFICATION	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Current drinkers	831	2,369,747	10.0	8.59	11.62
Male	552	1,643,143	13.4	11.48	15.51
Female	279	726,604	6.4	5.12	7.90
Heavy episodic drinking in population	92	246,889	1.0	0.74	1.46
Male	75	205,360	1.7	1.17	2.37
Female	17	41,529	0.4	0.20	0.65
Heavy episodic drinking among drinkers only*	92	246,889	11.1	8.30	14.80
Male	75	205,360	13.3	9.65	18.02
Female	17	41,529	6.2	3.52	10.68
Lifetime abstainers	9,837	19,930,812	84.1	81.99	85.93
Male	4,306	9,823,464	79.9	77.37	82.14
Female	5,531	10,107,348	88.6	86.42	90.46
Abstainers, past 12 months	10,401	21,323,873	90.0	88.38	91.41
Male	4,641	10,650,271	86.6	84.49	88.52
Female	5,760	10,673,602	93.6	92.10	94.88

*Data reported in percentage

NON-COMMUNICABLE DISEASES: DEPRESSION

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HIGHLIGHTS

- Depression among individuals aged 16 years old and above in Malaysia had doubled as compared to the previous NHMS findings in 2019.
- Approximately 43.6% of those experiencing depression reported thoughts of being better off dead or self-harm in some way.
- Younger age groups and students were as the most vulnerable groups affected by this concerning trend.

INTRODUCTION

Adult mental health problems encompass a broad spectrum of psychological disorders, ranging from prevalent issues like depressive and anxiety symptoms to suicidal behaviour. Depression manifests as low mood, marked by feelings of sadness, difficulty in concentration, and notable changes in appetite and sleep patterns (1). Individuals may also struggle with emotions of dejection, hopelessness, and, in severe cases, harbour suicidal thoughts. The severity of depression varies, from mild to moderate and, in extreme cases, may lead to fatal complications. Unfortunately, mental health problems often go undiagnosed, which further delay treatment, resulting in unsatisfactory outcomes (1).

Recognising the urgency of addressing this issue, numerous screening tools have been developed for early detection in primary healthcare and community settings. These tools include the General Health Questionnaire (GHQ-12; GHQ-28) (2,3), Mini International Neuropsychiatric Interview (MINI) (4), and Patient Health Questionnaire (PHQ-9) (5). Analyses from the previous NHMS using the GHQ-12 showed an increase in the prevalence of mental health problems among adults in Malaysia aged 16 years old and above—from 10.7% in 1996 to 29.2% in 2015 (6). Suicidal ideation prevalence fluctuated between 1.7% and 26%, with an inconclusive trend over the surveyed years (7,8). The NHMS 2019 introduced the PHQ-9, revealing that approximately 2.3% of adults in Malaysia experienced depression (9). Addressing the mental health problems in Malaysia necessitates a multifaceted approach to ensure more intensive programmes and effective interventions are planned and implemented.

OBJECTIVES

To determine the prevalence of depression among individuals aged 16 years old and above in Malaysia.

METHODS

The mental health module was offered to eligible respondents aged 16 years old and above. Data were collected through a validated self-administered Patient Health Questionnaire (PHQ-9).

DEFINITIONS

The Patient Health Questionnaire (PHQ-9) consisted of nine items and the total score ranged from 0 to 27; each of the nine items was scored from 0=not at all, 1=several days, 2=more than half the days to 3=nearly every day. Based on the validation study by Sherina et al. (2012), a positive score was defined as a total score of 10 and above, and would be categorised as having depression in this study (5). All items must be answered to be considered as a valid response.

FINDINGS

10,487 respondents responded to this module. **(Table 4.14.2).**

The prevalence of depression among individuals aged 16 years old and above was 4.6% (95% CI: 4.08, 5.22). There were no differences in prevalence by respondents residing in urban or rural areas. Among respondents with depression, 43.6% (95% CI: 37.53, 49.87) had thoughts that they would be better off dead or hurting themselves in some way. The prevalence of overall depression was higher among female respondents (5.4%; 95% CI: 4.63, 6.24) than male respondents (3.9%; 95% CI: 3.17, 4.74). By age group, the prevalence was significantly higher among respondents aged 16-19 years old (7.9%; 95% CI: 5.81, 10.71), followed by those aged 20-29 years old (7.6%; 95% CI: 6.12, 9.40). The lowest prevalence was among those aged 50-59 years old (2.4%; 95% CI: 1.67, 3.58) **(Table 4.14.2).**

Respondents from Bumiputera Sarawak ethnicity had the highest prevalence of depression (9.5%; 95% CI: 6.51, 13.59) and the lowest prevalence was among Chinese ethnicity (2.6%; 95% CI: 1.69, 4.11) **(Table 4.14.2).**

Respondents who were never married had a significantly higher prevalence of depression at 8.0% (95% CI: 6.64, 9.52) as compared to those who were married/living with partner (2.9%; 95% CI: 2.45, 3.50). Respondents with no formal education had the highest prevalence of depression at 5.5% (95% CI: 3.29, 8.94). By occupational status, students reported the highest prevalence of depression (9.0%; 95% CI: 6.79, 11.85), and the lowest prevalence was among the retiree group at 2.6% (95% CI: 1.57, 4.40). By household income category, the highest prevalence of depression was from the B40 groups (4.7%; 95% CI: 4.07, 5.51). However, there was no significant difference in the prevalence among different household income categories **(Table 4.14.2).**

CONCLUSION

The prevalence of depression showed an increasing trend from 2.3% (2019) to 4.6% (2023) **(Table 4.14.1)** with almost half of those with depression experiencing thoughts that they would be better off dead or hurting themselves in some way. The young age group (16-19 and 20-29 years old) and respondents who were never married reported a significantly higher prevalence of depression compared to other age groups and married respondents, respectively. Other sociodemographic profiles such as female respondents, Bumiputera Sarawak ethnicity, students, and respondents from

the lowest household income category also reported a higher prevalence of depression compared to other groups.

RECOMMENDATIONS

- Enhance early recognition of depression to enable prompt intervention.
- Build awareness and increase mental health promotions among younger age groups, students, women, and certain ethnicities.
- Strengthen the strategies among multi-agencies to ensure a holistic approach and enhance mental health programmes for working adults.
- Conduct a further study on the prevalence of anxiety and suicidal behaviour.

Table 4.14.1: Prevalence of depression among adults in Malaysia, 2019 and 2023

	2019 (%)	2023 (%)
Depression	2.3	4.6

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Table 4.14.2: Prevalence of depression among individuals aged 16 years old and above in Malaysia by sociodemographic characteristics (n=10,487)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	456	1,000,173	4.6	4.08	5.22
Location					
Urban	343	777,727	4.6	3.99	5.30
Rural	113	222,447	4.6	3.61	5.95
Sex					
Male	180	429,582	3.9	3.17	4.74
Female	276	570,591	5.4	4.63	6.24
Age Group (Years)					
16 – 19	59	135,007	7.9	5.81	10.71
20 – 29	125	358,553	7.6	6.12	9.40
30 – 39	81	225,741	4.1	3.13	5.41
40 – 49	55	102,436	3.1	2.28	4.16
50 – 59	50	83,020	2.4	1.67	3.58
60 and above	86	95,415	3.1	2.35	4.09
Ethnicity					
Malay ^a	295	603,798	5.0	4.28	5.82
Chinese	41	116,421	2.6	1.69	4.11
Indian	38	84,598	6.9	4.63	10.04
Bumiputera Sabah	42	75,367	5.1	3.46	7.38
Bumiputera Sarawak	27	72,267	9.5	6.51	13.59
Others	13	47,722	2.8	1.43	5.37
Education Level					
No formal education	40	80,322	5.5	3.29	8.94
Primary education	52	87,980	4.1	3.03	5.64
Secondary education	314	713,705	4.8	4.20	5.53
Tertiary education	49	114,925	3.6	2.42	5.25
Marital Status					
Never married	194	527,417	8.0	6.64	9.52
Married/ Living with partner	207	389,176	2.9	2.45	3.50
Separated/ Divorced/ Widowed	55	83,580	4.7	3.19	6.99
Occupation					
Government employee	29	60,578	3.7	2.32	5.96
Private employee	120	320,201	4.2	3.30	5.23
Self employed	53	121,004	3.5	2.45	4.88
Unpaid worker/ Homemaker/ Caregiver	70	139,021	4.0	3.01	5.25
Retiree	23	30,379	2.6	1.57	4.40
Student	59	157,774	9.0	6.79	11.85
Not working ^b	98	161,395	6.7	5.28	8.55
Household Income Group					
Less than RM 1000	77	162,265	6.3	4.73	8.34
RM 1,000 – RM 1999	72	153,262	5.0	3.57	7.09
RM 2,000 – RM 3,999	108	235,538	4.2	3.31	5.20
RM 4,000 – RM 5,999	77	152,007	4.0	3.00	5.40
RM 6,000 – RM 7,999	46	100,148	4.5	3.16	6.32
RM 8,000 – RM 9,999	25	67,706	4.3	2.59	7.02
RM 10,000 and above	50	126,006	4.6	3.18	6.67
Household Income Quintile					
Quintile 1	101	201,359	5.5	4.21	7.16
Quintile 2	106	237,655	5.5	4.31	7.10
Quintile 3	65	144,854	3.3	2.44	4.54
Quintile 4	101	205,380	4.3	3.37	5.39
Quintile 5	82	207,683	4.6	3.49	6.09
Household Income Category					
Bottom 40%	284	602,558	4.7	4.07	5.51
Middle 40%	119	262,750	4.3	3.45	5.45
Top 20%	52	131,624	4.6	3.33	6.44

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: MENTAL HEALTH PROBLEMS AMONG CHILDREN

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HIGHLIGHTS

- Mental, emotional, and behavioural issues were observed in 16.5% of children in Malaysia.
- The prevalence of mental, emotional, and behavioural problems has doubled since 2019.
- Peer problems showed the most consistent prevalence among domains, with a rising trend noted from 2015 to 2023.

INTRODUCTION

Childhood represents a critical phase for nurturing mental health, given that more than half of all mental health problems arise during this period and persist into adulthood for many individuals (1). The prevalence of mental health challenges among children worldwide has escalated to nearly 14% (2). Compounding this issue is the unfortunate reality that a significant number of these young individuals do not have access to the specialized care they need urgently (3). The World Health Organisation (WHO) defines mental health not merely as the absence of illness but as a comprehensive state of well-being where individuals can develop their capabilities, manage daily life stresses, engage in productive work, and contribute positively to their community (4).

The holistic development and mental well-being of a child encompass diverse facets, including emotional, behavioural, social, and cognitive dimensions. Child mental health stands apart from that of adults due to the distinctive developmental stages experienced by children, rendering it more intricate. A child's individual characteristics play a significant role in shaping their overall well-being. Additionally, external factors such as family, community, and societal influence directly impact and mould a child's mental health.

In Malaysia, the National Health Morbidity Survey (NHMS) conducted in 2019 using the Strength and Difficulty Questionnaire (SDQ) found that the prevalence of mental health problems among children aged 5 to 15 years old was 7.9% (5) (**Table 4.15.3**). The prevalence was higher among females (8.4%), older age group (10-15 years old) (9.5%) and those from rural areas (8.8%).

OBJECTIVES

General Objective

To determine the prevalence of mental health problems among children in Malaysia aged 5 to 15 years old.

Specific Objectives

1. To determine the prevalence of emotional problems among children in Malaysia aged 5 to 15 years old.
2. To determine the prevalence of conduct problems among children in Malaysia aged 5 to 15 years old.
3. To determine the prevalence of hyperactivity problems among children in Malaysia aged 5 to 15 years old.
4. To determine the prevalence of peer problems among children in Malaysia aged 5 to 15 years old.
5. To determine the prevalence of pro-social skills among children in Malaysia aged 5 to 15 years old.

METHODS

The mental health module was carried out among respondents aged 5 to 15 years old where information was obtained from their parents or guardians. Data were collected through the Strengths and Difficulties Questionnaires (SDQ) (6). The SDQ is a brief behavioural screening questionnaire measuring emotional, conduct, hyperactivity and peer problems as well as pro-social skills. In order to compare the results of this survey based on trends, the same instrument was employed as in the previous surveys (NHMS 2015 and 2019).

DEFINITIONS

There were two languages available for the SDQ questionnaire: Malay and English. The Malay version was translated from the English version and validated (7). The Malay version of the SDQ has acceptable internal consistency, with a Cronbach's alpha coefficient of 0.67 based on parent ratings of a large group of children in Malaysia. Informants answered the questionnaires using Likert scales. The SDQ comprises 25 items, with 5 scales of 5 items; which were emotional problems scale, conduct problems scale, hyperactivity problem scale, peer problem scale and pro-social scale. If at least three tasks were accomplished, the scale was scored up to the pro rata amount. There were five elements in each problem score, and the scores ranged from 0 to 10.

Table 4.15.1: Scores and categorise for SDQ scales

SDQ SCALES	CATEGORIES	
	NORMAL	ABNORMAL
Emotional Problems Scores	0 - 3	4 - 10
Conduct Problem Scores	0 - 2	3 - 10
Hyperactivity Problem Scores	0 - 5	6 - 10
Peer Problem Scores	0 - 2	3 - 10
Pro-Social Scores	6 - 10	0 - 5

We considered a child to have emotional and behavioural problems if the total difficulty score was 14 or more. Total Difficulties Scores were generated by adding the scores from all the scales except the pro-social scale. The score ranged from 0 to 40 and was counted as missing if one of the four component scores was missing.

Table 4.15.2: Total difficulties scores and categories for SDQ

SCALE	CATEGORIES	
	NORMAL	ABNORMAL
Total Difficulties Scores	0 - 13	14 - 40

FINDINGS

About 2,400 children aged 5 to 15 years old participated in this module. The overall prevalence of mental health problems among children was 16.5% (95% CI: 14.19, 19.10). Mental health problems were higher among females [17.5% (95% CI: 14.61, 20.87)] than males [15.5% (95% CI: 12.55, 19.10)]. Children from urban areas [16.9% (95% CI: 14.14, 20.16)] had a higher prevalence of mental health problems as compared to those from rural areas [15.1% (95% CI: 11.76, 19.19)]. Children aged 10-15 years old showed a higher prevalence of mental health problems [16.9% (95% CI: 13.84, 20.42)], as compared to children aged 5-9 years old [16.0% (95% CI: 13.08, 19.35)]. By household income category, those from middle household income (M40) category showed a higher prevalence of mental health problems [20.6% (95% CI: 15.49, 26.91)] as compared to lower household income (B40) category [14.8% (95% CI: 12.32, 17.750)] and higher household income (T20) category [16.2% (95% CI: 11.00, 23.28)] (**Table 4.15.4**).

By domains, peer problems had the highest prevalence with an increasing trend from 32.5% (NHMS 2015) and 42.9% (NHMS 2019) in previous surveys to 45.9% in this current survey (**Table 4.15.8**). The prevalence of emotional problems (16.5%) (**Table 4.15.5**), conduct problems (24.5%) (**Table 4.15.6**), and hyperactivity problems (7.7%) (**Table 4.15.7**) also showed an increasing trend as compared to NHMS 2015 and NHMS 2019. In the current study, the prevalence of pro-social skills (15.5%) was found to be much lower than reported in NHMS 2019 (27.7%) (**Table 4.15.9**).

CONCLUSION

Overall, the prevalence of mental health problems among children aged 5-15 years old in Malaysia was 16.5%. This survey found a higher prevalence of mental health problems among those in the older age group, females, those residing in urban areas and those from middle household income category. It was noted that the main types of mental health problems were peer problems, followed by conduct problems and emotional problems.

Table 4.15.3: Trends in the prevalence of mental health problems among children aged 5 to 15 in Malaysia, 2015-2023

	2015 (%)	2019 (%)	2023 (%)
Overall mental, emotional and behavioural problems	12.1	7.9	16.5
Emotional problem	15.7	8.3	16.5
Conduct problem	16.7	15.9	24.5
Hyperactivity problem	4.6	2.3	7.7
Peer problem	32.5	42.9	45.9
Pro-social skills	11.2	27.7	15.5

RECOMMENDATIONS

- Empower school teachers and students to handle peer problems through training on social emotional learning and skills
- Strengthen training for school teachers at all levels in early detection of mental health and behavioural problems among children and facilitate urgent referral for further management
- Strengthen school-based counselling services to at-risk children.
- Build mental health awareness among parents and community with regards to mental health problems and parenting skills.
- Enhance multi agencies involvement to ensure support for parents and caregivers in handling children with mental health and behavioural problems.
- Conduct further study on prevalence of anxiety and depressive symptoms and suicidal behaviour among children.

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Table 4.15.4: Prevalence of mental health problems among those aged 5-15 years old in Malaysia by sociodemographic characteristics (n=2,400)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	411	922,318	16.5	14.19	19.10
Location					
Urban	325	719,220	16.9	14.14	20.16
Rural	86	203,098	15.1	11.76	19.19
Sex					
Male	206	450,066	15.5	12.55	19.10
Female	205	472,253	17.5	14.61	20.87
Age Group (Years)					
5 - 9	181	370,270	16.0	13.08	19.35
10 - 15	230	552,048	16.9	13.84	20.42
Ethnicity					
Malay ^a	300	583,246	17.2	14.77	20.02
Chinese	27	146,047	15.3	9.20	24.27
Indian	32	77,824	28.8	16.61	45.11
Bumiputera Sabah	36	68,097	14.5	7.33	26.54
Bumiputera Sarawak	7	-	-	-	-
Others	9	-	-	-	-
Household Income Group					
Less than RM 1000	59	127,448	15.7	10.76	22.44
RM 1,000 – RM 1999	40	94,807	12.7	8.27	19.10
RM 2,000 – RM 3,999	104	241,905	15.1	11.27	19.94
RM 4,000 – RM 5,999	70	178,065	20.8	14.47	29.00
RM 6,000 – RM 7,999	44	90,926	19.2	11.78	29.61
RM 8,000 – RM 9,999	24	45,877	13.0	6.68	23.82
RM 10,000 and above	69	140,765	19.1	12.05	28.85
Household Income Quintile					
Quintile 1	74	161,459	15.5	11.08	21.19
Quintile 2	67	156,658	13.1	9.52	17.74
Quintile 3	83	194,401	17.2	12.60	23.01
Quintile 4	90	214,671	20.0	14.45	26.91
Quintile 5	96	192,604	17.0	11.79	24.01
Household Income Category					
Bottom 40%	248	508,130	14.8	12.32	17.75
Middle 40%	113	294,305	20.6	15.49	26.91
Top 20%	49	117,358	16.2	11.00	23.28

^a Malay included Orang Asli

Table 4.15.5: Prevalence of emotional health problems among those aged 5-15 years old in Malaysia by sociodemographic characteristics (n= 2,400)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	403	923,981	16.5	13.88	19.57
Location					
Urban	326	747,267	17.6	14.33	21.43
Rural	77	176,714	13.1	10.02	17.04
Sex					
Male	180	405,179	14.0	11.08	17.53
Female	223	518,802	19.2	15.81	23.22
Age Group (Years)					
5 - 9	158	299,716	12.9	10.64	15.62
10 - 15	245	624,265	19.1	15.43	23.35
Ethnicity					
Malay ^a	284	563,170	16.6	14.02	19.65
Chinese	22	104,378	10.9	6.84	16.97
Indian	26	62,579	23.2	13.61	36.59
Bumiputera Sabah	46	80,459	17.1	10.45	26.70
Bumiputera Sarawak	14	32,565	15.8	10.60	22.89
Others	11	-	-	-	-
Household Income Group					
Less than RM 1000	61	130,003	16.1	11.42	22.09
RM 1,000 – RM 1999	43	148,043	19.9	9.96	35.77
RM 2,000 – RM 3,999	109	259,205	16.2	12.29	21.01
RM 4,000 – RM 5,999	65	148,720	17.4	12.12	24.31
RM 6,000 – RM 7,999	36	61,923	13.1	8.28	19.97
RM 8,000 – RM 9,999	27	51,612	14.6	7.56	26.45
RM 10,000 and above	62	124,476	16.9	11.11	24.78
Household Income Quintile					
Quintile 1	77	180,517	17.3	12.83	22.92
Quintile 2	69	199,222	16.6	10.90	24.59
Quintile 3	88	209,416	18.5	13.93	24.19
Quintile 4	77	151,054	14.0	10.05	19.29
Quintile 5	92	183,772	16.3	11.67	22.22
Household Income Category					
Bottom 40%	256	586,673	17.1	13.64	21.28
Middle 40%	102	229,066	16.0	11.76	21.53
Top 20%	45	108,242	15.0	10.13	21.56

^a Malay included Orang Asli

Table 4.15.6: Prevalence of conduct problems among those aged 5-15 years old in Malaysia by sociodemographic characteristics (n=2,400)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	572	1,369,532	24.5	21.78	27.43
Location					
Urban	444	1,078,292	25.4	22.11	28.99
Rural	128	291,239	21.7	17.67	26.25
Sex					
Male	290	686,893	23.7	20.39	27.43
Female	282	682,639	25.3	21.76	29.26
Age Group (Years)					
5 - 9	270	572,809	24.7	20.76	29.13
10 - 15	302	796,723	24.4	20.79	28.31
Ethnicity					
Malay ^a	390	810,058	23.9	21.14	26.99
Chinese	49	232,169	24.3	16.59	34.07
Indian	38	109,631	40.6	29.75	52.42
Bumiputera Sabah	62	129,258	27.5	17.90	39.64
Bumiputera Sarawak	24	58,509	28.4	20.21	38.28
Others	9	-	-	-	-
Household Income Group					
Less than RM 1000	70	167,776	20.7	15.20	27.59
RM 1,000 – RM 1999	52	132,643	17.8	12.26	25.16
RM 2,000 – RM 3,999	157	388,427	24.2	20.02	29.04
RM 4,000 – RM 5,999	95	239,321	28.0	20.72	36.59
RM 6,000 – RM 7,999	73	154,966	32.7	22.07	45.37
RM 8,000 – RM 9,999	31	72,195	20.5	12.50	31.72
RM 10,000 and above	92	206,788	28.0	20.12	37.55
Household Income Quintile					
Quintile 1	90	218,848	21.0	15.88	27.18
Quintile 2	99	237,165	19.8	15.40	25.13
Quintile 3	118	299,998	26.5	21.07	32.80
Quintile 4	134	323,104	30.0	22.98	38.20
Quintile 5	129	283,001	25.0	19.09	32.12
Household Income Category					
Bottom 40%	346	776,456	22.7	19.74	25.88
Middle 40%	146	396,064	27.7	21.80	34.60
Top 20%	78	189,597	26.2	19.08	34.87

^a Malay included Orang Asli

Table 4.15.7: Prevalence of hyperactivity problems among those aged 5-15 years old in Malaysia by sociodemographic characteristics (n=2,400)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	192	430,185	7.7	6.23	9.48
Location					
Urban	153	340,899	8.0	6.28	10.21
Rural	39	89,286	6.6	4.43	9.84
Sex					
Male	111	233,619	8.1	6.29	10.30
Female	81	196,566	7.3	5.42	9.74
Age Group (Years)					
5 - 9	102	201,461	8.7	6.84	10.97
10 - 15	90	228,723	7.0	5.07	9.57
Ethnicity					
Malay ^a	132	255,291	7.5	5.97	9.50
Chinese	19	87,703	9.2	5.23	15.58
Indian	16	42,932	15.9	8.24	28.45
Bumiputera Sabah	19	-	-	-	-
Bumiputera Sarawak	4	-	-	-	-
Others	2	-	-	-	-
Household Income Group					
Less than RM 1000	32	72,378	8.9	5.42	14.40
RM 1,000 – RM 1999	13	25,571	3.4	1.76	6.59
RM 2,000 – RM 3,999	48	110,973	6.9	4.79	9.92
RM 4,000 – RM 5,999	34	91,521	10.7	6.81	16.41
RM 6,000 – RM 7,999	21	31,299	6.6	3.41	12.38
RM 8,000 – RM 9,999	10	-	-	-	-
RM 10,000 and above	33	79,013	10.7	5.91	18.61
Household Income Quintile					
Quintile 1	35	78,490	7.5	4.68	11.87
Quintile 2	27	56,887	4.8	3.10	7.22
Quintile 3	41	94,113	8.3	5.27	12.90
Quintile 4	44	98,655	9.2	6.12	13.53
Quintile 5	44	99,514	8.8	5.34	14.20
Household Income Category					
Bottom 40%	111	237,844	6.9	5.39	8.90
Middle 40%	61	142,044	10.0	6.64	14.65
Top 20%	19	47,771	6.6	3.91	10.95

^a Malay included Orang Asli

Table 4.15.8: Prevalence of peer problems among those aged 5-15 years old in Malaysia by sociodemographic characteristics (n= 2,400)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,090	2,563,434	45.9	42.83	48.91
Location					
Urban	839	1,989,988	46.9	43.44	50.34
Rural	251	573,446	42.6	36.46	49.06
Sex					
Male	564	1,310,763	45.3	41.16	49.47
Female	526	1,252,671	46.5	42.56	50.42
Age Group (Years)					
5 - 9	510	1,045,625	45.1	41.10	49.16
10 - 15	580	1,517,810	46.4	42.42	50.40
Ethnicity					
Malay ^a	771	1,606,096	47.5	44.10	50.86
Chinese	85	389,054	40.7	31.72	50.31
Indian	55	149,694	55.4	39.91	69.93
Bumiputera Sabah	114	200,978	42.7	33.89	51.97
Bumiputera Sarawak	29	74,096	35.9	22.10	52.60
Others	36	143,516	47.3	28.98	66.38
Household Income Group					
Less than RM 1000	141	360,781	44.5	36.34	53.06
RM 1,000 – RM 1999	137	350,332	47.1	37.63	56.69
RM 2,000 – RM 3,999	302	739,652	46.2	40.39	52.06
RM 4,000 – RM 5,999	163	383,937	44.9	38.17	51.78
RM 6,000 – RM 7,999	117	209,422	44.1	34.20	54.56
RM 8,000 – RM 9,999	69	157,911	44.8	33.14	57.07
RM 10,000 and above	157	347,868	47.1	38.00	56.46
Household Income Quintile					
Quintile 1	188	478,276	45.8	38.83	53.02
Quintile 2	220	542,598	45.3	39.00	51.84
Quintile 3	217	533,533	47.2	40.59	53.84
Quintile 4	224	472,710	43.9	37.37	50.75
Quintile 5	237	522,785	46.3	39.47	53.21
Household Income Category					
Bottom 40%	678	1,557,046	45.4	41.59	49.35
Middle 40%	279	660,259	46.3	40.09	52.54
Top 20%	129	332,598	46.0	38.59	53.56

^a Malay included Orang Asli

Table 4.15.9: Prevalence of pro-social skills among those aged 5 -15 years old in Malaysia by sociodemographic characteristics (n= 2,400)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	387	864,097	15.5	13.47	17.68
Location					
Urban	290	646,353	15.2	12.93	17.85
Rural	97	217,744	16.2	12.58	20.60
Sex					
Male	213	464,648	16.1	13.32	19.22
Female	174	399,449	14.8	12.22	17.85
Age Group (Years)					
5 - 9	172	317,275	13.7	11.20	16.61
10 - 15	215	546,822	16.7	14.00	19.83
Ethnicity					
Malay ^a	281	567,085	16.8	14.33	19.50
Chinese	34	154,031	16.1	11.13	22.75
Indian	18	-	-	-	-
Bumiputera Sabah	31	37,172	7.9	4.19	14.38
Bumiputera Sarawak	13	33,805	16.4	9.15	27.65
Others	10	-	-	-	-
Household Income Group					
Less than RM 1000	40	115,887	14.3	9.74	20.53
RM 1,000 – RM 1999	40	103,484	13.9	9.14	20.58
RM 2,000 – RM 3,999	111	280,303	17.5	14.01	21.64
RM 4,000 – RM 5,999	59	135,130	15.8	11.73	20.93
RM 6,000 – RM 7,999	55	63,890	13.5	8.35	20.99
RM 8,000 – RM 9,999	21	52,389	14.9	8.51	24.68
RM 10,000 and above	59	105,833	14.3	9.00	22.09
Household Income Quintile					
Quintile 1	51	133,861	12.8	9.00	17.97
Quintile 2	83	219,109	18.3	13.63	24.14
Quintile 3	71	181,650	16.1	12.08	21.04
Quintile 4	94	160,207	14.9	11.13	19.64
Quintile 5	86	162,088	14.3	10.21	19.78
Household Income Category					
Bottom 40%	237	540,499	15.8	13.27	18.65
Middle 40%	115	257,361	18.0	14.20	22.62
Top 20%	33	59,056	8.2	5.04	12.96

^a Malay included Orang Asli

NON-COMMUNICABLE DISEASES: DISABILITY

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HIGHLIGHTS

- The prevalence of overall disability was 8.2%.
- The prevalence of overall functional difficulty was 21.7%.
- The prevalence of difficulty in seeing was 11.1%, walking 10.2%, remembering 6.9%, hearing 3.2%, communicating 1.8%, and self-care 1.5%.
- The prevalence of rehabilitation service utilisation among person with disability was 40.6%.

INTRODUCTION

The World Health Organization (WHO) has estimated that over a billion (15%) of the world's population lives with a disability (1). Disability continues to be a major health issue, as people with disabilities face barriers in accessing health and related services, have worse health outcomes, experience stigmatisation, discrimination and inequalities, and are subject to multiple violations of their rights. In response to these disadvantaged outcomes, the Ministry of Health (MOH) Malaysia, has incorporated a Plan of Action (POA) for Health Care of Persons with Disabilities (PWDs) 2011 - 2020 and a National POA for PWDs 2016 - 2022 (2,3). The WHO has developed the Global Disabilities Action Plan 2014-2021 which aimed to strengthen the collection of relevant and internationally comparable data on disability and support research on disability

(4). Reliable data and associated disability factors are needed for the development of policies, programs and strategies in Malaysia, as well as for monitoring and evaluating the existing programs for PWDs. Thus, the National Health and Morbidity Survey (NHMS) 2023 continues to focus on the prevalence of disability and rehabilitation service utilisation.

OBJECTIVES

General Objective

To determine the prevalence of disability among adults in Malaysia.

Specific Objectives

1. To determine the prevalence of overall difficulty among adults in Malaysia.
2. To determine the prevalence of difficulty in seeing among adults in Malaysia.
3. To determine the prevalence of difficulty in hearing among adults in Malaysia.
4. To determine the prevalence of difficulty in walking among adults in Malaysia.
5. To determine the prevalence of difficulty in remembering/ concentrating among adults in Malaysia.
6. To determine the prevalence of difficulty in self-care among adults in Malaysia.
7. To determine the prevalence of difficulty in communicating among adults in Malaysia.
8. To determine the prevalence of overall disability among adults in Malaysia.
9. To determine the prevalence of rehabilitation services utilisation among adults with disabilities in Malaysia.

METHODS

Data on disability was obtained from adult respondents aged 18 years old and above via face-to-face interviews by trained research assistants using the Washington Group Questionnaire (short version).

DEFINITIONS

- 1. Difficulty** is defined as having ‘some difficulty’ or ‘a lot of difficulty’ or ‘cannot do at all’ in an individual domain.
- 2. Overall difficulty** was defined as having ‘some difficulty’ or ‘a lot of difficulty’ or ‘cannot do at all’ in any domain.
- 3. Overall disability** was defined as having ‘some difficulty’ in two domains or ‘a lot of difficulty’ or ‘cannot do at all’ in one domain.
- 4. Rehabilitation services utilisation** is defined as the use of rehabilitation services among people with disabilities.

FINDINGS

Disability

The national prevalence of overall disability was 8.2% (95% CI: 7.37, 9.17). By state, Sarawak had the highest prevalence of overall disability, 24.1% (95% CI: 19.23, 29.80), followed by Perak, 11.2% (95% CI: 7.82, 15.84) and Wilayah Persekutuan Putrajaya, 10.2% (95% CI: 7.06, 14.61). While the lowest prevalence was in Melaka, 4.5% (95% CI: 2.25, 8.92). The prevalence of overall disability was significantly higher in rural areas, 11.8% (95% CI: 9.35, 14.79) as compared to urban areas, 7.2% (95% CI: 6.42, 8.11) (**Table 4.16.2**).

By sex, females showed a significantly higher prevalence of overall disability [9.0% (95% CI: 7.94, 10.23)] as compared to males [7.5% (95% CI: 6.51, 8.62)]. The prevalence showed an increasing trend with age, from 2.7% (95% CI: 1.97, 3.77) among the 30-39 years old age group to 26.0% (95% CI: 23.59, 28.64) among the 60 years old and above. Among ethnic groups, Bumiputera Sarawak reported the highest prevalence of overall disability [21.4% (95% CI: 17.46, 26.04)], followed by Chinese, 9.7% (95% CI: 7.32, 12.76) and Indians, 7.9% (95% CI: 5.70, 10.80). In terms of marital status, the prevalence was significantly higher among those who were separated/ divorced/ widowed [21.0% (95% CI: 18.25, 24.01)] as compared to those who were married or living with a partner [8.1% (95% CI: 7.14, 9.25)] and those who were never married [4.5% (95% CI: 3.37, 6.05)] (**Table 4.16.2**).

In terms of education level, the prevalence of overall disability was significantly higher among those with no formal education at 24.2% (95% CI: 20.51, 28.39) as compared to those with either primary, secondary, or tertiary education levels. Respondents who were not working showed a significantly higher prevalence of overall disability at 27.6% (95% CI: 24.38, 31.06) as compared to other occupational status. Respondents from B40 household income category also reported a significantly higher prevalence of overall disability,

at 9.5% (95% CI: 8.50, 10.69) compared to those with a higher household income level (**Table 4.16.2**).

Difficulty

The national prevalence of overall difficulty was 21.7% (95% CI: 20.03, 23.37). Difficulty in seeing was the most common type of difficulty with a prevalence of 11.1% (95% CI: 9.91, 12.48) among adults in Malaysia. This was followed by difficulties in hearing [3.2% (95% CI: 2.80, 3.61)], walking [10.2% (95% CI: 9.29, 11.26)], remembering [6.9% (95% CI: 6.02, 7.82)], self-care [1.5% (95% CI: 1.28, 1.80)], and communicating [1.8% (95% CI: 1.49, 2.16)] (**Table 4.16.3**).

By state, Sarawak had the highest prevalence of overall difficulty with 47.6% (95% CI: 40.25, 55.01), followed by Perak at 31.2% (95% CI: 25.05, 38.02) and WP Putrajaya at 28.3% (95% CI: 21.64, 36.02), while the lowest was in Melaka at 14.9% (95% CI: 9.35, 22.82). The prevalence was significantly higher in the rural areas at 27.9% (95% CI: 23.85, 32.38) as compared to the urban areas at 19.9% (95% CI: 18.21, 21.67) (**Table 4.16.3**).

Females reported a significantly higher prevalence of overall difficulty at 23.4% (95% CI: 21.67, 25.32) as compared to males at 20.0% (95% CI: 18.00, 22.13). The prevalence of overall difficulty increased with increasing age. Adults aged 60 years old and above had significantly higher prevalence of overall difficulty as compared to other age groups at 48.9% (95% CI: 45.85, 51.86). By ethnicity, Bumiputera Sarawak reported the highest prevalence of overall difficulty at 47.0% (95% CI: 39.73, 54.42), followed by Chinese, at 23.4% (95% CI: 19.70, 27.64) and Malay at 20.8% (95% CI: 18.86, 22.88). In terms of marital status, those who were separated/ divorced/ widowed showed a significantly higher prevalence of overall difficulty at 38.9% (95% CI: 35.52, 42.41)] as compared to those who were married at 23.3% (95% CI: 21.46, 25.19) or those who were never married at 12.8% (95% CI: 10.65, 15.24) (**Table 4.16.3**).

By education level, those with no formal education at 41.8% (95% CI: 36.54, 47.36) showed a higher prevalence of overall difficulty as compared to those with a primary [35.2% (95% CI: 30.86, 39.78)] or secondary education [18.7% (95% CI: 17.06, 20.55)]. The prevalence was significantly higher among those who were not working [47.7% (95% CI: 43.98, 51.40)] as compared to other occupational status. Respondents from B40 household income category also reported a significantly higher prevalence of overall difficulty at 23.4% (95% CI: 21.61, 25.37) as compared to those with a higher household income level (**Table 4.16.3**).

Rehabilitation service utilisation

Overall, 40.6% (95% CI: 36.88, 44.33) of those with disability utilised rehabilitation services. There was no significant difference in any sociodemographic characteristics with rehabilitation service utilisation. The highest prevalence of rehabilitation service utilisation was in the state of Pulau Pinang [60.5% (95% CI: 44.45, 74.57)]; while the lowest was in Johor [34.2% (95% CI: 22.20, 48.55)]. The prevalence was higher in urban areas [42.6% (95% CI: 37.78, 47.47)] and among males [44.8% (95% CI: 39.24, 50.55)]. Rehabilitation services were mostly utilised by those aged 20-29 years old [54.3% (95% CI: 32.52, 74.54)] and 60 years old and above [42.6% (95% CI: 37.68, 47.66)] (**Table 4.16.4**)

CONCLUSION

According to the survey results, there was a reduction in the overall disability rate among adults in Malaysia, with a prevalence of 8.2%, as compared to 11.8% in NHMS 2015 (5) and 11.1% in NHMS 2019 (6). The prevalence of overall difficulty was also decreasing, from 25.9% in 2019 to 21.7% in the current survey. Among all the domains for difficulties, the highest prevalence was in seeing with 11.1%. In contrast to NHMS 2019, this survey indicated a general reduction in the prevalence of difficulties across all domains, with the highest reduction in the difficulty in seeing, decreasing from 16.8% in NHMS 2015 and 14.9% in NHMS 2019. The surveys employed similar methodology, definitions, and cut-off points. Additionally, the current survey also reveals that 40.6% of individuals with disability utilised the rehabilitation services.

RECOMMENDATIONS

- Strengthen promotional activities to create disability awareness, prevention and community-based rehabilitation programmes which are tailored to targeted groups.
- Strengthen the health workforce training to enhance knowledge and skills on working with disabilities to ensure access to quality rehabilitation.
- Collaborate with other agencies in order to scale up the delivery of rehabilitation services through tele-rehabilitation.
- Conduct targeted research evaluating the barriers and enablers of utilising rehabilitation services among women with disability.
- Conduct research on factors contributing to difficulties in seeing and vision service utilisation.

Table 4.16.1: Trend in the prevalence of overall disability in Malaysia, 2015 – 2023

	2015 (%)	2019 (%)	2023 (%)
Overall Disability	11.8	11.1	8.2

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Table 4.16.2: Prevalence of overall disability among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,842)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,207	1,874,091	8.2	7.37	9.17
State					
Johor	86	172,610	6.3	4.66	8.39
Kedah	63	100,312	7.0	5.24	9.42
Kelantan	51	69,798	6.1	3.40	10.76
Melaka	44	-	-	-	-
Negeri Sembilan	48	53,613	6.5	4.05	10.39
Pahang	64	81,353	8.1	6.05	10.76
Pulau Pinang	69	97,501	7.7	5.43	10.72
Perak	103	176,395	11.2	7.82	15.84
Perlis	68	16,521	8.4	6.14	11.35
Selangor	111	310,041	5.9	4.53	7.55
Terengganu	47	54,679	7.2	4.30	11.74
Sabah	66	162,909	6.9	4.47	10.57
Sarawak	192	436,390	24.1	19.23	29.80
WP Kuala Lumpur	63	96,832	6.3	4.76	8.38
WP Labuan	81	5,358	8.3	5.39	12.51
WP Putrajaya	51	6,944	10.2	7.06	14.61
Location					
Urban	830	1,282,488	7.2	6.42	8.11
Rural	377	591,603	11.8	9.35	14.79
Sex					
Male	544	886,244	7.5	6.51	8.62
Female	663	987,847	9.0	7.94	10.23
Age Group (Years)					
18 - 19	10	-	-	-	-
20 - 29	53	157,349	3.1	1.98	4.83
30 - 39	69	160,071	2.7	1.97	3.77
40 - 49	123	220,446	6.1	4.69	8.00
50 - 59	181	387,280	10.4	8.46	12.82
60 and above	771	934,300	26.0	23.59	28.64
Ethnicity					
Malay ^a	665	926,863	7.7	6.74	8.77
Chinese	224	474,211	9.7	7.32	12.76
Indian	83	104,359	7.9	5.70	10.80
Bumiputera Sabah	100	82,723	5.7	3.66	8.67
Bumiputera Sarawak	100	198,800	21.4	17.46	26.04
Others	35	87,136	4.1	2.47	6.65
Education Level					
No formal education	326	450,940	24.2	20.51	28.39
Primary education	275	418,410	16.8	13.51	20.77
Secondary education	546	905,512	6.1	5.29	6.92
Tertiary education	55	91,907	2.7	1.90	3.85
Marital Status					
Never married	119	291,663	4.5	3.37	6.05
Married/ Living with partner	757	1,169,176	8.1	7.14	9.25
Separated/ Divorced/ Widowed	328	408,603	21.0	18.25	24.01
Occupation					
Government employee	55	65,605	4.0	2.66	5.91
Private employee	108	266,462	3.1	2.36	4.18
Self employed	139	238,641	6.5	4.93	8.49
Unpaid worker/ Homemaker/ Caregiver	192	315,331	8.3	6.69	10.35
Retiree	147	199,885	16.3	13.48	19.61
Student	9	-	-	-	-
Not working ^b	549	756,370	27.6	24.38	31.06

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	330	439,864	15.9	13.69	18.43
RM 1,000 – RM 1999	226	353,101	10.6	8.23	13.53
RM 2,000 – RM 3,999	272	448,461	7.6	6.29	9.11
RM 4,000 – RM 5,999	162	288,565	7.3	5.54	9.58
RM 6,000 – RM 7,999	77	125,885	5.5	4.08	7.39
RM 8,000 – RM 9,999	62	92,743	5.8	4.16	8.00
RM 10,000 and above	76	125,040	4.4	3.15	6.19
Household Income Quintile					
Quintile 1	440	615,986	15.7	13.68	17.92
Quintile 2	229	355,859	7.6	6.15	9.47
Quintile 3	209	349,040	7.8	6.26	9.57
Quintile 4	176	314,969	6.3	4.93	8.14
Quintile 5	151	237,806	5.1	4.01	6.56
Household Income Category					
Bottom 40%	876	1,297,963	9.5	8.50	10.69
Middle 40%	243	428,029	6.8	5.48	8.52
Top 20%	86	147,669	5.2	3.97	6.91

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.16.3: Prevalence of difficulty by overall and domains among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,842)

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL DIFFICULTY						DIFFICULTY IN SEEING						DIFFICULTY IN HEARING						DIFFICULTY IN WALKING					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL					
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER	LOWER	UPPER		
MALAYSIA	2,882	4,932,056	21.7	20.03	23.37	1,475	2,533,691	11.1	9.91	12.48	512	723,745	3.2	2.80	3.61	1,451	2,330,242	10.2	9.29	11.26				
State																								
Johor	244	550,324	20.0	15.95	24.78	102	237,085	8.6	6.11	12.03	37	65,842	2.4	1.55	3.67	138	278,293	10.1	7.48	13.54				
Kedah	137	256,009	18.0	14.08	22.71	66	130,181	9.1	6.47	12.79	22	35,573	2.5	1.27	4.87	88	143,577	10.1	7.43	13.59				
Kelantan	123	203,374	17.8	9.60	30.69	65	104,102	9.1	4.93	16.27	15	18,239	1.6	0.81	3.13	38	44,673	3.9	2.73	5.58				
Malaka	123	107,689	14.9	9.35	22.82	55	47,136	6.5	3.56	11.61	23	15,431	2.1	1.11	4.05	72	59,271	8.2	5.14	12.78				
Negeri Sembilan	125	147,715	18.0	11.32	27.42	49	63,920	7.8	4.54	13.05	18	-	-	-	75	81,054	9.9	5.72	16.53					
Pahang	151	217,041	21.6	16.63	27.56	91	134,318	13.4	9.88	17.84	30	31,524	3.1	2.23	4.41	62	78,619	7.8	5.84	10.41				
Pulau Pinang	149	235,092	18.5	14.36	23.48	80	130,214	10.2	7.26	14.27	27	40,598	3.2	2.04	4.96	100	145,765	11.5	7.90	16.35				
Perak	228	489,874	31.2	25.05	38.02	109	235,773	15.0	10.67	20.73	51	85,322	5.4	3.54	8.25	117	211,312	13.4	9.19	19.25				
Perlis	168	39,326	20.0	16.15	24.39	77	18,842	9.6	6.92	13.06	32	8,101	4.1	2.63	6.38	89	19,832	10.1	7.64	13.15				
Selangor	286	901,183	17.0	14.09	20.45	116	351,073	6.6	5.17	8.48	61	156,085	3.0	2.18	3.98	191	593,566	11.2	8.97	13.95				
Terengganu	123	149,161	19.6	12.22	29.85	77	89,925	11.8	7.33	18.46	18	20,069	2.6	1.59	4.33	37	39,381	5.2	3.34	7.91				
Sabah	171	469,552	20.0	15.21	25.74	120	336,771	14.3	10.50	19.22	27	43,312	1.8	1.25	2.70	59	128,786	5.5	4.00	7.46				
Sarawak	388	860,657	47.6	40.25	55.01	231	543,159	30.0	22.02	39.47	61	127,681	7.1	5.23	9.46	175	347,879	19.2	15.53	23.57				
WP Kuala Lumpur	147	270,700	17.7	13.64	22.65	59	93,968	6.2	4.27	8.81	35	52,769	3.5	2.21	5.36	85	145,791	9.6	6.65	13.54				
WP Labuan	201	15,173	23.4	17.84	30.16	119	9,578	14.8	10.69	20.13	32	2,042	3.2	1.80	5.48	64	4,349	6.7	4.52	9.89				
WP Putrajaya	138	19,186	28.3	21.64	36.02	59	7,647	11.3	8.11	15.46	23	3,753	5.5	3.06	9.78	61	8,094	11.9	8.80	15.97				
Location																								
Urban	2,077	3,532,789	19.9	18.21	21.67	1,015	1,705,304	9.6	8.52	10.80	363	541,669	3.0	2.63	3.54	1,050	1,735,909	9.8	8.76	10.89				
Rural	815	1,399,267	27.9	23.85	32.38	460	828,388	16.5	12.87	20.99	149	182,076	3.6	2.85	4.63	401	594,333	11.9	9.71	14.41				
Sex																								
Male	1,288	2,363,357	20.0	18.00	22.13	719	1,270,052	10.7	9.35	12.33	270	388,894	3.3	2.78	3.89	569	998,687	8.4	7.36	9.68				
Female	1,604	2,568,698	23.4	21.67	25.32	756	1,263,639	11.5	10.14	13.10	242	334,851	3.1	2.55	3.66	882	1,331,555	12.2	10.99	13.42				
Age Group (Years)																								
18 - 19	42	89,722	9.3	6.48	13.29	22	59,157	6.2	3.87	9.67	5	-	-	-	7	-	-	-	-	-				
20 - 29	217	620,049	12.2	9.96	14.91	102	314,492	6.2	4.34	8.78	18	33,693	0.7	0.38	1.17	31	92,465	1.8	1.16	2.86				
30 - 39	244	613,474	10.5	8.59	12.69	102	271,747	4.6	3.43	6.24	24	50,826	0.9	0.53	1.42	83	192,365	3.3	2.43	4.41				
40 - 49	406	707,690	19.7	17.08	22.67	237	409,507	11.4	9.30	13.98	26	35,263	1.0	0.61	1.59	152	291,933	8.1	6.51	10.13				
50 - 59	548	1,148,096	31.0	27.86	34.47	273	543,503	14.7	12.35	17.31	52	101,999	2.8	1.97	3.84	274	646,411	17.4	14.68	20.58				
60 and above	1,435	1,753,025	48.9	45.85	51.86	739	935,285	26.1	23.19	29.16	387	494,626	13.8	12.11	15.65	904	1,093,847	30.5	28.10	33.00				
Ethnicity																								
Malay ^a	1,633	2,505,484	20.8	18.86	22.88	815	1,244,485	10.3	9.14	11.67	277	388,150	3.1	2.59	3.61	813	1,130,083	9.4	8.41	10.45				
Chinese	483	1,145,275	23.4	19.70	27.64	222	552,009	11.3	8.26	15.28	113	186,017	3.8	2.91	4.96	281	645,774	13.2	10.67	16.26				
Indian	188	270,559	20.4	15.80	26.01	77	96,858	7.3	5.45	9.75	32	37,329	2.8	1.88	4.22	133	195,844	14.8	10.96	19.67				
Bumiputera Sabah	270	282,789	20.0	15.42	25.64	169	211,125	14.5	10.27	19.96	41	27,329	1.9	1.12	3.11	89	95,055	6.5	4.32	9.69				
Bumiputera Sarawak	207	435,923	47.0	39.73	54.42	126	259,954	28.0	19.77	38.11	35	74,191	8.0	5.47	11.56	96	189,757	20.5	16.47	25.13				
Others	111	282,025	13.2	9.20	18.57	66	169,260	7.9	5.36	11.56	14	30,729	1.4	0.75	2.73	39	73,730	3.5	2.15	5.50				

SOCIODEMOGRAPHIC CHARACTERISTICS	OVERALL DIFFICULTY						DIFFICULTY IN SEEING						DIFFICULTY IN HEARING						DIFFICULTY IN WALKING					
	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL		COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL					
				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER				LOWER	UPPER				
Education Level																								
No formal education	535	778,737	41.8	36.54	47.36	292	431,802	23.2	19.14	27.83	149	182,459	9.8	7.75	12.34	332	427,473	23.0	19.30	27.12				
Primary education	576	875,091	35.2	30.86	39.78	296	484,981	19.5	15.88	23.77	122	171,321	6.9	5.38	8.78	351	491,782	19.8	17.12	22.73				
Secondary education	1,543	2,804,290	18.7	17.06	20.55	780	1,422,005	9.5	8.37	10.78	212	328,124	2.2	1.85	2.60	681	1,214,774	8.1	7.11	9.26				
Tertiary education	229	462,948	13.7	11.24	16.48	102	189,617	5.6	4.27	7.29	26	36,871	1.1	0.66	1.79	84	193,701	5.7	4.17	7.79				
Marital Status																								
Never married	331	822,379	12.8	10.65	15.24	147	410,879	6.4	4.74	8.56	42	73,962	1.1	0.77	1.71	85	187,186	2.9	2.17	3.89				
Married/Living with partner	1,980	3,344,219	23.3	21.46	25.19	1,012	1,705,221	11.9	10.54	13.34	327	466,448	3.2	2.77	3.79	980	1,653,359	11.5	10.29	12.85				
Separated/ Divorced/ Widowed	577	757,675	38.9	35.52	42.41	313	410,674	21.1	18.19	24.32	141	179,550	9.2	7.55	11.22	385	487,525	25.0	21.98	28.37				
Occupation																								
Government employee	184	258,201	15.6	12.44	19.50	87	137,787	8.3	5.96	11.58	19	18,599	1.1	0.59	2.14	70	88,768	5.4	3.82	7.52				
Private employee	464	1,067,963	12.6	10.78	14.68	250	565,994	6.7	5.39	8.24	45	89,088	1.1	0.72	1.53	156	385,664	4.6	3.65	5.66				
Self-employed	408	764,300	20.8	17.57	24.40	236	438,108	11.9	9.86	14.34	60	84,448	2.3	1.65	3.18	148	282,272	7.7	5.78	10.12				
Unpaid worker/ Homemaker/ Caregiver	536	940,649	24.9	22.13	27.85	260	486,888	12.9	10.68	15.45	51	74,700	2.0	1.34	2.90	276	464,207	12.3	10.34	14.52				
Retiree	344	483,250	39.4	35.21	43.85	179	220,687	18.0	14.83	21.71	87	115,209	9.4	7.22	12.16	181	275,924	22.5	19.12	26.34				
Student	34	82,301	7.2	4.72	10.92	21	56,840	5.0	3.01	8.18	3	-	-	-	6	-	-	-	-					
Not working ^a	904	1,306,997	47.7	43.98	51.40	437	616,726	22.5	19.51	25.87	245	330,010	12.0	10.21	14.15	602	802,833	29.3	25.99	32.85				
Household Income Group																								
Less than RM 1000	638	976,688	35.3	31.65	39.24	323	461,647	16.7	14.20	19.61	138	174,357	6.3	5.03	7.89	392	589,991	21.4	18.07	25.06				
RM 1,000 - RM 1999	522	812,871	24.4	20.77	28.41	290	499,681	15.0	11.83	18.85	103	142,670	4.3	3.28	5.57	252	349,725	10.5	8.52	12.86				
RM 2,000 - RM 3,999	656	1,164,943	19.7	17.39	22.20	338	617,074	10.4	8.73	12.40	113	166,441	2.8	2.23	3.54	303	472,228	8.0	6.81	9.34				
RM 4,000 - RM 5,999	417	783,412	19.8	16.60	23.55	204	384,392	9.7	7.46	12.62	71	116,413	2.9	2.08	4.16	201	357,303	9.1	7.43	10.99				
RM 6,000 - RM 7,999	239	419,906	18.4	15.25	21.96	122	200,939	8.8	6.77	11.36	34	52,993	2.3	1.55	3.45	102	193,760	8.5	6.57	10.87				
RM 8,000 - RM 9,999	149	282,832	17.7	14.13	21.85	73	139,907	8.7	6.49	11.66	23	28,298	1.8	1.08	2.87	79	136,639	8.5	6.22	11.63				
RM 10,000 and above	263	489,632	16.6	13.32	20.60	121	222,047	7.9	5.88	10.46	29	42,537	1.5	0.90	2.50	117	217,004	7.7	5.72	10.27				
Household Income Quintile																								
Quintile 1	871	1,324,548	33.7	30.68	36.90	453	665,679	17.0	14.72	19.47	191	242,479	6.2	5.08	7.49	518	760,659	19.4	16.71	22.34				
Quintile 2	574	959,693	20.6	17.68	23.92	313	565,157	12.2	9.88	14.86	95	144,078	3.1	2.32	4.12	258	374,421	8.0	6.57	9.82				
Quintile 3	485	858,239	19.1	16.65	21.73	239	439,567	9.8	7.82	12.13	85	122,706	2.7	2.11	3.62	241	390,089	8.7	7.34	10.20				
Quintile 4	505	949,985	19.1	16.24	22.43	254	463,939	9.4	7.37	11.81	85	138,638	2.8	2.09	3.73	215	406,509	8.2	6.71	9.97				
Quintile 5	449	818,029	17.7	15.13	20.56	212	391,345	8.5	6.90	10.33	55	75,809	1.6	1.15	2.33	214	384,973	8.3	6.67	10.34				
Household Income Category																								
Bottom 40%	1,982	3,188,800	23.4	21.61	25.37	1,016	1,640,688	12.1	10.64	13.65	384	530,691	3.9	3.40	4.48	1,046	1,599,217	11.8	10.57	13.06				
Middle 40%	615	1,183,778	18.9	16.36	21.81	316	621,865	10.0	8.09	12.18	96	153,987	2.5	1.90	3.19	278	481,462	7.7	6.42	9.23				
Top 20%	287	537,917	19.1	15.70	23.07	139	263,134	9.3	7.29	11.92	31	39,031	1.4	0.88	2.18	122	235,970	8.4	6.35	10.99				

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.16.3: Prevalence of difficulty by overall and domains among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,842) (cont.)

SOCIODEMOGRAPHIC CHARACTERISTICS	DIFFICULTY IN REMEMBERING/ CONCENTRATING				DIFFICULTY IN SELF-CARE				DIFFICULTY IN COMMUNICATING						
	COUNT	ESTIMATED POPULATION	95% CONFIDENCE INTERVAL (%)		ESTIMATED POPULATION	95% CONFIDENCE INTERVAL (%)		ESTIMATED POPULATION	95% CONFIDENCE INTERVAL (%)		ESTIMATED POPULATION	95% CONFIDENCE INTERVAL (%)			
			PREVALENCE (%)	LOWER		UPPER	PREVALENCE (%)		LOWER	UPPER		PREVALENCE (%)	LOWER	UPPER	
MALAYSIA	986	1,563,096	6.9	6.02	7.82	228	345,929	1.5	1.28	1.80	230	408,515	1.8	1.49	2.16
State															
Johor	61	122,343	4.4	2.96	6.62	33	65,933	2.4	1.45	3.94	20	47,159	1.7	1.04	2.81
Kedah	36	65,362	4.6	2.95	7.09	15	24,432	1.7	0.96	3.05	6	-	-	-	-
Kelantan	61	-	-	-	-	13	18,277	1.6	0.95	2.69	9	-	-	-	-
Malaka	31	-	-	-	-	11	-	-	-	-	9	-	-	-	-
Negeri Sembilan	24	-	-	-	-	9	-	-	-	-	5	-	-	-	-
Pahang	53	68,693	6.8	4.15	11.07	12	12,383	1.2	0.66	2.30	19	24,403	2.4	1.51	3.89
Pulau Pinang	36	45,397	3.6	2.43	5.22	13	-	-	-	-	11	17,889	1.4	0.71	2.76
Perak	87	161,316	10.3	6.71	15.38	22	39,108	2.5	1.48	4.15	28	57,158	3.6	2.01	6.49
Perlis	53	15,073	7.6	5.21	11.09	12	2,626	1.3	0.69	2.57	9	2,796	1.4	0.75	2.67
Selangor	79	223,376	4.2	3.06	5.80	29	70,540	1.3	0.90	1.97	22	54,051	1.0	0.60	1.73
Terengganu	53	69,193	9.1	4.79	16.54	8	-	-	-	-	5	-	-	-	-
Sabah	55	140,140	6.0	3.56	9.80	8	-	-	-	-	17	46,528	2.0	1.03	3.76
Sarawak	165	382,404	21.2	17.07	25.95	19	40,139	2.2	1.38	3.56	43	92,147	5.1	3.19	8.04
WP Kuala Lumpur	48	84,834	5.5	3.89	7.86	9	-	-	-	-	11	-	-	-	-
WP Labuan	93	6,085	9.4	5.91	14.63	9	-	-	-	-	8	-	-	-	-
WP Putrajaya	51	6,896	10.2	7.06	14.41	6	-	-	-	-	8	-	-	-	-
Location															
Urban	688	1,053,488	5.9	5.10	6.88	158	257,429	1.4	1.18	1.78	154	294,474	1.7	1.32	2.09
Rural	298	509,608	10.2	7.88	13.02	70	88,500	1.8	1.32	2.35	76	114,041	2.3	1.64	3.14
Sex															
Male	414	708,939	6.0	5.10	7.04	106	182,555	1.5	1.21	1.97	105	206,478	1.7	1.37	2.22
Female	572	854,157	7.8	6.76	8.99	122	163,374	1.5	1.20	1.86	125	202,037	1.8	1.44	2.35
Age Group (Years)															
18 - 19	15	20,827	2.2	1.10	4.22	0	-	-	-	-	3	-	-	-	-
20 - 29	90	253,921	5.0	3.64	6.85	9	-	-	-	-	27	76,284	1.5	0.95	2.36
30 - 39	98	232,004	4.0	2.88	5.42	11	-	-	-	-	22	61,489	1.0	0.60	1.82
40 - 49	98	151,717	4.2	3.25	5.49	21	46,606	1.3	0.77	2.19	25	49,547	1.4	0.88	2.16
50 - 59	144	245,640	6.6	5.29	8.27	15	25,025	0.7	0.38	1.20	18	37,136	1.0	0.59	1.71
60 and above	541	658,988	18.4	16.19	20.76	172	216,013	6.0	4.98	7.25	135	179,811	5.0	4.08	6.14
Ethnicity															
Malay ^a	522	766,131	6.4	5.31	7.60	128	176,974	1.5	1.18	1.83	127	212,131	1.8	1.36	2.28
Chinese	180	380,575	7.8	5.80	10.38	42	72,558	1.5	1.01	2.17	40	78,234	1.6	1.05	2.44
Indian	61	80,676	6.1	4.06	9.04	28	41,520	3.1	1.93	5.06	15	17,762	1.3	0.72	2.47
Bumiputera Sabah	107	74,716	5.1	3.27	7.91	14	-	-	-	-	19	26,295	1.8	0.97	3.30
Bumiputera Sarawak	87	176,465	19.0	14.60	24.42	11	25,328	2.7	1.52	4.87	21	49,913	5.4	3.09	9.22
Others	29	-	-	-	-	5	-	-	-	-	8	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	DIFFICULTY IN REMEMBERING/ CONCENTRATING				DIFFICULTY IN SELF-CARE				DIFFICULTY IN COMMUNICATING			
	COUNT	ESTIMATED POPULATION	95% CONFIDENCE INTERVAL (%)		COUNT	ESTIMATED POPULATION	95% CONFIDENCE INTERVAL (%)		COUNT	ESTIMATED POPULATION	95% CONFIDENCE INTERVAL (%)	
			PREVALENCE (%)	LOWER UPPER			PREVALENCE (%)	LOWER UPPER			PREVALENCE (%)	LOWER UPPER
Education Level												
No formal education	233	313,448	16.8	13.80 20.41	83	124,829	6.7	4.98 8.97	92	164,285	8.8	6.55 11.81
Primary education	197	309,353	12.4	9.70 15.82	62	87,587	3.5	2.50 4.94	47	68,665	2.8	1.92 3.96
Secondary education	487	821,750	5.5	4.64 6.49	75	126,153	0.8	0.63 1.13	78	154,022	1.0	0.76 1.39
Tertiary education	62	107,872	3.2	2.18 4.63	6	-	-	-	12	-	-	-
Marital Status												
Never married	133	315,079	4.9	3.68 6.47	24	68,392	1.1	0.67 1.68	60	150,980	2.3	1.70 3.23
Married/ Living with partner	613	949,915	6.6	5.69 7.67	113	162,089	1.1	0.86 1.47	96	156,008	1.1	0.80 1.47
Separated/ Divorced/ Widowed	237	293,455	15.1	12.80 17.67	90	113,276	5.8	4.54 7.42	74	101,527	5.2	4.04 6.71
Occupation												
Government employee	65	81,039	4.9	3.19 7.52	4	-	-	-	8	-	-	-
Private employee	115	269,308	3.2	2.35 4.28	3	-	-	-	12	-	-	-
Self-employed	130	231,597	6.3	4.72 8.35	6	-	-	-	11	27,349	0.7	0.40 1.39
Unpaid worker/ Homemaker/ Caregiver	168	278,443	7.4	5.87 9.20	17	25,232	0.7	0.37 1.19	31	58,789	1.6	0.96 2.51
Retiree	97	126,964	10.4	8.01 13.30	18	24,457	2.0	1.03 3.84	13	21,308	1.7	0.91 3.28
Student	11	-	-	-	0	-	-	-	4	-	-	-
Not working ^a	393	543,501	19.8	17.17 22.78	179	270,544	9.9	8.22 11.80	149	257,222	9.4	7.67 11.44
Household Income Group												
Less than RM 1000	236	308,503	11.2	9.17 13.52	83	129,473	4.7	3.53 6.19	76	118,002	4.3	3.03 5.99
RM 1,000 - RM 1999	188	299,797	9.0	7.06 11.40	44	64,187	1.9	1.33 2.79	49	91,136	2.7	1.95 3.83
RM 2,000 - RM 3,999	217	385,284	6.5	5.20 8.12	40	56,311	1.0	0.62 1.45	38	73,943	1.2	0.79 1.98
RM 4,000 - RM 5,999	134	225,521	5.7	3.97 8.15	35	48,417	1.2	0.80 1.87	28	51,326	1.3	0.83 2.03
RM 6,000 - RM 7,999	72	117,971	5.2	3.70 7.16	11	20,122	0.9	0.45 1.73	17	34,947	1.5	0.89 2.61
RM 8,000 - RM 9,999	47	85,295	5.3	3.61 7.82	8	-	-	-	10	-	-	-
RM 10,000 and above	91	140,330	5.0	3.43 7.16	7	-	-	-	12	-	-	-
Household Income Quintile												
Quintile 1	315	446,328	11.4	9.49 13.55	103	160,470	4.1	3.20 5.19	102	170,173	4.3	3.27 5.72
Quintile 2	194	318,530	6.8	5.34 8.73	40	53,956	1.2	0.77 1.73	39	80,519	1.7	1.13 2.64
Quintile 3	162	266,424	5.9	4.65 7.50	32	44,870	1.0	0.62 1.59	25	37,092	0.8	0.47 1.45
Quintile 4	162	282,167	5.7	4.20 7.66	37	58,443	1.2	0.78 1.78	39	77,429	1.6	1.09 2.24
Quintile 5	152	249,253	5.4	4.13 7.02	16	28,190	0.6	0.31 1.21	25	43,301	0.9	0.53 1.66
Household Income Category												
Bottom 40%	678	1,012,040	7.4	6.50 8.51	181	266,174	2.0	1.60 2.39	171	294,005	2.2	1.73 2.69
Middle 40%	207	378,504	6.1	4.69 7.78	40	68,037	1.1	0.73 1.63	45	86,957	1.4	0.96 2.00
Top 20%	100	172,157	6.1	4.38 8.49	7	-	-	-	14	-	-	-

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.16.4: Prevalence of rehabilitation services utilisation among people with disabilities aged 18 years old and above in Malaysia by sociodemographic characteristics (n=2,892)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	518	760,002	40.6	36.88	44.33
State					
Johor	30	58,975	34.2	22.20	48.55
Kedah	28	42,191	42.1	30.44	54.63
Kelantan	27	36,865	52.8	35.72	69.28
Melaka	22	14,386	43.8	30.53	58.05
Negeri Sembilan	26	27,827	51.9	41.01	62.62
Pahang	27	38,362	47.2	34.24	60.46
Pulau Pinang	47	58,990	60.5	44.45	74.57
Perak	44	75,108	42.6	32.60	53.20
Perlis	35	8,476	51.3	37.08	65.33
Selangor	50	131,243	42.3	32.52	52.78
Terengganu	21	26,051	47.6	32.33	63.41
Sabah	9	-	-	-	-
Sarawak	68	163,114	37.4	29.14	46.42
WP Kuala Lumpur	29	41,898	43.3	27.06	61.06
WP Labuan	32	1,853	34.6	23.24	48.02
WP Putrajaya	23	2,970	42.8	31.65	54.68
Location					
Urban	381	545,744	42.6	37.78	47.47
Rural	137	214,258	36.2	30.46	42.40
Sex					
Male	253	397,260	44.8	39.24	50.55
Female	265	362,742	36.7	31.91	41.82
Age Group (Years)					
18 - 19	3	-	-	-	-
20 - 29	19	85,431	54.3	32.52	74.54
30 - 39	19	37,290	23.3	13.63	36.88
40 - 49	47	84,619	38.4	26.38	51.99
50 - 59	73	151,433	39.1	30.55	48.38
60 and above	357	397,970	42.6	37.68	47.66
Ethnicity					
Malay ^a	299	396,522	42.8	38.03	47.67
Chinese	92	198,867	41.9	33.87	50.45
Indian	54	70,819	67.9	55.88	77.88
Bumiputera Sabah	29	-	-	-	-
Bumiputera Sarawak	32	65,908	33.2	20.18	49.32
Others	12	-	-	-	-
Education Level					
No formal education	122	157,360	34.9	27.86	42.66
Primary education	124	175,227	41.9	34.34	49.82
Secondary education	244	391,149	43.2	37.86	48.70
Tertiary education	27	36,084	39.3	23.43	57.73
Marital Status					
Never married	38	119,989	41.1	25.93	58.25
Married/ Living with partner	332	470,329	40.2	35.52	45.12
Separated/ Divorced/ Widowed	148	169,684	41.5	34.96	48.41
Occupation					
Government employee	22	26,536	40.4	23.82	59.60
Private employee	36	96,442	36.2	24.28	50.08
Self employed	49	84,413	35.4	26.12	45.87
Unpaid worker/ Homemaker/ Caregiver	73	101,950	32.3	22.96	43.37
Retiree	83	100,525	50.3	40.60	59.96
Student	4	-	-	-	-
Not working ^b	248	336,318	44.5	39.14	49.92

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	141	172,995	39.3	32.82	46.24
RM 1,000 – RM 1999	90	112,210	31.8	25.58	38.69
RM 2,000 – RM 3,999	111	188,795	42.1	34.42	50.17
RM 4,000 – RM 5,999	66	127,653	44.2	30.73	58.65
RM 6,000 – RM 7,999	40	59,217	47.0	33.96	60.54
RM 8,000 – RM 9,999	31	37,977	40.9	26.54	57.10
RM 10,000 and above	38	60,760	48.6	32.27	65.22
Household Income Quintile					
Quintile 1	187	225,330	36.6	31.01	42.54
Quintile 2	89	137,318	38.6	31.00	46.78
Quintile 3	81	137,702	39.5	29.75	50.06
Quintile 4	87	155,240	49.3	37.28	61.38
Quintile 5	73	104,017	43.7	32.73	55.40
Household Income Category					
Bottom 40%	360	481,111	37.1	33.10	41.21
Middle 40%	115	215,028	50.2	40.09	60.36
Top 20%	42	63,467	43.0	29.79	57.25

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

NON-COMMUNICABLE DISEASES: ASTHMA AMONG ADULTS

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HIGHLIGHTS

- The prevalence of known asthma among adults in Malaysia was 6.2%.
- The prevalence of probable asthma among adults in Malaysia was 2.7%.
- The prevalence of asthma attack in the last 12 months among adults in Malaysia was 4.4%, with 1.7% among known asthmatic adults and 2.7% probable asthmatic adults.
- Among the known asthmatic adults, 8.0% reported having 4 or more attacks, 21.9% reported having 1 to 3 attacks, with the remaining 70.1% reporting no asthma attacks in the last 12 months.

INTRODUCTION

Asthma, a respiratory condition impacting children and adults, is still a complex challenge to individuals and healthcare systems globally. Characterized by recurrent episodes of wheezing, breathlessness, chest tightness, and coughing especially during the night or early morning. This chronic inflammatory disorder of the airways extends beyond its physical impact, but also influences one's daily activities, overall quality of life and results in significant economic costs (1). When uncontrolled, it imposes severe limitations and potential risks to the individual. Asthma remains a prominent respiratory challenge on a global scale, demanding a comprehensive understanding for effective management (2). Globally, asthma affects approximately 262 million individuals, with an

estimated 1,000 deaths each day (1). In Malaysia, the prevalence of self-reported asthma among adults was 4.5% as reported in 2006 and 6.3% in 2011 (3,4). Asthma was also reported to be the second leading cause of non-fatal burden in Malaysia (5). The Global Initiative for Asthma (GINA) emphasizes the goal for achieving and maintaining control of symptoms, preserving pulmonary function as close to normal as possible, and preventing exacerbations and mortality in the effective management of asthma (6). National health agencies play pivotal roles in addressing asthma challenges, with research efforts focused on understanding and managing the condition of uncontrolled and undiagnosed asthma (7).

OBJECTIVES

General objective

To determine the prevalence of asthma among adults in Malaysia.

Specific Objectives

1. To determine the prevalence of known asthma among adults aged 18 years old and above in Malaysia.
2. To determine the prevalence of at least one asthma attack in known asthmatics in the past 12 months among adults aged 18 years old above in Malaysia
3. To determine the prevalence of probable asthma among adults aged 18 years old and above in Malaysia.

METHODS

The asthma module was carried out among all respondents aged 18 years old and above, via face-to-face interview by trained research assistants. Data were collected using a questionnaire. A total of 18 questions were adapted from the European Community Respiratory Health Survey (ECRHS) questionnaire. The ECRHS questionnaire was translated into Malay language and used in the Third National Health and Morbidity Survey 2006 in Malaysia.

DEFINITIONS

- 1. Known asthma** – Respondents who were told by a doctor or health personnel to have asthma.
- 2. At least one asthma attack in known asthmatics in the past 12 months** – Respondents with known asthma and reported having at least one asthmatic attack in the past 12 months.
- 3. Probable asthma** – Respondents not known to have asthma, tuberculosis (TB), chronic obstructive pulmonary disease (COPD) or other lung diseases including COVID-19, but reported having symptoms of breathlessness, wheezing, nocturnal chest tightness, nocturnal breathlessness, nocturnal cough or took inhalers for their breathlessness in the past 12 months.

FINDINGS

A total of 10,840 respondents answered the asthma module in this survey. The prevalence of known asthma was 6.2% (95% CI 5.60, 6.86), corresponding to an estimated 1,411,702 people in Malaysia. The prevalence of known asthma was higher in urban areas [6.4% (95% CI 5.69, 7.15)] as compared to rural areas [5.5% (95% CI 4.44, 6.89)], and higher among females [7.1% (95% CI 6.26, 8.02)] as compared to males [5.4% (95% CI 4.59, 6.28)] (**Table 4.17.2**).

The prevalence of at least one asthmatic attack in known asthmatics in the last 12 months among adults in Malaysia was 1.7% (95% CI 1.40, 1.99). The prevalence was also higher in urban areas [1.8% (95% CI 1.47, 2.19)] as compared to rural at [1.2% (95% CI 0.83, 1.78)] and higher among females [1.9% (95% CI 1.52, 2.39)] as compared to males [1.4% (95% CI 1.12, 1.86)] (**Table 4.17.3**). A further 2.7% of the adults in Malaysia reported asthma-like symptoms, and were classified as probable asthma. The prevalence of probable asthma was higher in rural areas [3.3% (95% CI 2.50, 4.45)] as compared to urban areas [2.5% (95% CI 2.01, 3.02)] (**Table 4.17.4**).

Among the known asthmatics in Malaysia, 21.9% reported to have at least 1 to 3 attacks in the last 12 months and 8.0% reported to have 4 or more attacks in the same duration (**Table 4.17.5**).

CONCLUSION

The prevalence of asthma in adults aged 18 years old and above had increased from 4.5% in 2006 to 6.2% in 2023. The total burden of asthma was 8.9%, comprising of 6.2% of known asthmatics and 2.7% of those with probable asthma or reporting asthma-like symptoms. This would mean, around 30% of asthmatics in Malaysia have not been diagnosed. Awareness of their diagnosis had been reported

higher in urban areas, while those with probable asthma were seen to be higher in rural areas. Among known asthmatic adults in Malaysia, 29.8% were not well controlled.

RECOMMENDATIONS

- Strengthening of efforts to reduce risk factors and prevent asthma in the population by tackling common risk factors such as exposure to second-hand smoke and obesity in Malaysia.
- Further efforts need to be undertaken to increase the awareness of symptoms among the public and the impact of asthma on their lives. Awareness of symptoms, diagnosis and treatment, as well as strengthening of training and education of healthcare personnel is also essential.
- There is an urgent need to improve the accessibility and availability of equipment and medication for the diagnosis and treatment of asthma at healthcare facilities, especially in rural areas.

Table 4.17.1: Prevalence of asthma among adults in Malaysia, 2006 and 2023

	2006 (%)	2023 (%)
Known Asthma	4.5	6.2

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Table 4.17.2: Prevalence of known asthma among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,840)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	748	1,411,702	6.2	5.60	6.86
State					
Johor	75	158,164	5.7	4.37	7.52
Kedah	29	65,866	4.6	2.98	7.12
Kelantan	29	46,511	4.1	2.59	6.35
Melaka	28	33,299	4.6	2.97	7.05
Negeri Sembilan	48	64,688	7.9	5.58	11.03
Pahang	42	68,514	6.8	4.93	9.36
Pulau Pinang	35	57,266	4.5	2.83	7.09
Perak	58	131,910	8.4	6.16	11.35
Perlis	33	11,152	5.7	3.71	8.54
Selangor	106	387,923	7.3	5.76	9.29
Terengganu	23	25,019	3.3	2.04	5.24
Sabah	43	116,978	5.0	3.69	6.67
Sarawak	61	159,573	8.8	6.35	12.13
WP Kuala Lumpur	32	73,581	4.8	2.87	8.01
WP Labuan	54	4,193	6.5	4.54	9.17
WP Putrajaya	52	7,067	10.4	7.70	13.95
Location					
Urban	577	1,134,112	6.4	5.69	7.15
Rural	171	277,590	5.5	4.44	6.89
Sex					
Male	296	635,041	5.4	4.59	6.28
Female	452	776,662	7.1	6.26	8.02
Age Group (Years)					
18 - 19	22	81,857	8.5	4.83	14.62
20 - 29	124	319,998	6.3	5.05	7.88
30 - 39	139	334,812	5.7	4.60	7.08
40 - 49	126	221,101	6.2	5.02	7.55
50 - 59	109	199,409	5.4	4.20	6.85
60 and above	228	254,525	7.1	5.98	8.40
Ethnicity					
Malay ^a	478	868,200	7.2	6.44	8.06
Chinese	70	205,749	4.2	3.03	5.83
Indian	79	134,887	10.2	7.56	13.61
Bumiputera Sabah	73	85,166	5.8	4.20	8.04
Bumiputera Sarawak	28	68,454	7.4	4.43	12.05
Others	20	49,245	2.3	1.21	4.34
Education Level					
No formal education	74	93,427	5.0	3.68	6.81
Primary education	106	136,890	5.5	4.24	7.13
Secondary education	474	981,908	6.6	5.85	7.35
Tertiary education	94	199,477	5.9	4.26	8.07
Marital Status					
Never married	145	398,963	6.2	5.00	7.67
Married/ Living with partner	488	857,831	6.0	5.29	6.73
Separated/ Divorced/ Widowed	115	154,907	8.0	6.26	10.05
Occupation					
Government employee	74	94,102	5.7	4.15	7.79
Private employee	191	443,856	5.2	4.34	6.32
Self employed	105	239,438	6.5	4.94	8.53
Unpaid worker/ Homemaker/ Caregiver	149	250,407	6.6	5.47	8.00
Retiree	67	96,089	7.8	5.98	10.18
Student	29	93,431	8.2	5.16	12.82
Not working ^b	130	191,373	7.0	5.56	8.73

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Group					
Less than RM 1000	109	166,733	6.0	4.70	7.72
RM 1,000 – RM 1999	99	179,611	5.4	4.08	7.08
RM 2,000 – RM 3,999	182	364,512	6.2	5.17	7.33
RM 4,000 – RM 5,999	117	230,996	5.9	4.55	7.50
RM 6,000 – RM 7,999	76	146,043	6.4	4.66	8.70
RM 8,000 – RM 9,999	57	97,724	6.1	4.45	8.31
RM 10,000 and above	105	218,913	7.8	5.87	10.19
Household Income Quintile					
Quintile 1	161	268,957	6.8	5.50	8.49
Quintile 2	136	239,526	5.1	4.11	6.43
Quintile 3	128	263,677	5.9	4.77	7.19
Quintile 4	150	303,774	6.1	4.95	7.56
Quintile 5	170	328,600	7.1	5.72	8.79
Household Income Category					
Bottom 40%	441	789,231	5.8	5.12	6.57
Middle 40%	193	402,317	6.4	5.32	7.76
Top 20%	111	212,985	7.6	5.92	9.62

^a Malay included Orang Asli

^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.17.3: Prevalence of at least one asthma attack in the last 12 months among known asthmatic aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,832)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	222	379,752	1.7	1.40	1.99
Location					
Urban	176	318,835	1.8	1.47	2.19
Rural	46	60,917	1.2	0.83	1.78
Sex					
Male	89	170,348	1.4	1.12	1.86
Female	133	209,404	1.9	1.52	2.39
Age Group (Years)					
18 - 19	4	-	-	-	-
20 - 29	30	73,019	1.4	0.95	2.18
30 - 39	45	93,856	1.6	1.12	2.30
40 - 49	38	64,897	1.8	1.16	2.81
50 - 59	30	49,842	1.3	0.87	2.06
60 and above	75	86,111	2.4	1.74	3.30
Ethnicity					
Malay ^a	153	256,477	2.1	1.75	2.60
Chinese	10	20,647	0.4	0.22	0.82
Indian	27	43,620	3.3	1.97	5.46
Bumiputera Sabah	20	30,704	2.1	1.06	4.11
Bumiputera Sarawak	9	-	-	-	-
Others	3	-	-	-	-
Education Level					
No formal education	22	29,695	1.6	0.88	2.87
Primary education	41	53,826	2.2	1.40	3.33
Secondary education	141	271,823	1.8	1.48	2.23
Tertiary education	18	24,409	0.7	0.38	1.35
Marital Status					
Never married	33	81,254	1.3	0.84	1.89
Married/ Living with partner	148	243,638	1.7	1.36	2.11
Separated/ Divorced/ Widowed	41	54,861	2.8	1.92	4.11
Occupation					
Government employee	22	-	-	-	-
Private employee	48	97,115	1.1	0.79	1.66
Self employed	28	52,834	1.4	0.89	2.30
Unpaid worker/ Homemaker/ Caregiver	53	93,337	2.5	1.77	3.43
Retiree	17	23,894	1.9	1.02	3.71
Student	9	-	-	-	-
Not working ^b	45	67,080	2.4	1.71	3.50
Household Income Group					
Less than RM 1000	36	56,452	2.0	1.38	3.02
RM 1,000 – RM 1,999	32	54,858	1.6	1.06	2.55
RM 2,000 – RM 3,999	50	88,022	1.5	1.05	2.10
RM 4,000 – RM 5,999	32	62,647	1.6	1.04	2.41
RM 6,000 – RM 7,999	26	43,521	1.9	1.16	3.11
RM 8,000 – RM 9,999	22	33,823	2.1	1.22	3.64
RM 10,000 and above	24	40,428	1.4	0.84	2.45
Household Income Quintile					
Quintile 1	54	83,795	2.1	1.52	2.99
Quintile 2	38	68,961	1.5	0.99	2.21
Quintile 3	38	71,820	1.6	1.09	2.34
Quintile 4	42	76,204	1.5	1.07	2.19
Quintile 5	50	78,973	1.7	1.15	2.55
Household Income Category					
Bottom 40%	129	213,267	1.6	1.25	1.97
Middle 40%	60	113,372	1.8	1.31	2.50
Top 20%	33	53,113	1.9	1.23	2.90

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.17.4: Prevalence of probable asthma among those aged 18 years old and above in Malaysia by sociodemographic characteristics (n=10,840)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	319	605,624	2.7	2.25	3.14
Location					
Urban	232	438,231	2.5	2.01	3.02
Rural	87	167,394	3.3	2.50	4.45
Sex					
Male	155	319,835	2.7	2.16	3.38
Female	164	285,789	2.6	2.16	3.15
Age Group (Years)					
18 - 19	8	-	-	-	-
20 - 29	51	138,028	2.7	1.96	3.77
30 - 39	70	157,027	2.7	1.96	3.65
40 - 49	67	104,515	2.9	2.14	3.96
50 - 59	46	98,394	2.7	1.73	4.04
60 and above	77	96,379	2.7	1.97	3.66
Ethnicity					
Malay ^a	231	416,404	3.5	2.85	4.19
Chinese	19	51,182	1.0	0.55	1.97
Indian	15	16,417	1.2	0.65	2.36
Bumiputera Sabah	19	38,688	2.6	1.60	4.36
Bumiputera Sarawak	30	66,931	7.2	4.43	11.55
Others	5	-	-	-	-
Education Level					
No formal education	29	44,149	2.4	1.47	3.80
Primary education	39	68,637	2.8	1.74	4.35
Secondary education	206	413,985	2.8	2.27	3.37
Tertiary education	43	76,594	2.3	1.49	3.41
Marital Status					
Never married	58	127,910	2.0	1.45	2.71
Married/ Living with partner	227	420,722	2.9	2.41	3.55
Separated/ Divorced/ Widowed	34	56,992	2.9	1.75	4.86
Occupation					
Government employee	46	50,925	3.1	2.00	4.74
Private employee	88	214,142	2.5	1.95	3.27
Self employed	54	115,407	3.1	2.11	4.64
Unpaid worker/ Homemaker/ Caregiver	47	112,086	3.0	2.05	4.28
Retiree	26	31,878	2.6	1.54	4.33
Student	7	-	-	-	-
Not working ^b	49	64,017	2.3	1.63	3.34
Household Income Group					
Less than RM 1000	47	82,913	3.0	2.00	4.48
RM 1,000 – RM 1999	50	90,310	2.7	1.89	3.87
RM 2,000 – RM 3,999	74	162,328	2.7	2.06	3.65
RM 4,000 – RM 5,999	52	97,178	2.5	1.72	3.52
RM 6,000 – RM 7,999	32	58,009	2.5	1.65	3.88
RM 8,000 – RM 9,999	22	46,933	2.9	1.52	5.57
RM 10,000 and above	42	67,953	2.4	1.46	3.95
Household Income Quintile					
Quintile 1	63	106,873	2.7	1.94	3.80
Quintile 2	57	114,419	2.5	1.77	3.40
Quintile 3	71	156,016	3.5	2.60	4.62
Quintile 4	58	103,641	2.1	1.45	2.99
Quintile 5	70	124,676	2.7	1.85	3.91
Household Income Category					
Bottom 40%	192	353,114	2.6	2.12	3.17
Middle 40%	93	179,664	2.9	2.12	3.89
Top 20%	34	72,847	2.6	1.65	4.04

^a Malay included Orang Asli^b Not working included those who were unemployed, old age, not working due to health problems, and children who did not attend school

Table 4.17.5: Frequency of asthma attacks in the last 12 months among known asthmatic aged 18 years old and above in Malaysia (n=804)

FREQUENCY	COUNT	ESTIMATED POPULATION	PROPORTION (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
No attack	539	1,054,700	70.1	65.69	74.25
1-3 attack	183	328,944	21.9	18.33	25.89
4 or more attacks	82	120,006	8.0	5.88	10.75

NON-COMMUNICABLE DISEASES: ASTHMA AMONG CHILDREN

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HIGHLIGHTS

- Total respondents for the asthma in children module was 2,524.
- Prevalence of probable asthma was 7.1%.
- Prevalence of doctor-diagnosed asthma was 5.3%.
- High percentage of children with current asthma had severe asthma symptoms.
- Speech limitation during asthma episodes was the most common severe asthma symptom.

INTRODUCTION

Asthma is the most prevalent chronic respiratory disease among children (1). In 2019, the Global Burden of Disease estimated the prevalence of asthma among 5 to 19 year olds was 78.5 million (2). The latest Global Asthma Network study reported a worldwide asthma prevalence of 9.1% among children aged 6 to 7 years, and 11.1% for adolescents aged 13 to 14 years (3). In Malaysia, the prevalence of asthma in 2006 was 7.1% among children aged 2 to 17 years (4). Recurrent cough, shortness of breath, wheezing, and chest tightness are common asthma symptoms which manifest with varying severity and frequency. Some children may experience worsening symptoms during physical activity or at night. While asthma remains incurable, effective management through optimum treatment, vigilant self-care, and regular medical follow-up will empower patients to lead normal lives (5).

OBJECTIVES

General Objective

To determine the prevalence of asthma among children aged 6 to 17 years in Malaysia.

Specific Objectives

1. To determine the prevalence of probable asthma.
2. To determine the prevalence of doctor-diagnosed asthma.
3. To determine the prevalence of current asthma.
4. To determine the percentage of severe asthma.
5. To determine the prevalence of exercise-induced asthma.

METHODS

This module was carried out through face-to-face interviews with children aged 13 to 17 years, whereas for children aged 6 to 12 years, their parents or guardians were interviewed as proxies. The interview was based on a questionnaire adapted from the International Study of Asthma and Allergies in Childhood (ISAAC) (6).

DEFINITIONS

1. **Probable asthma** is defined as respondents who ever felt breathless/ had wheezing, or had a dry cough at night, apart from a cough associated with a cold or a chest infection (4,6).
2. **Doctor-diagnosed asthma** is defined as respondents who have been diagnosed as having asthma by a medical practitioner (4,6).
3. **Current asthma** is defined as respondents who have breathless or wheezing within the last 12 months (4,6).
4. **Severe asthma** is defined as respondents with current asthma who have 4 or more attacks of wheezing, or had their sleep disturbed one or more nights in a week due to wheezing, or have speech limitation to only one or two words at a time between breaths (during acute asthma episode) within the last 12 months (6,7).
5. **Exercise-induced asthma** is defined as respondents who felt breathless or wheezed during or after exercise/ play within the last 12 months (4,6).

FINDINGS

A total of 2,524 respondents responded to the asthma children module. The prevalence of probable asthma among children aged 6 to 17 years was 7.1% (95% CI: 5.67, 8.79). Prevalence of probable asthma was higher among children living in urban residences [7.4% (95% CI: 5.75, 9.45)] as compared to rural residences [6.1% (95% CI: 3.78, 9.55)], females [7.4% (95% CI: 5.44, 10.03)] as compared to males [6.8% (95% CI: 5.13, 8.84)], and older age group of 13 to 17 years old [7.4% (95% CI: 5.41, 10.15)] as compared to 6 to 12 years old [6.9% (95% CI: 5.17, 9.05)] (**Table 4.18.2**).

The prevalence of doctor-diagnosed asthma was 5.3% (95% CI: 4.27, 6.60); while current asthma was 3.4% (95% CI: 2.60, 4.39) (**Table 4.18.3**). The study found a high percentage of children with current asthma had severe asthma symptoms. Most of the children [39.1% (95% CI: 26.97, 52.67)] had speech limitation, followed by “4 or more attacks of wheezing” [29.6% (95% CI: 19.17, 42.70)], and 19.4% (95% CI: 10.72, 32.42) had sleep disturbances one or more nights in a week (**Table 4.18.4**). However, the prevalence of exercise-induced asthma was only 3.0% (95% CI: 2.22, 4.09) (**Table 4.18.3**).

CONCLUSION

The prevalence of probable asthma remains plateau for almost two decades. However, the prevalence of doctor-diagnosed asthma was lower than probable asthma, but higher than current asthma, highlighting that under-diagnosis of asthma by doctors and under-reporting of asthma symptoms were still prevalent. There was a changing pattern among genders, in which females seem to have a higher prevalence of asthma among children as compared to a previous study. The burden of severe asthma among children with current asthma was still high (4).

RECOMMENDATIONS

- To strengthen asthma awareness and education among the public through social or mass media on a regular basis.
- To develop training modules or structured asthma programmes to standardise asthma education and training for healthcare providers.
- To conduct regular training on asthma diagnosis and clinical management for healthcare providers especially frontliners. This includes regular training to perform spirometry and/ or Fractional Nitric Oxide (FENO) according to international standards.
- To develop, strengthen and widen the use of patients' asthma diaries which shall incorporate

the Asthma Action Plan and asthma monitoring tools (Asthma Control Test (ACT), Child Asthma Control Test (cACT), GINA Asthma Control, Asthma Control Questionnaire (ACQ).

- To provide adequate diagnostic tools, for example, Spirometry and/ or FENO (Fractional Nitric Oxide) in dedicated health clinics or hospitals with certified trained technicians.
- To emphasise the importance of early referrals for children with severe asthma to specialists/ pediatricians/ pediatric respiratory physicians for optimal asthma management.
- To ensure the availability of new asthma medications which include innovative inhalers and asthma biologics drugs.
- To conduct regular asthma research based on up-to-date methods for high-quality data.

Table 4.18.1: Prevalence of asthma among children in Malaysia, 2006 and 2023

	2006 (%)	2023 (%)
Probable asthma	7.1	7.1
Diagnosed asthma	6.4	5.3
Exercise-induced asthma	2.8	3.0
Current asthma	5.4	3.4

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Table 4.18.2: Prevalence of probable asthma among children aged 6 to 17 years in Malaysia by sociodemographic characteristics (n=2,524)

SOCIODEMOGRAPHIC	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	210	427,905	7.1	5.67	8.79
Location					
Urban	171	341,000	7.4	5.75	9.45
Rural	39	86,905	6.1	3.78	9.55
Sex					
Male	97	210,627	6.8	5.13	8.84
Female	113	217,278	7.4	5.44	10.03
Age Group (Years)					
6 - 12	132	262,541	6.9	5.17	9.05
13 - 17	78	165,364	7.4	5.41	10.15
Ethnicity					
Malay ^a	165	302,410	8.3	6.58	10.34
Chinese	6	-	-	-	-
Indian	8	-	-	-	-
Bumiputera Sabah	13	-	-	-	-
Bumiputera Sarawak	14	42,614	16.9	9.13	29.28
Others	4	-	-	-	-
Household Income Group					
Less than RM 1000	21	51,916	5.9	3.43	9.99
RM 1,000 – RM 1999	25	56,700	6.5	3.82	10.91
RM 2,000 – RM 3,999	51	106,241	6.2	4.25	8.95
RM 4,000 – RM 5,999	35	79,655	8.9	5.58	13.92
RM 6,000 – RM 7,999	27	-	-	-	-
RM 8,000 – RM 9,999	17	-	-	-	-
RM 10,000 and above	34	41,988	5.5	2.91	10.10
Household Income Quintile					
Quintile 1	123	241,588	6.5	4.96	8.36
Quintile 2	57	120,078	8.0	4.95	12.75
Quintile 3	30	66,239	8.4	5.01	13.64
Quintile 4	30	67,306	5.7	3.62	8.92
Quintile 5	33	73,998	5.8	3.56	9.21
Household Income Category					
Bottom 40%	41	87,550	7.2	4.88	10.48
Middle 40%	53	130,448	11.2	7.11	17.19
Top 20%	53	68,602	5.8	3.51	9.31

^a Malay included Orang Asli

Table 4.18.3: Prevalence of doctor-diagnosed asthma, current asthma, and exercise-induced asthma among children aged 6 to 17 years in Malaysia (n=2,524)

ASTHMA INDICATORS	COUNT	ESTIMATED POPULATION	PREVALENCE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Doctor-diagnosed asthma	158	320,835	5.3	4.27	6.60
Current asthma	101	204,673	3.4	2.60	4.39
Exercise-induced asthma	82	182,361	3.0	2.22	4.09

Table 4.18.4: Percentage of severe asthma among children aged 6 to 17 years with current asthma in Malaysia (n=101)

SEVERE ASTHMA CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
4 or more attacks	26	59,869	29.6	19.17	42.70
1 or more nights of sleep disturbance	19	37,323	19.4	10.72	32.42
Speech limitation (acute severe asthma)	32	76,996	39.1	26.97	52.67

HEALTHCARE DEMAND

HEALTHCARE DEMAND: OVERVIEW

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INTRODUCTION

The degree of an individual's actual utilisation of health care in the event of illness or injury characterises demand for healthcare. The demand for healthcare is complex and multifaceted; may vary depending on demand factors such as societal norms and traditions, education, income, healthcare costs, and the quality and appropriateness of the services provided (1,2). Understanding healthcare demand is crucial for health sector planning and development, in addition to healthcare needs and utilisation patterns, as these are building blocks of reform plans that target health financing, service provision and quality, governance, and resource management in one way or another (3). This information is vital for strengthening and improving healthcare systems performance, ensuring universal access to quality healthcare (4) and ultimately improving the health of the population towards achieving Sustainable Development Goals (SDG) (5).

With the availability and wide access to health services spanning from health promotion, prevention, treatment, rehabilitation, and palliative care, Malaysia has been acknowledged by the World Health Organization (WHO) as one of the countries that has achieved Universal Health Coverage (UHC). Our current challenge, though, is to strengthen our healthcare services in order to address the healthcare demand as a result of changing demographics, especially with regard to the ageing population and the increase in non-communicable illnesses.

The demand for healthcare will continually increase and evolve to a certain extent, independent of the ability of the healthcare systems to meet public expectations. The movement towards wellness, person and family-centred care, the largely untapped resources for health such as the individual, novel service access approaches such as online consultation may change

how healthcare could be delivered, thus contributing to a paradigm shift in access to healthcare. This may influence health-seeking behaviours and be reflected in service access changes such as self-medication practices and domiciliary care.

Since its inception in 1986, the Healthcare Demand (HCD) module has evolved to realign the survey with the changing healthcare context in Malaysia. The year 2023 marks the seventh cycle of the National Health and Morbidity Survey (NHMS) in monitoring the changes and trends in non-communicable diseases, risk factors, healthcare demand, and other areas identified by stakeholders, following the pattern of the previous surveys carried out in 1986, 1996, 2006, 2011, 2015, and 2019. The modules on non-communicable diseases, healthcare demand, and health literacy are the main focus of this NHMS cycle. The HCD module, specifically, measures the load of illness, health-seeking behaviour, healthcare utilisation, and health expenditures.

The aim of the healthcare demand analysis was to provide important evidence and invaluable inputs to support the Ministry of Health in evaluating the impact of strategies for healthcare services, reviewing the priorities and activities of health programmes, as well as planning for future allocation of resources.

OBJECTIVES

General objective

To determine the load of illness, health-seeking behaviour, healthcare utilisation, and health expenditures among the population in Malaysia.

Specific objectives

1. To determine the prevalence of self-rated health among the population in Malaysia.
2. To determine the prevalence of acute health problems among the population in Malaysia.
3. To determine the health-seeking behaviours among those who experienced acute health problems among the population in Malaysia.
4. To determine the perceived barriers to accessing healthcare among the population in Malaysia.
5. To determine the prevalence of medical check-up services utilisation among the population in Malaysia.

6. To determine the prevalence of online healthcare services utilisation among the population in Malaysia.
7. To determine the patterns of healthcare services utilisation, including outpatient, inpatient, and oral healthcare, among the population in Malaysia.
8. To determine the distribution of out-of-pocket expenditure for healthcare utilisation, encompassing outpatient, inpatient, and oral healthcare, among the population in Malaysia.
9. To determine the percentage of caregivers informed about a sick child's diagnosis by healthcare practitioners among the population in Malaysia.

GENERAL FINDINGS

Sample population

Among the 5,554 eligible Living Quarters (LQs), 2,579 LQs participated in successful interviews, resulting in a LQ response rate of 46.4%. Within this cohort, among the 16,096 eligible respondents, 9,177 individuals were successfully interviewed. The individual response rate was 57.0%, consistent with the Computer Assisted Telephone Interviewing (CATI) approach applied in the NHMS 2020 module for communicable diseases (6). The overall response rate for the HCD module in 2023, employing the CATI approach was 26.5% (**Table 5.1.1**). This overall survey response rate aligns closely with the reported 3–35% response rate for the CATI method in a multi-country study assessing population confidence in the health system (7).

Table 5.1.1: Response rate at living quarter and individual level by states, HCD NHMS 2023

STATE	LIVING QUARTER (LQ)			INDIVIDUAL			TOTAL RESPONSE RATE (%)
	ELIGIBLE	INTERVIEWED	RESPONSE RATE (%)	ELIGIBLE	INTERVIEWED	RESPONSE RATE (%)	
MALAYSIA	5,554	2,579	46.4	16,096	9,177	57.0	26.5
Johor	473	314	66.4	1,449	1,043	72.0	47.8
Kedah	284	154	54.2	811	509	62.8	34.0
Kelantan	283	169	59.7	903	646	71.5	42.7
Melaka	275	156	56.7	843	580	68.8	39.0
Negeri Sembilan	290	167	57.6	830	580	69.9	40.2
Pahang	284	154	54.2	858	581	67.7	36.7
Pulau Pinang	296	175	59.1	758	500	66.0	39.0
Perak	321	166	51.7	812	492	60.6	31.3
Perlis	282	162	57.4	754	521	69.1	39.7
Selangor	771	159	20.6	2,076	629	30.3	6.2
Terengganu	279	146	52.3	820	492	60.0	31.4
Sabah	399	123	30.8	1,152	474	41.1	12.7
Sarawak	343	184	53.6	1,155	769	66.6	35.7
WP Kuala Lumpur	326	47	14.4	833	136	16.3	2.4
WP Labuan	327	155	47.4	1,087	626	57.6	27.3
WP Putrajaya	321	148	46.1	955	599	62.7	28.9

Consistent with the findings of Kreuter et al's study, the majority of respondents who declined participation did so before the actual interview, citing reasons such as incorrect phone numbers and a general reluctance to answer calls (8). Different studies investigated different factors, like the level of urbanisation, the make-up of households, and the experience of the respondents in telephone-related surveys. These studies shed light on why there was a high rate of refusal for CATI in some developed regions (9).

Sociodemographic characteristics of the study population

Overall, 9,177 respondents were included in the analysis. There were 78.3% respondents resided in urban localities and 52.3% were males. The ethnic composition was predominantly Malay, making up 52.8% of the respondents. Details of the sociodemographic characteristics of the respondents are available in **Table 5.1.2**.

Table 5.1.2: Sociodemographic characteristics of respondents and estimated population for 2023, HCD NHMS 2023 (n=9,177)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)
MALAYSIA	9,177	33,378,911	100.0
Location			
Urban	6,797	26,135,702	78.3
Rural	2,380	7,243,209	21.7
Sex			
Male	4,465	17,466,108	52.3
Female	4,712	15,912,804	47.7
Age Group (Years)			
0 - 9	1,558	4,921,344	14.7
10 - 19	1,429	5,393,902	16.2
20 - 29	1,213	5,968,899	17.9
30 - 39	1,260	5,745,462	17.2
40 - 49	1,169	4,435,801	13.3
50 - 59	1,062	3,145,798	9.4
60 and above	1,486	3,767,705	11.3
Citizenship			
Malaysian	8,836	30,553,916	91.5
Permanent resident	42	127,184	0.4
Non-Malaysian	299	2,697,811	8.1
Ethnicity			
Malay ^a	6,163	17,613,501	52.8
Chinese	910	6,862,297	20.6
Indian	543	2,001,000	6.0
Bumiputera Sabah	790	2,142,859	6.4
Bumiputera Sarawak	388	1,568,841	4.7
Others	383	3,190,413	9.6
Marital Status			
Never Married	2,096	9,629,592	28.8
Married/ Living with partner	4,293	15,028,569	45.0
Separated/ Divorced/ Widowed	684	1,946,060	5.8
Children aged less than 13 years	2,083	6,622,037	19.8
Missing ^b	21	152,654	0.5
Education Level			
No formal education ^c	1,607	5,258,430	15.8
Primary education	1,202	4,198,372	12.6
Secondary education	4,475	16,616,365	49.8
Tertiary education	750	3,443,570	10.3
Children aged less than 7 years	1,048	3,428,640	10.3
Missing ^b	95	433,536	1.3
Occupation			
Government employee	657	1,749,887	5.2
Private employee	1,915	9,505,674	28.5
Self-employed	1,015	3,781,664	11.3
Unpaid worker/Homemaker/caregiver	1,178	3,589,438	10.8
Retiree	433	1,151,846	3.5
Student	584	2,685,146	8.0
Not working (unemployed, health problem, old age & child) ^d	952	2,973,605	8.9
Children aged 7-15 years	1,308	4,111,305	12.3
Children aged less than 7 years	1,048	3,428,640	10.3
Missing ^b	87	401,708	1.2
Household Income Group			
Less than RM 1,000	879	2,913,979	8.7
RM 1,000 – RM 1,999	1,241	4,012,276	12.0
RM 2,000 – RM 3,999	2,524	8,444,580	25.3

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)
RM 4,000 – RM 5,999	1,771	6,353,454	19.0
RM 6,000 – RM 7,999	1,041	3,832,015	11.5
RM 8,000 – RM 9,999	613	2,525,071	7.6
RM 10,000 and above	1,108	5,297,536	15.9
Household Income Quintile			
Quintile 1	1,273	4,156,297	12.5
Quintile 2	1,755	5,898,029	17.7
Quintile 3	1,851	6,131,751	18.4
Quintile 4	1,981	7,125,319	21.3
Quintile 5	2,317	10,067,515	30.2
Household Income Category*			
Bottom 40%	5,823	20,564,565	61.6
Middle 40%	2,555	9,696,833	29.1
Top 20%	799	3,117,514	9.3

^a Malay included Orang Asli (count=15)

^b Missing includes those who answered “Don’t know” and “Refuse to answer”

^c No formal education included respondents who never attended school and did not complete primary school

^d Not working included those who were unemployed, old age, and those who were not working because of health problems

^e Household income category was based on DOSM household income classification in 2022, by state

Sample representativeness

Population pyramid comparing estimated population of HCD NHMS 2023 and the projected population of Malaysia for 2023, by age and sex

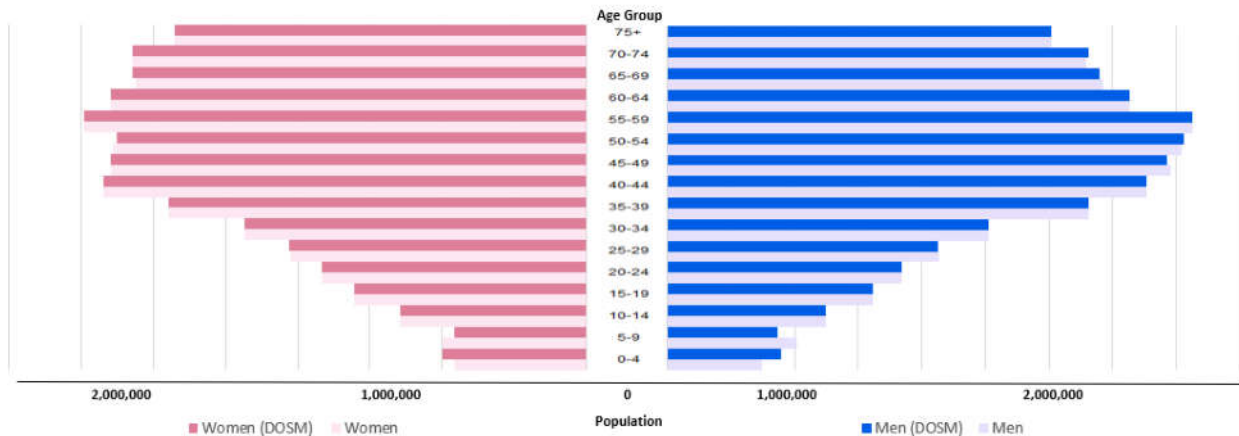


Figure 5.1: Population pyramid comparing the estimated population of HCD NHMS 2023 and the projected population of Malaysia for 2023, by age and sex.

HEALTHCARE DEMAND: SPECIFIC FINDINGS

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INTRODUCTION

The 2023 HCD module presents a comprehensive overview of health in Malaysia, covering self-rated health, acute health problems, health-seeking behaviours, and healthcare service utilisation, including outpatient healthcare, inpatient healthcare, oral healthcare, and medical check-ups. By evaluating predisposing factors like age, sex, and ethnicity, it explores how social and demographic characteristics can lead to variations in health-related attitudes and behaviours. Enabling factors such as income, education, and accessibility illuminate the resources available for healthcare. Additionally, need factors contribute to understanding perceived and actual health needs, resulting in a nuanced comprehension of health-seeking behaviours. Together, these factors offer a comprehensive understanding of how individual traits, societal influences, and healthcare system dynamics collectively shape the health landscape in Malaysia.

The introduction of new dimensions further enriches this module. Specifically, it captures valuable data on the utilisation of online healthcare services, reflecting the evolving landscape of healthcare accessibility and technology integration. Additionally, the module incorporates insights into the experiences of individuals informed about a sick child's diagnosis, particularly to delve into specific indicators outlined in the Primary Health Care Performance Initiative

(PHCPI) Vital Signs Profile. This provides valuable insight into the communication dynamics within healthcare settings.

Specific criteria for each sub-module are outlined in the subsequent section.

OPERATIONAL DEFINITIONS

1. **Self-rated health**, respondents aged 13 years old and above were asked to self-report their perception of their own current overall health condition at the point of the interview. A 5-point Likert-type measure was used to assess responses to the self-rated health question (excellent, good, fair, poor, very poor) (12–16). The answers were then classified into three groups: (1) positive responses (excellent & good), (2) neutral responses (fair), and (3) negative responses (poor & very poor).
2. **Acute health problems** were defined as the presence of acute health conditions such as fever, sore throat, diarrhoea, allergies, etc., in the last two weeks prior to the interview. Questions related to health problems were asked among respondents in all age groups.
3. **Health-seeking behaviour** was defined as the actions and decisions taken by individuals to address their health problems when they experience an acute health problem. Components assessed in this survey were seeking treatment from healthcare practitioners, self-medication practice without a healthcare practitioner's advice, and getting advice from non-healthcare practitioner sources. Respondents who answered "no" to all the given options were categorised as having answered "none of the above." It covered respondents in all age groups.
4. **Barriers to get healthcare** were defined as the respondent's experience in needing healthcare services for any health conditions but did not receive it in the last 12 months prior to the interview. Healthcare services include online healthcare but exclude traditional and complementary medicine. It covered respondents in all age groups.

5. Healthcare services utilisation was defined as the respondent's experience in receiving healthcare services in Malaysia, as the following:

- Medical check-up services utilisation referred to all health screenings which included, but were not limited to, blood tests, urine tests, and x-rays within 12 months prior to the interview. This section was asked to respondents aged 18 years old and above.
- Outpatient healthcare services utilisation was defined as the respondent's experience in receiving advice, check-up, or treatment at healthcare facilities, in the last two weeks prior to the interview and did not involve overnight stay, excluding oral health services. Healthcare facilities include clinics, clinics in a hospital, emergency departments, and day care/ ambulatory care centres. It covered respondents in all age groups.
- Inpatient healthcare services utilisation was defined as the respondent's experience with admission or had spent at least one night of stay at a treatment place for healthcare in the last 12 months prior to the interview. Respondents were considered as spending a night when the admission for healthcare crosses 12.00 am. This excluded a person that was admitted and discharged on the same day, admission to day-care centres, visit to an outpatient clinic, non-health related treatments, or a person accompanying patients. Healthcare facilities include hospitals, clinics, hospices, maternity homes, and emergency departments. It covered respondents in all age groups.
- Oral healthcare services utilisation was defined as the respondent's experience in receiving oral health check-ups, treatment for toothache or sensitive tooth, swollen gums with or without pus discharge, loss of teeth, denture problems, irregularly aligned teeth, mouth ulcers, and jaw pain in the last 12 months prior to the interview. Healthcare facilities include dental clinics, dental clinics in hospitals, school dental services, mobile dental clinics and mobile dental services. It covered respondents in all age groups.
- Online healthcare services (OHS) utilisation was defined as the respondent's experience in receiving online and interactive healthcare services over the internet connection for appointment scheduling, clinical consultation, and care plan, pick-up/ delivery of medication refill, request for a medical home visit by a healthcare practitioner, notification of laboratory and radiology tests, and health education session with a healthcare practitioner, in the last 12 months prior

interview. As OHS was newly incorporated in HCD 2023 module, the questions were intended to measure first-hand users of OHS, therefore, only respondents who independently accessed OHS were deemed to have utilised them. This section was asked to respondents aged 18 years old and above.

6. Out-of-pocket (OOP) expenditure was defined as direct payments made by individuals to healthcare providers at the time-of-service use. This includes expenses such as co-payments, deductibles, and payments for services not covered by insurance. In 2023, this submodule encompassed money spent on outpatient visits in the last two weeks (annualised to provide the yearly OOP payment for outpatient healthcare), expenditures related to inpatient visits over the past 12 months, and money spent on oral healthcare visits over the past 12 months.

7. Informed of sick child's diagnosis, another new addition to HCD 2023 module; was defined as the respondent's experience in accompanying any sick children under 5 years old to any healthcare facility in the last three months prior to the interview. This section was asked to respondents aged 18 years old and above.

5.2.1 General health

For self-rated health, 4,838 out of 7,094 respondents aged 13 years old and above answered the questions themselves (not via proxy) and were included in the analysis. Overall, 85.2% (95% CI: 83.10, 87.01) of population in Malaysia perceived their health as excellent or good (**Table 5.2.1.1**). Furthermore, **Table 5.2.1.2** also revealed an inverse relationship with age among those perceived their health as excellent or good.

For acute health problems, all 9,177 respondents were included in the analysis. Overall, 18.8% (95% CI: 17.10, 20.60) of population in Malaysia reported experienced acute health problems in the past two weeks prior to the interview. Notably, those without formal education [22.0% (95% CI: 18.41, 26.17)] and government employees [22.9% (95% CI: 17.60, 29.29)] reported the highest prevalence of acute health problems (**Table 5.2.1.3**).

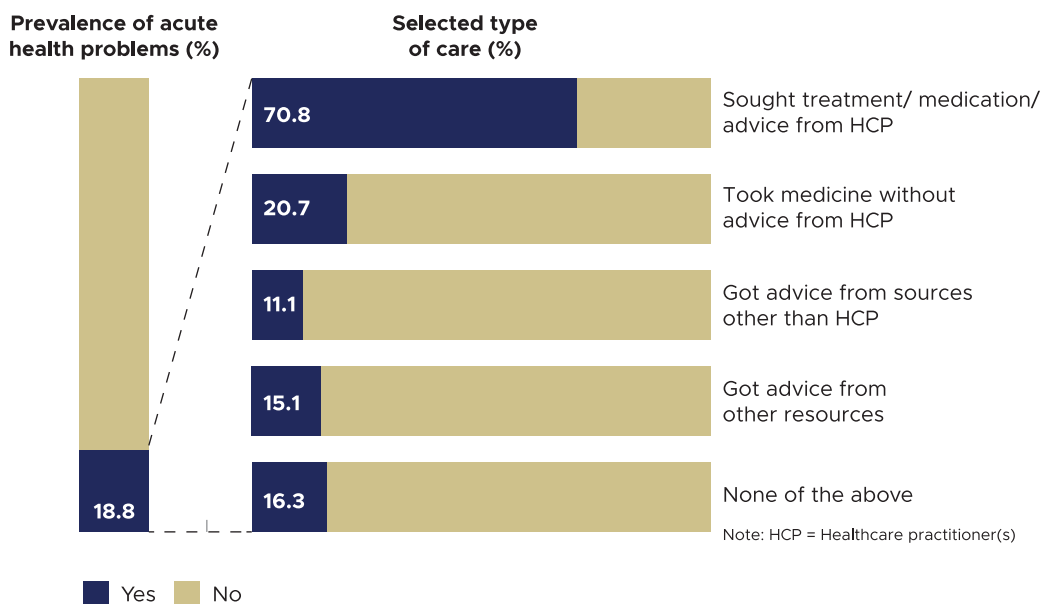


Figure 5.2: Prevalence of acute health problems in the last two weeks prior to the interview and percentage of selected types of care, NHMS 2023

Among those with recent acute health problems (**Figure 5.2**), 70.8% (95% CI: 66.95, 74.39) sought care from healthcare practitioners, while 20.7% (95% CI: 17.38, 24.46) opted for self-medication. Additionally, 11.1% (95% CI: 8.80, 14.02) sought advice from non-healthcare practitioners, and 15.1% (95% CI: 12.18, 18.66) sought alternative resources. These findings are further detailed in **Table 5.2.1.4**. On another note, children aged 0-9 years old [79.1% (95% CI: 71.48, 85.13)] and adults aged 50-59 years old [79.7% (95% CI: 71.11, 86.29)] had higher proportion of seeking healthcare practitioners' advice. Rural residents demonstrated a higher propensity [76.2% (95% CI: 70.07, 81.40)] to consult healthcare practitioners than their urban counterparts [69.5% (95% CI: 64.88, 73.69)], as detailed in **Table 5.2.1.5**. Unpaid workers or homemakers showed the lowest percentage

of self-medication without professional advice at 12.7% (95% CI: 8.02, 19.52) (**Table 5.2.1.6**). Details of those who sought advice from resources other than healthcare practitioners and those who sought advice from other resources are detailed in **Table 5.2.1.7** and **Table 5.2.1.8**, respectively.

Regarding the impact on daily activities, among those with recent acute health problems, the majority of respondents reported no disturbance at all [38.6% (95% CI: 33.88, 43.52)] or mild disturbance, [31.3% (95% CI: 27.83, 35.07)]. Severe disturbance was reported by 14.4% (95% CI: 9.83, 20.73), followed by 14.2% (95% CI: 11.60, 17.27) for moderate disturbance. Only 1.4% (95% CI: 0.85, 2.20) reported extreme disturbance due to recent acute health problems (**Table 5.2.1.9**).

Table 5.2.1.1: Prevalence of self-rated health among those aged 13 years old and above in Malaysia, NHMS 2023 (n=4,838)

SOCIODEMOGRAPHIC CHARACTERISTICS ^a	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Excellent or good ^b	4,153	15,133,676	85.2	83.10	87.01
Fair	629	2,463,162	13.9	12.13	15.80
Poor or very poor ^c	55	169,114	1.0	0.65	1.40
Missing ^d	1	-	-	-	-

^a This section did not include responses from proxy

^b Excellent or good included those who answered 'Excellent' or 'Good'

^c Poor or very poor included those who answered 'Poor' or 'Very poor'

^d Missing included those who answered "Don't know" and "Refuse to answer"

Dash (-) due to Relative Standard Error (RSE) more than 30%, to interpret with caution

Table 5.2.1.2: Prevalence of self-rated excellent or good health among those aged 13 years old and above in Malaysia by sociodemographic characteristics, NHMS 2023 (n=4,838)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	4,153	15,133,676	85.2	83.10	87.01
Location					
Urban	3,064	11,847,371	84.6	82.04	86.82
Rural	1,089	3,286,305	87.3	84.51	89.70
Sex					
Male	1,831	7,391,626	86.5	83.49	89.07
Female	2,322	7,742,051	83.9	81.05	86.40
Age Group (Years)					
13 – 19	309	1,288,724	92.7	87.57	95.85
20 – 29	761	3,577,360	89.4	84.02	93.07
30 – 39	839	3,681,939	84.4	79.28	88.47
40 – 49	794	2,785,084	81.9	76.89	85.96
50 – 59	665	1,921,498	84.7	80.23	88.29
60 and over	785	1,879,072	80.1	76.05	83.65
Ethnicity					
Malay ^a	2,735	7,744,242	84.3	82.30	86.11
Chinese	438	3,218,158	85.0	78.23	89.99
Indian	260	874,578	81.8	72.90	88.20
Bumiputera Sabah	337	996,332	89.3	81.47	94.06
Bumiputera Sarawak	173	719,050	89.6	83.30	93.71
Others	210	1,581,317	87.3	75.11	94.00
Citizenship^b					
Malaysian citizen	3,962	13,683,838	85.0	82.99	86.87
Marital status					
Never Married	1,026	4,779,620	87.8	84.44	90.53
Married/ Living with partner	2,736	9,201,955	84.2	81.16	86.77
Separated/ Divorced/ Widowed	381	1,046,103	81.3	75.65	85.85
Missing ^c	10	105,998	98.7	87.59	99.88
Education Level					
No formal education ^d	287	959,297	86.2	76.47	92.26
Primary education	553	1,851,100	87.1	82.59	90.57
Secondary education	2,785	10,020,896	85.2	82.49	87.50
Tertiary education	501	2,166,137	82.8	76.25	87.79
Missing ^c	27	136,246	91.8	72.56	97.96
Occupation^e					
Government employee	438	1,038,298	82.2	73.66	88.47
Private business (employer/employee)	1,180	5,755,699	86.7	83.51	89.28
Self-employed	635	2,127,653	79.7	70.56	86.50
Unpaid worker / Homemaker	842	2,584,666	87.3	84.25	89.83
Retiree	278	757,515	84.6	78.37	89.29
Student	264	1,240,900	92.6	86.88	95.92
Not working ^f	441	1,340,897	79.6	74.32	83.98
Missing ^c	30	158,330	88.2	64.01	96.91
Household Income Group					
Less than RM 1,000	422	1,443,545	81.2	74.46	86.46
RM 1,000 – RM 1,999	575	1,851,982	85.6	78.07	90.81
RM 2,000 – RM 3,999	1,128	3,882,351	87.5	84.61	89.95
RM 4,000 – RM 5,999	807	2,750,653	80.4	73.23	85.97
RM 6,000 – RM 7,999	473	1,773,483	88.1	83.51	91.56
RM 8,000 – RM 9,999	257	1,131,064	89.8	84.31	93.49
RM 10,000 and above	491	2,300,598	85.3	77.87	90.53

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Quintile					
Quintile 1	633	2,069,382	83.9	78.80	87.95
Quintile 2	772	2,650,164	85.2	80.13	89.10
Quintile 3	836	2,902,655	87.8	84.55	90.36
Quintile 4	900	3,017,755	81.5	74.79	86.67
Quintile 5	1,012	4,493,721	86.8	82.58	90.06
Household Income Category^g					
Bottom 40%	2,638	9,400,061	84.6	81.80	87.00
Middle 40%	1,144	4,335,729	85.5	81.24	88.89
Top 20%	371	1,397,886	88.3	80.93	93.01

^a Malay included Orang Asli (count=5)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=191)

^c Missing included those who answered "Don't know" and "Refuse to answer"

^d No formal education included those who never attended school and did not complete primary school

^e Occupation did not include children aged 13-15 years old (count=45)

^f Not working included those who were unemployed, old age and those who were not working because of health problems

^g Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%, to interpret with caution

Table 5.2.1.3: Prevalence of reported acute health problems in the last two weeks by sociodemographic characteristics, NHMS 2023 (n=9,177)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,854	6,270,466	18.8	17.10	20.60
Location					
Urban	1,390	5,020,156	19.2	17.19	21.40
Rural	464	1,250,310	17.3	14.70	20.16
Sex					
Male	887	3,075,005	17.6	15.64	19.76
Female	967	3,195,461	20.1	17.66	22.74
Age Group (Years)					
0 – 9	500	1,557,092	31.6	27.35	36.26
10 – 19	300	1,135,239	21.0	17.79	24.72
20 – 29	227	926,829	15.5	12.43	19.22
30 – 39	221	907,974	15.8	12.39	19.95
40 – 49	205	765,433	17.3	14.25	20.74
50 – 59	157	425,268	13.5	10.85	16.71
60 and over	244	552,631	14.7	12.39	17.28
Ethnicity					
Malay ^a	1,327	3,689,771	20.9	19.06	22.97
Chinese	153	1,266,109	18.5	14.10	23.77
Indian	102	417,995	20.9	14.72	28.77
Bumiputera Sabah	175	444,024	20.7	16.21	26.10
Bumiputera Sarawak	66	259,205	16.5	11.85	22.57
Others	31	-	-	-	-
Citizenship^b					
Malaysian citizen	1,827	6,115,479	20.0	18.27	21.88
Marital status^c					
Never Married	364	1,562,266	16.2	13.66	19.16
Married/ Living with partner	731	2,356,525	15.7	13.73	17.85
Separated/ Divorced/ Widowed	118	326,617	16.8	13.12	21.23
Missing ^d	4	18,194	11.9	1.91	48.51
Education Level^e					
No formal education ^f	386	1,159,403	22.0	18.41	26.17
Primary education	186	612,738	14.6	11.67	18.10
Secondary education	778	2,743,580	16.5	14.67	18.53

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Tertiary education	146	604,956	17.6	13.55	22.47
Missing ^d	19	-	-	-	-
Occupation^g					
Government employee	143	401,162	22.9	17.60	29.29
Private business (employer/employee)	333	1,433,619	15.1	12.66	17.87
Self-employed	150	545,274	14.4	10.39	19.67
Unpaid worker / Homemaker	192	531,875	14.8	12.16	17.93
Retiree	66	172,221	15.0	11.03	19.95
Student	104	446,005	16.6	12.44	21.84
Not working ^h	163	474,344	16.0	13.05	19.36
Missing ^d	14	-	-	-	-
Household Income Group					
Less than RM 1,000	134	495,096	17.0	13.25	21.53
RM 1,000 – RM 1,999	233	623,211	15.5	12.58	19.03
RM 2,000 – RM 3,999	511	1,577,633	18.7	16.27	21.36
RM 4,000 – RM 5,999	377	1,371,291	21.6	16.76	27.34
RM 6,000 – RM 7,999	225	670,946	17.5	13.36	22.62
RM 8,000 – RM 9,999	148	665,164	26.3	19.35	34.78
RM 10,000 and above	226	867,126	16.4	12.45	21.23
Household Income Quintile					
Quintile 1	202	651,718	15.7	12.58	19.38
Quintile 2	344	1,010,359	17.1	14.58	20.03
Quintile 3	377	1,132,223	18.5	15.73	21.55
Quintile 4	423	1,552,907	21.8	17.36	26.99
Quintile 5	508	1,923,260	19.1	15.94	22.73
Household Income Categoryⁱ					
Bottom 40%	1,155	3,763,678	18.3	16.16	20.66
Middle 40%	545	1,987,181	20.5	17.38	24.00
Top 20%	154	519,607	16.7	12.50	21.88

^a Malay included Orang Asli (count=7)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=191)

^c Marital status did not include children aged less than 13 years old (count=637)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=339)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=689)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%, to interpret with caution

Table 5.2.1.4: Types of care sought among those who experienced acute health problems in the last two weeks, NHMS 2023 (n=1,854)

TYPE OF CARE ^a	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Sought treatment or medication or advice from healthcare practitioner	1,340	4,439,871	70.8	66.95	74.39
Took medicine without advice from healthcare practitioner	388	1,297,932	20.7	17.38	24.46
Got advice from sources other than healthcare practitioner	193	698,880	11.1	8.80	14.02
Got advice from other resources	283	949,043	15.1	12.18	18.66
None of the above	245	1,023,983	16.3	13.12	20.15

^a Respondents were allowed to choose more than one reason for type of care; therefore, percentages might not add up to 100%; The "None of the above" category included responses that were not covered by the predefined options. Specific details for responses in this category was not asked in the survey.

Table 5.2.1.5: Percentage of seeking treatment or medication or advice from healthcare practitioner among those who experienced acute health problems in the last two weeks by sociodemographic characteristics, NHMS 2023 (n=1,854)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,340	4,439,871	70.8	66.95	74.39
Location					
Urban	989	3,487,163	69.5	64.88	73.69
Rural	351	952,708	76.2	70.07	81.40
Sex					
Male	654	2,180,275	70.9	66.07	75.30
Female	686	2,259,597	70.7	65.36	75.55
Age Group (Years)					
0 – 9	401	1,231,840	79.1	71.48	85.13
10 – 19	227	849,730	74.9	66.40	81.76
20 – 29	145	594,941	64.2	54.95	72.49
30 – 39	144	513,951	56.6	42.25	69.93
40 – 49	136	509,913	66.6	57.03	75.00
50 – 59	120	339,005	79.7	71.11	86.25
60 and over	167	400,492	72.5	63.77	79.74
Ethnicity					
Malay ^a	945	2,604,909	70.6	66.78	74.15
Chinese	118	890,231	70.3	57.29	80.70
Indian	82	347,179	83.1	67.41	92.08
Bumiputera Sabah	132	296,548	66.8	45.72	82.76
Bumiputera Sarawak	41	151,049	58.3	43.60	71.62
Others	22	149,954	77.6	53.69	91.14
Citizenship^b					
Malaysian citizen	1,322	4,328,293	70.8	66.93	74.34
Marital status^c					
Never Married	252	1,003,310	64.2	56.60	71.18
Married/ Living with partner	497	1,579,603	67.0	59.65	73.66
Separated/ Divorced/ Widowed	78	214,546	65.7	51.42	77.59
Missing ^d	4	18,194	100.0	0.00	0.00
Education Level^e					
No formal education ^f	296	935,781	80.7	73.84	86.12
Primary education	129	417,264	68.1	58.69	76.23
Secondary education	528	1,722,924	62.8	56.15	68.99
Tertiary education	100	453,280	74.9	64.83	82.89
Missing ^d	12	44,498	72.1	45.10	89.04
Occupation^g					
Government employee	103	291,135	72.6	59.82	82.46
Private business (employer/employee)	221	958,944	66.9	59.36	73.65
Self-employed	96	305,251	56.0	36.73	73.59
Unpaid worker / Homemaker	131	366,645	68.9	59.84	76.77
Retiree	44	110,137	64.0	44.77	79.52
Student	73	282,752	63.4	46.86	77.28
Not working ^h	110	290,316	61.2	49.23	71.96
Missing ^d	11	54,597	91.8	69.33	98.25
Household Income Group					
Less than RM 1,000	98	363,398	73.4	61.39	82.72
RM 1,000 – RM 1,999	168	476,455	76.5	69.03	82.54
RM 2,000 – RM 3,999	343	1,022,419	64.8	57.71	71.30
RM 4,000 – RM 5,999	269	896,531	65.4	55.29	74.25
RM 6,000 – RM 7,999	170	501,748	74.8	62.66	83.97
RM 8,000 – RM 9,999	119	562,205	84.5	72.10	92.02
RM 10,000 and above	173	617,115	71.2	56.25	82.57

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Quintile					
Quintile 1	155	497,758	76.4	67.04	83.71
Quintile 2	236	719,551	71.2	63.56	77.83
Quintile 3	249	718,014	63.4	55.42	70.74
Quintile 4	302	1,016,720	65.5	55.91	73.93
Quintile 5	398	1,487,828	77.4	68.30	84.42
Household Income Categoryⁱ					
Bottom 40%	821	2,626,879	69.8	64.98	74.21
Middle 40%	389	1,387,533	69.8	60.82	77.52
Top 20%	130	425,459	81.9	66.14	91.27

^a Malay included Orang Asli (count=5)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=18)

^c Marital status did not include children aged less than 13 years old (count=509)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=275)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=551)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.1.6: Percentage of self-medication among those who experienced acute health problems in the last two weeks by sociodemographic characteristics, NHMS 2023 (n=1,854)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	388	1,297,932	20.7	17.38	24.46
Location					
Urban	299	1,033,083	20.6	16.76	25.01
Rural	89	264,849	21.2	15.49	28.26
Sex					
Male	178	608,370	19.8	16.17	23.97
Female	210	689,562	21.6	16.87	27.17
Age Group (Years)					
0 – 9	99	342,191	22.0	15.74	29.82
10 – 19	52	242,202	21.3	14.32	30.56
20 – 29	51	208,512	22.5	15.63	31.26
30 – 39	52	193,745	21.3	13.71	31.65
40 – 49	44	153,195	20.0	13.56	28.53
50 – 59	31	53,487	12.6	7.49	20.35
60 and over	59	104,601	18.9	13.57	25.78
Ethnicity					
Malay ^a	276	717,327	19.4	16.21	23.14
Chinese	36	273,342	21.6	12.09	35.53
Indian	23	77,337	18.5	11.22	28.96
Bumiputera Sabah	34	132,855	29.9	16.15	48.62
Bumiputera Sarawak	14	64,118	24.7	15.03	37.91
Others	5	-	-	-	-
Citizenship^b					
Malaysian citizen	383	1,264,979	20.7	17.36	24.46
Marital status^c					
Never Married	82	404,206	25.9	20.21	32.48
Married/ Living with partner	158	416,015	17.7	13.73	22.41
Separated/ Divorced/ Widowed	29	66,666	20.4	13.00	30.55
Missing ^d	0	0	0.0	0.00	0.00
Education Level^e					
No formal education ^f	75	205,612	17.7	12.46	24.61
Primary education	32	123,930	20.2	12.30	31.42

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Secondary education	178	569,011	20.7	16.57	25.64
Tertiary education	36	133,702	22.1	12.98	35.05
Missing ^d	2	-	-	-	-
Occupation^e					
Government employee	34	84,275	21.0	12.30	33.52
Private business (employer/employee)	77	328,402	22.9	16.67	30.63
Self-employed	38	104,044	19.1	11.78	29.41
Unpaid worker / Homemaker	34	67,542	12.7	8.02	19.52
Retiree	18	42,564	24.7	14.16	39.52
Student	20	92,579	20.8	11.58	34.37
Not working ^h	38	105,110	22.2	14.66	32.05
Missing ^d	1	-	-	-	-
Household Income Group					
Less than RM 1,000	25	131,677	26.6	14.53	43.57
RM 1,000 – RM 1,999	39	89,633	14.4	9.15	21.89
RM 2,000 – RM 3,999	117	369,001	23.4	18.10	29.67
RM 4,000 – RM 5,999	79	279,900	20.4	13.24	30.12
RM 6,000 – RM 7,999	43	113,444	16.9	9.49	28.32
RM 8,000 – RM 9,999	29	-	-	-	-
RM 10,000 and above	56	177,917	20.5	12.76	31.30
Household Income Quintile					
Quintile 1	36	152,267	23.4	13.72	36.89
Quintile 2	73	222,211	22.0	16.03	29.39
Quintile 3	87	257,242	22.7	16.65	30.19
Quintile 4	84	297,301	19.1	12.64	27.93
Quintile 5	108	368,911	19.2	12.91	27.53
Household Income Categoryⁱ					
Bottom 40%	226	727,701	19.3	15.29	24.14
Middle 40%	133	473,773	23.8	17.10	32.20
Top 20%	29	96,458	18.6	10.14	31.54

^a Malay included Orang Asli (count=2)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=5)

^c Marital status did not include children aged less than 13 years old (count=119)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=65)

^f No formal education included respondents who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=128)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.1.7: Percentage of getting advice from sources other than healthcare practitioner among those who experienced acute health problems in the last two weeks by sociodemographic characteristics, NHMS 2023 (n=1,854)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	193	698,880	11.1	8.80	14.02
Location					
Urban	140	539,733	10.8	8.12	14.11
Rural	53	159,146	12.7	8.46	18.71
Sex					
Male	82	316,293	10.3	7.55	13.87
Female	111	382,587	12.0	8.83	16.04
Age Group (Years)					
0 – 9	44	136,630	8.8	5.41	13.93
10 – 19	35	193,296	17.0	10.37	26.68
20 – 29	26	96,512	10.4	6.45	16.39
30 – 39	27	-	-	-	-
40 – 49	18	-	-	-	-
50 – 59	16	-	-	-	-
60 and over	27	62,408	11.3	6.76	18.27
Ethnicity					
Malay ^a	136	360,162	9.8	7.35	12.85
Chinese	19	171,902	13.6	7.97	22.18
Indian	7	-	-	-	-
Bumiputera Sabah	22	-	-	-	-
Bumiputera Sarawak	6	-	-	-	-
Others	3	-	-	-	-
Citizenship^b					
Malaysian citizen	190	684,306	11.2	8.83	14.08
Marital status^c					
Never Married	41	186,862	12.0	7.85	17.81
Married/ Living with partner	80	259,898	11.0	7.73	15.50
Separated/ Divorced/ Widowed	11	-	-	-	-
Missing ^d	2	-	-	-	-
Education Level^e					
No formal education ^f	28	125,444	10.8	6.40	17.71
Primary education	20	96,909	15.8	8.86	26.65
Secondary education	81	259,167	9.4	6.89	12.83
Tertiary education	23	-	-	-	-
Missing ^d	4	-	-	-	-
Occupation^g					
Government employee	18	-	-	-	-
Private business (employer/employee)	31	161,354	11.3	6.87	17.89
Self-employed	10	-	-	-	-
Unpaid worker / Homemaker	25	72,868	13.7	7.72	23.14
Retiree	7	-	-	-	-
Student	12	-	-	-	-
Not working ^h	23	49,589	10.5	6.30	16.85
Missing ^d	3	-	-	-	-
Household Income Group					
Less than RM 1,000	17	-	-	-	-
RM 1,000 – RM 1,999	23	64,714	10.4	5.68	18.22
RM 2,000 – RM 3,999	50	182,216	11.5	7.49	17.41
RM 4,000 – RM 5,999	45	131,962	9.6	6.30	14.42
RM 6,000 – RM 7,999	24	-	-	-	-
RM 8,000 – RM 9,999	13	-	-	-	-
RM 10,000 and above	21	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Quintile					
Quintile 1	22	-	-	-	-
Quintile 2	41	141,815	14.0	8.40	22.52
Quintile 3	34	106,099	9.4	5.72	14.99
Quintile 4	44	142,860	9.2	5.67	14.58
Quintile 5	52	195,702	10.2	6.46	15.68
Household Income Categoryⁱ					
Bottom 40%	121	438,431	11.6	8.64	15.52
Middle 40%	54	183,634	9.2	5.72	14.59
Top 20%	18	-	-	-	-

^a Malay included Orang Asli (count=1)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=3)

^c Marital status did not include children aged less than 13 years old (count=59)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=37)

^f No formal education included respondents who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=64)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.1.8: Percentage of getting advice from other resources among those who experienced acute health problems in the last two weeks by sociodemographic characteristics, NHMS 2023 (n=1,854)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	283	949,043	15.1	12.18	18.66
Location					
Urban	204	706,029	14.1	10.73	18.22
Rural	79	243,014	19.4	14.42	25.68
Sex					
Male	114	422,285	13.7	10.38	17.95
Female	169	526,758	16.5	12.59	21.28
Age Group (Years)					
0 – 9	52	176,811	11.4	6.54	18.99
10 – 19	35	172,887	15.2	8.71	25.28
20 – 29	44	142,673	15.4	10.29	22.40
30 – 39	48	181,780	20.0	12.42	30.65
40 – 49	38	120,363	15.7	9.55	24.80
50 – 59	36	90,368	21.2	14.36	30.27
60 and over	30	64,160	11.6	7.17	18.26
Ethnicity					
Malay ^a	203	551,293	14.9	11.97	18.50
Chinese	26	216,143	17.1	9.33	29.17
Indian	12	-	-	-	-
Bumiputera Sabah	36	114,486	25.8	14.78	41.04
Bumiputera Sarawak	2	-	-	-	-
Others	4	-	-	-	-
Citizenship^b					
Malaysian citizen	280	933,966	15.3	12.26	18.86
Marital status^c					
Never Married	66	280,261	0.2	0.12	0.25
Married/ Living with partner	143	427,515	0.2	0.14	0.23
Separated/ Divorced/ Widowed	13	-	-	-	-
Missing ^d	1	-	-	-	-
Education Level^e					
No formal education ^f	24	-	-	-	-
Primary education	19	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Secondary education	159	486,818	17.7	14.20	21.95
Tertiary education	36	151,911	25.1	14.77	39.34
Missing ^d	4	-	-	-	-
Occupation^g					
Government employee	34	101,679	25.3	15.52	38.56
Private business (employer/employee)	49	170,657	11.9	7.97	17.42
Self-employed	28	105,442	19.3	10.69	32.44
Unpaid worker / Homemaker	46	122,409	23.0	15.37	32.98
Retiree	12	-	-	-	-
Student	19	94,565	21.2	11.59	35.59
Not working ^h	26	63,910	13.5	8.37	20.97
Missing ^d	2	-	-	-	-
Household Income Group					
Less than RM 1,000	30	156,791	31.7	18.31	48.93
RM 1,000 – RM 1,999	21	76,124	12.2	6.86	20.83
RM 2,000 – RM 3,999	97	347,331	22.0	16.13	29.30
RM 4,000 – RM 5,999	46	110,488	8.1	4.76	13.31
RM 6,000 – RM 7,999	30	58,762	8.8	4.97	14.98
RM 8,000 – RM 9,999	23	-	-	-	-
RM 10,000 and above	36	86,201	9.9	5.56	17.16
Household Income Quintile					
Quintile 1	33	170,873	26.2	15.51	40.76
Quintile 2	54	192,307	19.0	12.57	27.77
Quintile 3	66	229,433	20.3	14.02	28.37
Quintile 4	48	111,633	7.2	4.40	11.53
Quintile 5	82	244,797	12.7	8.14	19.36
Household Income Categoryⁱ					
Bottom 40%	182	622,235	16.5	12.76	21.15
Middle 40%	82	257,354	13.0	8.43	19.39
Top 20%	19	-	-	-	-

^a Malay included Orang Asli (count=5)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=3)

^c Marital status did not include children aged less than 13 years old (count=60)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=41)

^f No formal education included respondents who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=67)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.1.9: Distribution of level of daily activity interference among those who experienced acute health problems in the last two weeks, NHMS 2023 (n=1,854)

LEVEL OF INTERFERENCE	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Not disturbed at all	712	2,419,631	38.6	33.88	43.52
Mildly disturbed	622	1,964,966	31.3	27.83	35.07
Moderately disturbed	272	890,478	14.2	11.60	17.27
Severely disturbed	218	905,875	14.4	9.83	20.73
Extremely disturbed	29	85,913	1.4	0.85	2.20
Missing	1	-	-	-	-

Dash (-) due to Relative Standard Error (RSE) more than 30%

5.2.2 Barriers to get healthcare

For perceived barriers to get healthcare, all 9,177 respondents were included in the analysis. Over the preceding 12 months, 2.3% (95% CI: 1.73, 2.99) of the population reported unmet healthcare needs (**Table 5.2.2.1**).

Delving into the reasons behind perceived barriers, the highest reported obstacle was perceived high cost of treatment at 12.9% (95% CI: 7.86, 20.53) (**Table 5.2.2.2**). Among those who reported experiencing unmet needs, a substantial majority, constituting 67.7% (95% CI: 51.53, 80.50), responded “no” to all the provided options for barriers to accessing healthcare when asked for their reason(s), which might need further exploration in a separate study.

Table 5.2.2.1: Prevalence of perceived barriers to get healthcare among population in Malaysia in the last 12 months by sociodemographic characteristics, NHMS 2023 (n=9,177)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	197	759,456	2.3	1.73	2.99
Location					
Urban	140	560,605	2.1	1.52	3.02
Rural	57	198,851	2.7	1.87	4.01
Sex					
Male	94	385,974	2.2	1.56	3.11
Female	103	373,482	2.3	1.62	3.39
Age Group (Years)					
0 – 9	24	-	-	-	-
10 – 19	27	-	-	-	-
20 – 29	30	136,597	2.3	1.35	3.84
30 – 39	37	172,592	3.0	1.97	4.56
40 – 49	24	-	-	-	-
50 – 59	19	46,319	1.5	0.84	2.57
60 and over	36	103,941	2.8	1.78	4.25
Ethnicity					
Malay ^a	143	492,701	2.8	2.03	3.84
Chinese	5	-	-	-	-
Indian	8	-	-	-	-
Bumiputera Sabah	24	-	-	-	-
Bumiputera Sarawak	14	-	-	-	-
Others	3	-	-	-	-
Citizenship^b					
Malaysian citizen	194	743,536	2.4	1.85	3.20
Marital status^c					
Never Married	48	214,644	2.2	1.50	3.30
Married/ Living with partner	95	338,072	2.2	1.68	3.01
Separated/ Divorced/ Widowed	21	62,251	3.2	1.88	5.39
Missing ^d	0	-	-	-	-
Education Level^e					
No formal education ^f	32	102,770	2.0	1.13	3.37
Primary education	23	-	-	-	-
Secondary education	109	380,451	2.3	1.72	3.03
Tertiary education	17	-	-	-	-
Missing ^d	0	-	-	-	-
Occupation^g					
Government employee	18	-	-	-	-
Private business (employer/employee)	42	143,541	1.5	0.94	2.41
Self-employed	18	48,638	1.3	0.71	2.31
Unpaid worker / Homemaker	24	93,154	2.6	1.49	4.48
Retiree	10	-	-	-	-
Student	14	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Not working ^h	35	121,898	4.1	2.57	6.48
Missing ^d	0	-	-	-	-
Household Income Group					
Less than RM 1,000	29	84,574	2.9	1.77	4.73
RM 1,000 – RM 1,999	34	122,542	3.1	1.85	4.99
RM 2,000 – RM 3,999	63	264,529	3.1	1.79	5.42
RM 4,000 – RM 5,999	19	-	-	-	-
RM 6,000 – RM 7,999	19	-	-	-	-
RM 8,000 – RM 9,999	9	-	-	-	-
RM 10,000 and above	24	-	-	-	-
Household Income Quintile					
Quintile 1	42	127,521	3.1	2.00	4.68
Quintile 2	45	-	-	-	-
Quintile 3	41	135,102	2.2	1.33	3.63
Quintile 4	26	-	-	-	-
Quintile 5	43	195,046	1.9	1.15	3.25
Household Income Categoryⁱ					
Bottom 40%	144	534,939	2.7	1.93	3.65
Middle 40%	42	173,772	1.8	1.02	3.09
Top 20%	11	-	-	-	-

^a Malay included Orang Asli (count=1)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=3)

^c Marital status did not include children aged less than 13 years old (count=33)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=16)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=36)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%, to interpret with caution

Table 5.2.2.2: Distribution of reasons for not seeking treatment or medication or advice among those who perceived needed care and did not seek treatment/ medication/ advice in the last 12 months, NHMS 2023 (n=197)

REASON	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Treatment is too expensive/ cannot afford/ lack of money	31	98,150	12.9	7.86	20.53
No money for transport fee	8	-	-	-	-
No transportation	38	-	-	-	-
Distance to medical facility is too far away/ Travel time is too long	22	-	-	-	-
None of the above	131	514,415	67.7	51.63	80.50
Missing	8	-	-	-	-

Dash (-) due to Relative Standard Error (RSE) more than 30%, to interpret with caution

5.2.3 Healthcare services utilisation

Highlights

- Healthcare service utilisation include outpatient healthcare, inpatient healthcare, oral healthcare, medical check-ups, and online healthcare services by the population in Malaysia.
- There was an increase in the prevalence of getting medical check-ups (**Figure 5.3**).

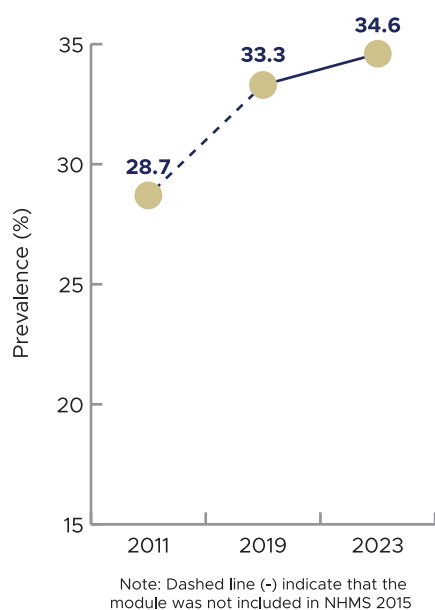


Figure 5.3 Trend of prevalence of getting medical check-ups, NHMS 2011 to 2023

5.2.3.1 Medical check-up services

For medical check-up services, all 6,432 respondents aged 18 years old and above were included in the analysis. In the 12 months preceding the interview, 34.6% (95% CI: 32.11, 37.14) of the population underwent at least one medical check-up (**Table 5.2.3.1**). The prevalence of medical check-ups demonstrated an increasing trend with age, peaking at 46.5% (95% CI: 42.40, 50.64) among individuals aged 60 years and above. Notably, Indians [31.5% (95% CI: 25.14, 38.73)] and Bumiputera Sabah [31.3% (95% CI: 24.92, 38.45)] reported lower prevalence compared to other ethnic groups. Prevalence was lowest among never married [27.8% (95% CI: 23.47, 32.59)] and highest among retirees [49.5% (95% CI: 41.30, 57.74)]. Furthermore, prevalence exhibited an upward trajectory with increasing household income, reaching 44.9% (95% CI: 35.23, 54.93) for households with an income of RM 10,000 and above.

Among those who had medical check-ups, 47.4% (95% CI: 42.16, 52.69) were referred by healthcare professionals, while 31.2% (95% CI: 26.82, 36.03) initiated the check-up themselves (**Table 5.2.3.2**). Additionally, a large majority, 96.3% (95% CI: 94.03, 97.75), of respondents who had a medical check-up

in the preceding 12 months sought further care due to irregular findings (**Table 5.2.3.3**).

5.2.3.2 Online healthcare services

For online healthcare services, all 6,432 respondents aged 18 years old and above were included in the analysis. In the 12 months preceding the interview, the prevalence of online healthcare services (OHS) utilisation was 6.3% (95% CI: 5.29, 7.55) (**Table 5.2.3.4**). Urban populations exhibited a slightly higher OHS prevalence [6.6% (95% CI: 5.35, 8.03)] as compared to rural populations [5.4% (95% CI: 3.85, 7.63)], and females [7.3% (95% CI: 6.04, 8.90)] had higher OHS usage than males [5.4% (95% CI: 4.18, 6.97)]. By age group, those aged 30-39 years old had the highest prevalence at 8.9% (95% CI: 6.40, 12.17), while the 50-59 years old age group had the lowest prevalence at 3.6% (95% CI: 2.41, 5.39). Notably, widow(er)s or divorcees had the highest OHS usage at 7.7% (95% CI: 4.92, 11.85), followed by married individuals [6.4% (95% CI: 5.26, 7.81)], and the lowest was among never married [5.8% (95% CI: 4.15, 8.18)].

OHS usage increased with higher education levels; tertiary education exhibited a higher prevalence at 9.7% (95% CI: 6.21, 14.91) than primary education [5.6% (95% CI: 3.69, 8.34)]. Retirees had the highest prevalence at 10.8% (95% CI: 6.34, 17.81), while self-employed individuals had the lowest prevalence at 4.0% (95% CI: 2.69, 6.02). Overall, OHS usage showed an increasing trend across household income quintiles, with Quintile 1 at 5.2% (95% CI: 3.63, 7.50) and Quintile 5 at 8.0% (95% CI: 5.56, 11.31).

Online appointment scheduling [4.8% (95% CI: 3.94, 5.93)] was the most prevalent OHS types, followed by the arrangement for medication refill via delivery or pick-up [0.7% (95% CI: 0.42, 1.16)], online notifications of laboratory and radiology tests [0.5% (95% CI: 0.28, 0.80)], and health education sessions with healthcare professionals [0.5% (95% CI: 0.29, 0.77)] (**Table 5.2.3.5**).

Highlights

- Increasing trend of the prevalence of healthcare services utilisation were observed from 2019 to 2023 as shown in **Figure 5.4(a)**.
- There was an increase in outpatient and oral healthcare services utilisation rates from 2015 to 2023 as shown in **Figure 5.4(b)**.
- For the public-private composition (based on annual mean number of visits), there was a shift from public to private sector healthcare utilisation for outpatient and oral healthcare services as shown in **Figure 5.4(c)**. Nevertheless, public sector healthcare services remained the most utilised by the population in Malaysia for inpatient and oral healthcare services.

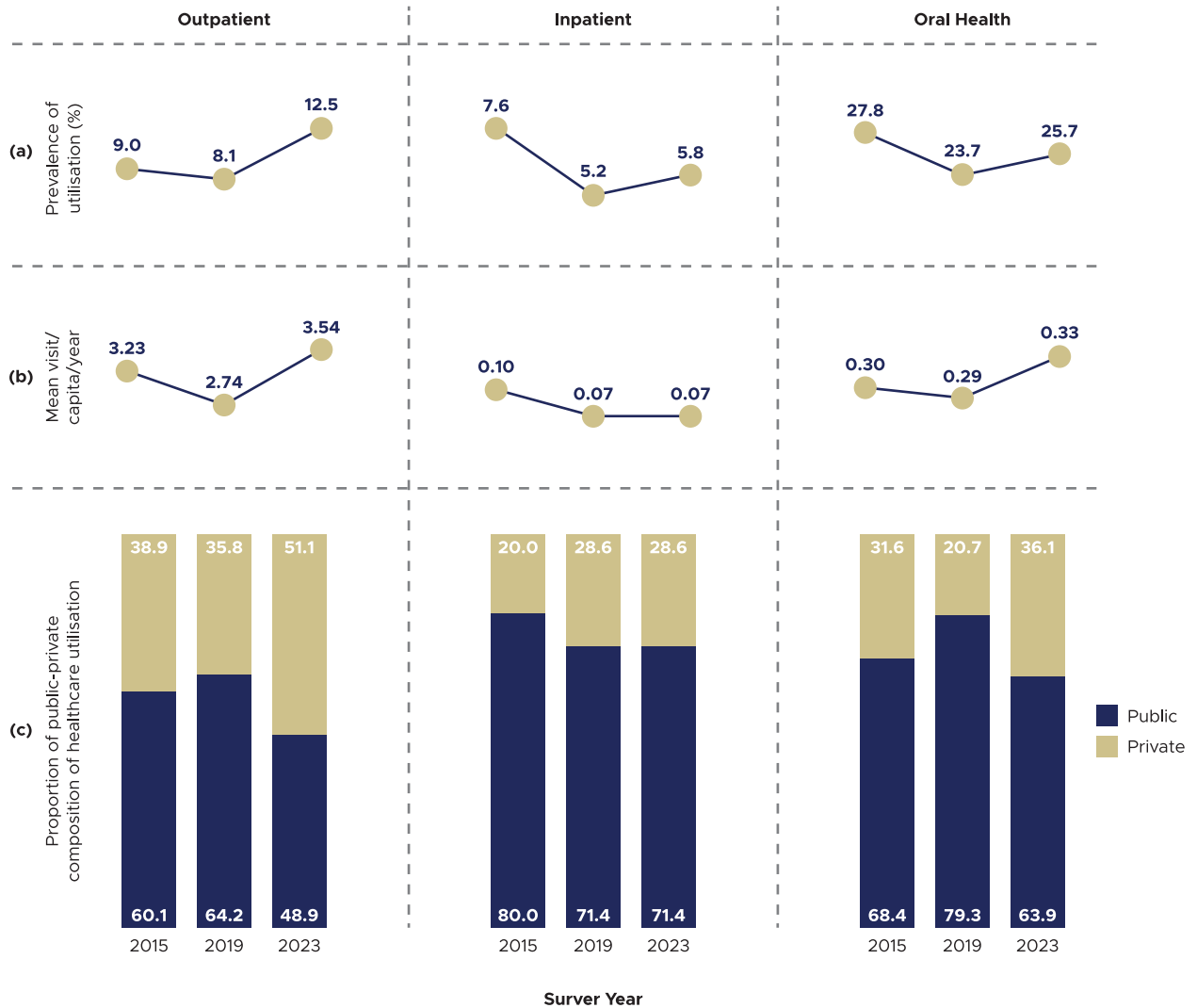


Figure 5.4: Trends of outpatient, inpatient and oral healthcare services utilisation, NHMS 2015 to 2023

5.2.3.3 Outpatient healthcare services

For outpatient healthcare services, all 9,177 respondents were included in the analysis. Outpatient healthcare utilisation was reported at a prevalence of 12.5% (95% CI: 11.31, 13.83) within the two weeks preceding the interview (Table 5.2.3.6). By gender, a higher utilisation was found among females, reaching 13.8% (95% CI: 12.09, 15.61). Notably, children aged 0-9 years old exhibited the highest usage at 22.2% (95% CI: 18.06, 26.95), indicating an age-dependent increase in utilisation.

Retirees had the highest utilisation rate at 15.7% (95% CI: 10.66, 22.57), while students had the lowest utilisation at 6.9% (95% CI: 4.67, 10.10).

Among users of outpatient healthcare services (n=1,254), 50.8% (95% CI: 45.35, 56.16) used public facilities and 52.0% (95% CI: 46.63, 57.41) used private facilities (Table 5.2.3.7). The private sector was notably more utilised, especially by the urban population [57.7% (95% CI: 51.40, 63.71)], children

aged 0 to 9 years old (66.9%; 95% CI: 58.76, 74.19), and individuals in the highest household income quintile (Quintile 5) at 70.1% (95% CI: 60.26, 78.34).

To standardise reporting, the recall period for outpatient healthcare utilisation within two weeks was annualised. The average annual visits to outpatient healthcare facilities for the Malaysian population were 3.54 (95% CI: 3.18, 3.91). Public outpatient healthcare facilities averaged 1.73 visits per year (95% CI: 1.52, 1.94), whereas private facilities averaged 1.81 visits per year (95% CI: 1.50, 2.12) (Table 5.2.3.8). The distribution of frequency of outpatient visits by sector is detailed in Table 5.2.3.9. The majority [61.5% (95% CI: 55.89, 66.89)] of respondents using outpatient health services in the preceding two weeks depended on themselves, their family, or household members for healthcare expenditures (Table 5.2.3.10).

5.2.3.4 Inpatient healthcare services

For inpatient healthcare services, all 9,177

respondents were included in the analysis. The prevalence of inpatient healthcare utilisation was 5.8% (95% CI: 5.09, 6.64) (**Table 5.2.3.11**), with the highest observed in those aged 60 years and older (8.9%; 95% CI: 7.17, 11.03). The Indian population had the highest utilisation at 11.7% (95% CI: 8.54, 15.72), followed by Bumiputera Sabah at 7.9% (95% CI: 4.90, 12.37). Individuals who reported 'not working' [9.8% (95% CI: 7.61, 12.47)] and unpaid workers/homemakers [8.2% (95% CI: 6.26, 10.68)] had the highest utilisation. Utilisation increased with higher household income quintiles, peaking at 7.9% in Quintile 4 (95% CI: 6.07, 10.11).

Among users of inpatient healthcare services (n=605), 72.6% (95% CI: 65.42, 78.74) used public facilities, notably higher in rural areas [88.8% (95% CI: 79.56, 94.14)] as compared to urban areas (68.3%, 95% CI: 59.65, 75.89). The highest percentage of public healthcare utilisation was reported among children aged 0–9 years old [85.3% (95% CI: 73.67, 92.34)]. Bumiputera Sarawak [93.9% (95% CI: 67.36, 99.14)], those who were separated/ divorced/ widowed [75.3%, (95% CI: 58.86, 86.64)], those not working [86.3% (95% CI: 76.06, 92.57)], and those from Quintile 1 households' income quintile [89.1% (95% CI: 78.65, 94.79)] (**Table 5.2.3.12**).

The annual mean number of admissions to inpatient healthcare facilities per capita were described in **Table 5.2.3.13**. Among those using inpatient healthcare in the last 12 months, the average admissions were 1.23 admissions (95% CI: 1.07, 1.39), as indicated in **Table 5.2.3.14**. Public healthcare facilities averaged 1.26 admissions (95% CI: 1.04, 1.48), and private facilities averaged 1.09 admissions (95% CI: 0.99, 1.19). Over half [54.8% (95% CI: 47.85, 61.52)] covered costs with personal, family, or household finances (**Table 5.2.3.15**).

5.2.3.5 Oral healthcare services

For oral healthcare services, all 9177 respondents were included in the analysis. The survey indicates a prevalence of 25.7% (95% CI: 23.90, 27.68) oral health service utilisation in the 12 months prior to the interview. Notably among those who utilised, 15.4% (95% CI: 13.96, 17.02) accessed services from dental facilities (**Figure 5.5**). Females showed a higher prevalence at 29.0% (95% CI: 26.68, 31.40) as compared to males [22.8% (95%CI: 20.52, 25.25)] (**Table 5.2.3.16**). By age groups, individuals aged 10–19 years old [47.3% (95% CI: 41.98, 52.60)] had the highest utilisation, and the utilisation decreased with age.

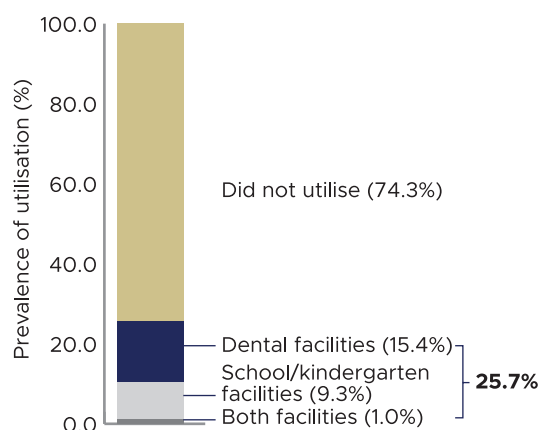


Figure 5.5: Prevalence of oral healthcare utilisation in the last 12 months prior to the interview by types of facility, NHMS 2023

Sector-wise, urban dwellers exhibited a higher utilisation of private oral healthcare services [39.1% (95% CI: 33.78, 44.62)] as compared to those from rural areas [16.8 (95% CI: 13.06, 21.23)] (**Table 5.2.3.17**). By ethnic group, the Chinese population had the highest utilisation of private oral healthcare [61.5% (95% CI: 50.75, 71.20)]. Notably, private oral healthcare facilities utilisation increased from the age group of 20–29 years old to 50–59 years old. By household income quintiles, Quintile 2 had the highest utilisation of public oral healthcare facilities [82.8% (95% CI: 75.26, 88.44)], while Quintile 5 exhibited the highest utilisation of private facilities [52.7% (95% CI: 43.23, 61.90)].

With an overall annual mean of 0.33 visits per capita, public healthcare facilities had a mean of 0.21 visits (95% CI: 0.19, 0.23), and private healthcare facilities had 0.12 visits (95% CI: 0.10, 0.14) (**Table 5.2.3.18**). The majority of the population visited oral healthcare facilities once in the last 12 months prior to interview, which were 88.5% (95% CI: 85.46, 90.98) and 87.0% (95% CI: 81.95, 90.73) at public and private oral healthcare facilities respectively (**Table 5.2.3.19**).

Regarding payment, 52.3% (95% CI: 48.02, 56.54) paid for services using money sourced from self/ family/ household members, and 43.6% (95% CI: 39.68, 47.65) were given fee exemptions (**Table 5.2.3.20**).

Table 5.2.3.1: Prevalence of getting medical check-up in the last 12 months among those aged 18 years old and above by sociodemographic characteristics, NHMS 2023 (n=6,432)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	2,329	8,360,601	34.6	32.11	37.14
Location					
Urban	1,726	6,626,676	34.8	31.89	37.86
Rural	603	1,733,924	33.7	29.69	38.01
Sex					
Male	1,077	4,417,765	34.8	31.06	38.73
Female	1,252	3,942,836	34.3	31.96	36.82
Age Group (Years)					
18 – 19	50	205,966	18.5	13.01	25.67
20 – 29	290	1,597,281	26.8	21.13	33.25
30 – 39	437	2,036,381	35.4	30.85	40.32
40 – 49	432	1,528,608	34.5	30.12	39.08
50 – 59	441	1,240,595	39.4	34.97	44.09
60 and over	679	1,751,770	46.5	42.40	50.64
Ethnicity					
Malay ^a	1,571	4,127,719	33.7	31.50	36.02
Chinese	277	1,958,270	37.4	31.71	43.53
Indian	133	476,518	31.5	25.14	38.73
Bumiputera Sabah	156	449,615	31.3	24.92	38.45
Bumiputera Sarawak	102	414,585	34.3	25.73	44.02
Others	90	933,894	36.7	21.97	54.33
Citizenship^b					
Malaysian citizen	2,245	7,498,850	34.4	32.22	36.59
Marital status					
Never Married	363	1,961,533	27.8	23.47	32.59
Married/ Living with partner	1,681	5,638,426	37.5	34.81	40.34
Separated/ Divorced/ Widowed	279	727,847	37.4	32.18	42.93
Missing ^c	6	-	-	-	-
Education Level					
No formal education ^d	196	718,802	36.2	27.71	45.54
Primary education	338	1,070,740	37.8	33.01	42.92
Secondary education	1,470	5,131,914	33.0	30.61	35.56
Tertiary education	300	1,337,998	38.9	32.58	45.52
Missing ^c	25	-	-	-	-
Occupation^e					
Government employee	310	775,396	44.3	38.34	50.45
Private business (employer/employee)	642	3,329,726	35.2	30.04	40.62
Self-employed	310	1,068,024	28.6	24.01	33.76
Unpaid worker / Homemaker	411	1,129,313	31.5	28.16	35.08
Retiree	214	570,256	49.5	41.30	57.74
Student	60	370,284	29.4	19.70	41.34
Not working ^e	355	990,693	34.7	30.01	39.73
Missing ^c	27	126,909	33.9	17.77	54.97
Household Income Group					
Less than RM 1,000	268	880,086	39.5	33.20	46.13
RM 1,000 – RM 1,999	304	907,265	31.4	26.23	37.09
RM 2,000 – RM 3,999	592	2,007,051	34.6	31.32	38.10
RM 4,000 – RM 5,999	436	1,482,192	32.1	27.41	37.15
RM 6,000 – RM 7,999	249	781,092	26.8	22.34	31.77
RM 8,000 – RM 9,999	155	545,341	30.1	22.21	39.40
RM 10,000 and above	325	1,757,574	44.9	35.23	54.93

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Quintile					
Quintile 1	372	1,119,555	35.7	30.00	41.87
Quintile 2	403	1,349,179	32.9	28.75	37.41
Quintile 3	456	1,539,481	35.9	31.38	40.70
Quintile 4	471	1,564,625	30.0	26.06	34.27
Quintile 5	627	2,787,760	37.5	31.30	44.04
Household Income Category^f					
Bottom 40%	1,478	4,948,085	33.7	31.02	36.43
Middle 40%	625	2,570,126	35.5	29.36	42.17
Top 20%	226	842,389	37.5	30.73	44.87

^a Malay includesd Orang Asli (count=7)

^b Citizenship did not includes those who were Permanent Resident and Non-Malaysian (count=84)

^c Missing included those who answered "Don't know" and "Refuse to answer"

^d No formal education included those who never attended school and did not complete primary school

^e Not working included those who were unemployed, old age and those who were not working because of health problems

^f Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.2: Distribution of reasons for doing medical check-up in the last 12 months, NHMS 2023 (n=2,329)

REASONS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Referred by healthcare practitioner	1,354	3,962,713	47.4	42.16	52.69
Self-initiative	646	2,611,511	31.2	26.82	36.03
Others (employment/university/insurance requirement)	329	1,786,377	21.4	15.29	29.03

Table 5.2.3.3: Distribution of seeking treatment after abnormal results among those who did medical check-up in the last 12 months, NHMS 2023 (n=810)

SOUGHT TREATMENT	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Yes	779	2,274,851	96.3	94.03	97.75
No	31	86,917	3.7	2.25	5.97

Table 5.2.3.4: Prevalence of getting online healthcare services in the last 12 months among those aged 18 years old and above by sociodemographic characteristics, NHMS 2023 (n=6,432)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	387	1,529,269	6.3	5.29	7.55
Location					
Urban	299	1,249,843	6.6	5.35	8.03
Rural	88	279,427	5.4	3.85	7.63
Sex					
Male	151	686,814	5.4	4.18	6.97
Female	236	842,456	7.3	6.04	8.90
Age Group (Years)					
18 – 19	10	-	-	-	-
20 – 29	68	299,121	5.0	3.37	7.39
30 – 39	111	509,819	8.9	6.40	12.17
40 – 49	87	309,687	7.0	4.84	9.96
50 – 59	44	113,821	3.6	2.41	5.39
60 and over	67	258,634	6.9	4.74	9.84
Ethnicity					
Malay ^a	265	927,624	7.6	6.21	9.22
Chinese	44	263,148	5.0	2.97	8.39
Indian	14	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Bumiputera Sabah	31	-	-	-	-
Bumiputera Sarawak	17	-	-	-	-
Others	16	-	-	-	-
Citizenship^b					
Malaysian citizen	374	1,431,563	6.6	5.45	7.88
Marital status					
Never Married	84	412,471	5.8	4.15	8.18
Married/ Living with partner	264	964,483	6.4	5.26	7.81
Separated/ Divorced/ Widowed	37	149,786	7.7	4.92	11.85
Missing ^c	2	-	-	-	-
Education Level					
No formal education ^d	21	-	-	-	-
Primary education	41	157,832	5.6	3.69	8.34
Secondary education	240	955,519	6.2	4.92	7.67
Tertiary education	80	335,018	9.7	6.21	14.91
Missing ^c	5	-	-	-	-
Occupation^g					
Government employee	71	141,402	8.1	4.77	13.37
Private business (employer/employee)	99	550,985	5.8	4.15	8.09
Self-employed	44	150,649	4.0	2.69	6.02
Unpaid worker / Homemaker	72	247,027	6.9	4.99	9.46
Retiree	27	124,421	10.8	6.34	17.81
Student	14	-	-	-	-
Not working ^e	53	217,121	7.6	5.24	10.92
Missing ^c	7	-	-	-	-
Household Income Group					
Less than RM 1,000	48	137,185	6.2	4.03	9.29
RM 1,000 – RM 1,999	39	122,551	4.2	2.76	6.47
RM 2,000 – RM 3,999	82	291,544	5.0	3.55	7.08
RM 4,000 – RM 5,999	75	314,133	6.8	4.58	9.98
RM 6,000 – RM 7,999	45	199,677	6.8	4.19	11.01
RM 8,000 – RM 9,999	38	-	-	-	-
RM 10,000 and above	60	293,781	7.5	4.23	12.95
Household Income Quintile					
Quintile 1	63	164,039	5.2	3.63	7.50
Quintile 2	49	168,004	4.1	2.87	5.84
Quintile 3	71	260,922	6.1	4.10	8.94
Quintile 4	77	342,985	6.6	4.44	9.63
Quintile 5	127	593,319	8.0	5.56	11.31
Household Income Category^f					
Bottom 40%	239	917,228	6.2	5.07	7.66
Middle 40%	105	459,245	6.3	4.28	9.32
Top 20%	43	152,797	6.8	3.76	12.01

^a Malay included Orang Asli (count=3)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=13)

^c Missing included those who answered “Don’t know” and “Refuse to answer”

^d No formal education included those who never attended school and did not complete primary school

^e Not working included those who were unemployed, old age and those who were not working because of health problems

^f Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.5: Types of online healthcare services utilised in the last 12 months, NHMS 2023 (n=387)

TYPE OF ONLINE HEALTHCARE UTILISATION ^a	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Appointment	285	1,169,675	4.8	3.94	5.93
Clinical consultation/care plan	19	-	-	-	-
Delivery/pick-up of follow-up medicines	45	169,135	0.7	0.42	1.16
Request for visit by a healthcare practitioner	12	-	-	-	-
Notification of laboratory and radiology tests including self-test	28	114,078	0.5	0.28	0.80
Health education session with healthcare practitioner including rehabilitation simulation	33	115,407	0.5	0.29	0.77

^a Multiple responses

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.6: Prevalence of outpatient healthcare utilisation in the last two weeks by sociodemographic characteristics, NHMS 2023 (n=9,177)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	1,254	4,176,990	12.5	11.31	13.83
Location					
Urban	902	3,241,582	12.4	10.99	13.97
Rural	352	935,409	12.9	10.84	15.32
Sex					
Male	590	1,988,159	11.4	10.01	12.92
Female	664	2,188,832	13.8	12.09	15.61
Age Group (Years)					
0 – 9	335	1,092,062	22.2	18.06	26.95
10 – 19	159	597,363	11.1	8.72	13.97
20 – 29	116	466,757	7.8	5.92	10.27
30 – 39	116	437,773	7.6	5.80	9.94
40 – 49	138	570,786	12.9	9.79	16.73
50 – 59	134	399,558	12.7	10.14	15.80
60 and over	256	612,693	16.3	13.60	19.33
Ethnicity					
Malay ^a	868	2,339,889	13.3	11.86	14.85
Chinese	122	899,247	13.1	10.64	16.04
Indian	86	383,469	19.2	13.62	26.28
Bumiputera Sabah	113	262,536	12.3	7.98	18.36
Bumiputera Sarawak	47	189,499	12.1	8.52	16.86
Others	18	-	-	-	-
Citizenship^b					
Malaysian citizen	1,240	4,096,405	13.4	12.16	14.76
Marital status					
Never Married	183	753,523	7.8	6.25	9.75
Married/ Living with partner	569	1,804,740	12.0	10.55	13.64
Separated/ Divorced/ Widowed	90	230,797	11.9	8.99	15.49
Missing ^c	3	-	-	-	-
Education Level					
No formal education ^d	244	774,503	14.7	11.75	18.30
Primary education	157	439,867	10.5	8.39	13.00
Secondary education	512	1,710,653	10.3	9.05	11.69
Tertiary education	87	408,740	11.9	8.43	16.46
Missing ^c	9	-	-	-	-
Occupation^e					
Government employee	89	255,706	14.6	10.03	20.80
Private business (employer/employee)	205	894,213	9.4	7.81	11.29
Self-employed	88	301,304	8.0	6.07	10.39

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Unpaid worker / Homemaker	152	417,418	11.6	9.40	14.31
Retiree	72	181,077	15.7	10.66	22.57
Student	53	185,527	6.9	4.67	10.10
Not working ^e	147	410,848	13.8	10.98	17.25
Missing ^f	9	-	-	-	-
Household Income Group					
Less than RM 1,000	104	343,443	11.8	8.87	15.50
RM 1,000 – RM 1,999	160	388,977	9.7	7.65	12.21
RM 2,000 – RM 3,999	334	934,624	11.1	9.38	13.02
RM 4,000 – RM 5,999	251	862,472	13.6	11.02	16.61
RM 6,000 – RM 7,999	143	449,323	11.7	8.62	15.76
RM 8,000 – RM 9,999	112	493,015	19.5	13.41	27.54
RM 10,000 and above	150	705,138	13.3	9.80	17.82
Household Income Quintile					
Quintile 1	159	476,449	11.5	8.95	14.57
Quintile 2	220	548,350	9.3	7.70	11.19
Quintile 3	250	707,487	11.5	9.55	13.88
Quintile 4	272	965,344	13.5	11.10	16.43
Quintile 5	353	1,479,361	14.7	11.98	17.90
Household Income Category^f					
Bottom 40%	794	2,420,236	11.8	10.47	13.20
Middle 40%	351	1,332,099	13.7	11.06	16.93
Top 20%	109	424,656	13.6	10.02	18.26

^a Malay included Orang Asli (count=3)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=14)

^c Marital status did not include children aged less than 13 years old (count=409)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=245)

^f No formal education included respondents who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=439)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.7: Distribution of outpatient healthcare utilisation in the last two weeks by sector and sociodemographic characteristics, NHMS 2023 (n=1,254)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CI		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER
MALAYSIA	757	2,120,422	50.8	45.35	56.16	541	2,173,880	52.0	46.63	57.41
Location										
Urban	516	1,483,954	45.8	39.63	52.06	427	1,869,478	57.7	51.40	63.71
Rural	241	636,469	68.0	59.90	75.21	114	304,402	32.5	25.31	40.72
Sex										
Male	350	998,871	49.8	43.13	56.39	260	1,045,637	52.6	46.16	58.95
Female	407	1,121,551	48.8	42.34	55.22	281	1,128,242	51.5	44.93	58.11
Age Group (Years)										
0 – 9	166	389,813	35.7	28.21	43.95	185	730,912	66.9	58.76	74.19
10 – 19	87	290,078	48.6	37.84	59.42	76	340,300	57.0	44.13	68.93
20 – 29	52	190,413	40.8	28.09	54.86	67	280,146	60.0	46.00	72.57
30 – 39	62	217,259	49.6	37.51	61.79	61	239,362	54.7	42.08	66.70
40 – 49	85	247,235	43.3	30.64	56.93	56	340,642	59.7	46.41	71.67
50 – 59	100	296,030	74.1	60.24	84.37	41	115,777	29.0	18.35	42.55
60 and over	205	489,594	79.9	72.50	85.71	55	126,741	20.7	14.82	28.11
Ethnicity										
Malay ^a	535	1,254,295	53.6	47.25	59.85	368	1,174,068	50.2	43.72	56.63
Chinese	58	312,368	34.7	23.93	47.39	65	592,982	65.9	53.28	76.67
Indian	48	177,219	46.2	33.78	59.14	43	228,226	59.5	45.07	72.48
Bumiputera Sabah	64	163,402	62.2	41.79	79.10	52	99,891	38.0	21.04	58.60
Bumiputera Sarawak	39	150,208	79.3	55.74	92.07	8	-	-	-	-
Others	13	62,929	61.5	31.84	84.51	5	-	-	-	-
Citizenship^b										
Malaysian citizen	748	2,079,258	50.8	45.32	56.18	536	2,134,458	52.1	46.59	57.57
Marital status^c										
Never Married	96	362,923	48.2	37.62	58.88	88	401,467	53.3	41.80	64.42
Married/ Living with partner	392	1,072,765	59.4	52.49	66.04	197	781,213	43.3	36.63	50.20
Separated/ Divorced/ Widowed	67	180,721	78.3	65.69	87.18	27	56,472	24.5	15.06	37.18
Missing ^d	0	-	-	-	-	3	18,003	100.0	100.00	100.00
Education Level^e										
No formal education ^f	132	347,840	44.9	33.90	56.44	120	451,107	58.2	46.79	68.87
Primary education	118	305,720	69.5	58.66	78.54	43	148,241	33.7	23.08	46.27
Secondary education	322	987,456	57.7	50.39	64.73	207	766,077	44.8	37.83	51.95
Tertiary education	49	148,496	36.3	23.02	52.12	41	269,429	65.9	50.14	78.81
Missing ^d	3	-	-	-	-	6	23,395	77.6	38.34	95.07

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CI		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER
Occupation^a										
Government employee	52	99,634	39.0	23.87	56.51	42	177,045	69.2	52.28	82.22
Private business (employer/employee)	93	338,246	37.8	29.85	46.52	119	570,087	63.8	55.03	71.65
Self-employed	63	203,458	67.5	51.85	80.06	27	105,060	34.9	22.27	50.01
Unpaid worker / Homemaker	119	326,248	78.2	67.04	86.29	40	103,691	24.8	16.39	35.78
Retiree	60	146,592	81.0	62.82	91.45	13	-	-	-	-
Student	31	110,387	59.5	40.01	76.39	22	75,140	40.5	23.65	59.94
Not working ^b	116	324,979	79.1	68.77	86.67	33	86,379	21.0	13.43	31.35
Missing ^c	5	-	-	-	-	4	-	-	-	-
Household Income Group										
Less than RM 1,000	74	222,549	64.8	46.60	79.52	30	120,894	35.2	20.48	53.39
RM 1,000 – RM 1,999	125	286,168	73.6	62.25	82.45	38	106,063	27.3	18.33	38.51
RM 2,000 – RM 3,999	215	562,612	60.2	52.24	67.65	126	383,537	41.0	33.53	48.98
RM 4,000 – RM 5,999	150	489,717	56.8	46.37	66.63	116	442,087	51.3	40.76	61.65
RM 6,000 – RM 7,999	87	208,285	46.4	31.23	62.18	62	249,785	55.6	40.03	70.13
RM 8,000 – RM 9,999	47	-	-	-	-	73	406,313	82.4	67.34	91.42
RM 10,000 and above	59	248,147	35.2	22.62	50.21	96	465,199	66.0	50.85	78.42
Household Income Quintile										
Quintile 1	118	330,503	69.4	54.54	81.04	41	145,946	30.6	18.95	45.47
Quintile 2	159	377,329	68.8	58.76	77.36	68	179,380	32.7	24.04	42.76
Quintile 3	159	410,277	58.0	48.96	66.52	96	309,447	43.7	35.32	52.53
Quintile 4	162	528,998	54.8	45.58	63.70	125	502,457	52.0	42.86	61.10
Quintile 5	159	473,316	32.0	23.47	41.93	211	1,036,649	70.1	60.26	78.34
Household Income Category										
Bottom 40%	529	1,433,163	59.2	53.14	65.02	289	1,063,093	43.9	37.57	50.49
Middle 40%	181	500,650	37.6	29.26	46.72	184	858,610	64.5	55.51	72.49
Top 20%	47	186,609	43.9	27.20	62.19	68	252,177	59.4	40.36	75.96

^a Malay included Orang Asli (count public=3, count private=0)
^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count public=9, count private=5)
^c Marital status did not include children aged less than 13 years old (count public=202, count private=226)
^d Missing included those who answered "Don't know" and "Refuse to answer"
^e Education did not include children aged less than 7 years old (count public=133, count private=124)
^f No formal education included those who never attended school and did not complete primary school
^g Occupation did not include children aged less than 15 years old (count public=218, count private=241)
^h Not working included those who were unemployed, old age and those who were not working because of health problems
ⁱ Household income category was based on DOSM household income classification in 2022, by state
 Dash (-) due to Relative Standard Error (RSE) more than 30%

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	TOTAL						PUBLIC			PRIVATE							
			MEAN	MEDIAN	95% CI		MEAN	MEDIAN	95% CI		MEAN	MEDIAN	95% CONFIDENCE INTERVAL						
					LOWER	UPPER			LOWER	UPPER			LOWER	UPPER					
Occupation^a																			
Government employee	657	1,749,887	4.67	0.00	2.64	6.69	0.00	0.00	0.82	2.21	3.15	0.00	1.30	5.00					
Private business (employer/employee)	1,915	9,505,674	2.62	0.00	2.11	3.13	0.00	0.00	0.69	1.24	1.66	0.00	1.24	2.08					
Self-employed	1,015	3,781,663	2.17	0.00	1.58	2.75	0.00	0.00	1.01	1.88	0.72	0.00	0.34	1.11					
Unpaid worker / Homemaker	1,178	3,589,438	3.81	0.00	2.92	4.69	0.00	0.00	1.98	3.56	1.03	0.00	0.60	1.47					
Retiree	433	1,151,846	4.29	0.00	2.71	5.87	0.00	0.00	2.02	4.98	-	-	-	-					
Student	584	2,685,146	1.86	0.00	1.14	2.57	0.00	0.00	0.51	1.64	0.78	0.00	0.33	1.23					
Not working ^b	952	2,973,605	3.76	0.00	2.92	4.60	0.00	0.00	2.15	3.71	0.83	0.00	0.45	1.21					
Missing ^d	87	-	-	-	-	-	-	-	-	-	-	-	-	-					
Household Income Group																			
Less than RM 1,000	879	2,913,979	3.19	0.00	2.31	4.08	0.00	0.00	1.38	2.69	-	-	-	-					
RM 1,000 – RM 1,999	1,241	4,012,276	2.79	0.00	2.10	3.48	0.00	0.00	1.44	2.62	0.76	0.00	0.42	1.10					
RM 2,000 – RM 3,999	2,524	8,444,580	3.04	0.00	2.53	3.54	0.00	0.00	1.38	2.14	1.28	0.00	0.96	1.59					
RM 4,000 – RM 5,999	1,771	6,353,454	3.99	0.00	3.17	4.80	0.00	0.00	1.57	2.65	1.88	0.00	1.33	2.42					
RM 6,000 – RM 7,999	1,041	3,832,015	3.25	0.00	2.30	4.20	0.00	0.00	0.99	2.00	1.75	0.00	0.91	2.60					
RM 8,000 – RM 9,999	613	2,525,071	5.63	0.00	3.70	7.56	0.00	0.00	0.57	2.02	4.33	0.00	2.42	6.25					
RM 10,000 and above	1,108	5,297,536	3.81	0.00	2.53	5.08	0.00	0.00	0.59	1.87	2.58	0.00	1.46	3.69					
Household Income Quintile																			
Quintile 1	1,273	4,156,297	3.11	0.00	2.35	3.87	0.00	0.00	1.51	2.77	0.97	0.00	0.45	1.49					
Quintile 2	1,755	5,898,029	2.69	0.00	2.18	3.20	0.00	0.00	1.36	2.19	0.92	0.00	0.59	1.24					
Quintile 3	1,851	6,131,751	3.14	0.00	2.54	3.74	0.00	0.00	1.34	2.20	1.37	0.00	0.99	1.75					
Quintile 4	1,981	7,125,319	3.94	0.00	3.18	4.70	0.00	0.00	1.56	2.54	1.89	0.00	1.40	2.39					
Quintile 5	2,317	10,067,515	4.19	0.00	3.32	5.06	0.00	0.00	0.91	1.69	2.89	0.00	2.07	3.71					
Household Income Category																			
Bottom 40%	5,823	20,564,565	3.30	0.00	2.92	3.69	0.00	0.00	1.62	2.15	1.42	0.00	1.14	1.70					
Middle 40%	2,555	9,696,833	3.98	0.00	3.08	4.87	0.00	0.00	1.11	1.84	2.51	0.00	1.70	3.31					
Top 20%	799	3,117,514	3.79	0.00	2.66	4.93	0.00	0.00	0.72	2.40	2.23	0.00	1.34	3.13					

^a Malay included Orang Asli (count=15)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=341)

^c Marital status did not include children aged less than 13 years old (count=2,083)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=1,048)

^f No formal education included respondents who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (=2,356)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.9: Distribution of frequency of visit to outpatient healthcare facilities among those who utilised in the last two weeks by sector, NHMS 2023 (n=1,254)

FREQUENCY OF VISIT	PUBLIC					PRIVATE				
	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CI		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER
Once	724	2,061,886	97.2	95.73	98.22	521	2,067,529	95.1	87.38	98.20
Twice	22	43,757	2.1	1.29	3.29	13	-	-	-	-
More than twice	11	-	-	-	-	7	-	-	-	-

Dash (-) due to Relative Standard Error (RSE) more than 30%

5.2.3.10: Payer of outpatient healthcare utilisation, among those who utilised in the last 2 weeks, NHMS 2023 (n=1,254)

PAYER FOR OUTPATIENT HEALTHCARE ^a		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL
					LOWER
Self/family/household members		722	2,570,432	61.5	55.89
Fee exemption (such as senior citizen, antenatal/postnatal care, blood donor and others)		208	493,171	11.8	9.44
Employer-sponsored (panel clinic/employee insurance)		164	758,106	18.2	13.56
Personal health insurance		26	-	-	-

^a Multiple responses

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.11: Prevalence of inpatient healthcare utilisation in the last 12 months by sociodemographic characteristics, NHMS 2023 (n=9,177)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	605	1,940,592	5.8	5.09	6.64
Location					
Urban	466	1,537,039	5.9	5.01	6.89
Rural	139	403,553	5.6	4.54	6.82
Sex					
Male	268	924,415	5.3	4.38	6.38
Female	337	1,016,177	6.4	5.35	7.61
Age Group (Years)					
0 – 9	106	316,880	6.4	4.44	9.25
10 – 19	49	216,397	4.0	2.45	6.49
20 – 29	62	206,766	3.5	2.44	4.89
30 – 39	107	461,431	8.0	6.03	10.62
40 – 49	68	225,980	5.1	3.36	7.65
50 – 59	70	177,393	5.6	3.94	8.01
60 and over	143	335,745	8.9	7.17	11.03
Ethnicity					
Malay ^a	420	1,101,949	6.3	5.39	7.25
Chinese	39	276,061	4.0	2.63	6.11
Indian	57	233,319	11.7	8.54	15.72
Bumiputera Sabah	55	168,380	7.9	4.90	12.37
Bumiputera Sarawak	21	71,909	4.6	3.12	6.69
Others	13	-	-	-	-
Citizenship^b					
Malaysian citizen	595	1,870,789	6.1	5.37	6.98
Marital status					
Never Married	79	330,616	3.4	2.42	4.86
Married/ Living with partner	341	1,099,173	7.3	6.17	8.65
Separated/ Divorced/ Widowed	63	126,495	6.5	4.79	8.76
Missing ^c	0	-	-	-	-
Education Level					
No formal education ^d	72	195,760	3.7	2.64	5.23
Primary education	69	224,101	5.3	3.86	7.34
Secondary education	300	940,123	5.7	4.77	6.70
Tertiary education	70	287,005	8.3	5.82	11.81
Missing ^c	4	-	-	-	-
Occupation^g					
Government employee	46	90,392	5.2	3.05	8.62
Private business (employer/employee)	116	534,225	5.6	4.21	7.47
Self-employed	53	168,763	4.5	2.93	6.75
Unpaid worker / Homemaker	99	294,337	8.2	6.26	10.68
Retiree	29	61,903	5.4	3.23	8.80
Student	20	-	-	-	-
Not working ^e	107	290,580	9.8	7.61	12.47
Missing ^c	4	-	-	-	-
Household Income Group					
Less than RM 1,000	61	157,833	5.4	3.71	7.85
RM 1,000 – RM 1,999	83	193,996	4.8	3.65	6.38
RM 2,000 – RM 3,999	163	499,715	5.9	4.76	7.33
RM 4,000 – RM 5,999	125	525,166	8.3	6.33	10.72
RM 6,000 – RM 7,999	63	180,334	4.7	2.97	7.37
RM 8,000 – RM 9,999	37	93,396	3.7	2.09	6.47
RM 10,000 and above	73	290,152	5.5	3.64	8.16

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Household Income Quintile					
Quintile 1	90	219,616	5.3	3.88	7.16
Quintile 2	103	309,641	5.2	4.03	6.81
Quintile 3	126	386,221	6.3	4.95	7.98
Quintile 4	140	559,914	7.9	6.07	10.11
Quintile 5	146	465,199	4.6	3.35	6.35
Household Income Category^f					
Bottom 40%	399	1,257,780	6.1	5.21	7.17
Middle 40%	156	513,445	5.3	3.98	7.02
Top 20%	50	169,367	5.4	3.57	8.19

^a Malay included Orang Asli (count=1)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=10)

^c Marital status did not include children aged less than 13 years old (count=122)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=90)

^f No formal education Included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=131)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.12: Distribution of inpatient healthcare utilisation in the last 12 months by sector and sociodemographic characteristics, NHMS 2023 (n=605)

SOCIODEMOGRAPHIC CHARACTERISTICS	PUBLIC					PRIVATE				
	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)		95% CI	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)		95% CONFIDENCE INTERVAL
			LOWER	UPPER				LOWER	UPPER	
MALAYSIA	471	1,408,483	72.6	65.42	78.74	143	554,162	28.6	22.36	35.68
Location										
Urban	349	1,050,219	68.3	59.65	75.89	122	1,034,392	32.5	24.92	41.13
Rural	122	358,264	88.8	79.56	94.14	21	348,965	13.5	7.68	22.73
Sex										
Male	209	670,838	72.6	64.06	79.70	64	656,731	29.0	21.77	37.39
Female	262	737,645	72.6	62.83	80.58	79	726,627	28.2	20.15	37.92
Age Group (Years)										
0 – 9	84	270,323	85.3	73.67	92.34	24	265,056	16.4	8.92	28.08
10 – 19	36	175,458	81.1	62.26	91.76	13	-	-	-	-
20 – 29	51	160,783	77.8	59.49	89.28	11	-	-	-	-
30 – 39	84	301,191	65.3	48.02	79.27	25	295,534	36.0	21.83	53.02
40 – 49	43	107,445	47.5	27.81	68.08	26	107,257	52.5	32.01	72.24
50 – 59	56	129,172	72.8	50.20	87.68	16	-	-	-	-
60 and over	117	264,110	78.7	67.05	86.98	28	258,785	22.9	14.43	34.40
Ethnicity										
Malay ^a	336	866,141	78.6	70.40	85.01	90	850,836	22.5	16.04	30.64
Chinese	24	152,391	55.2	32.54	75.89	16	149,203	46.0	25.09	68.33
Indian	34	136,271	58.4	44.26	71.29	25	129,638	44.4	31.47	58.21
Bumiputera Sabah	50	149,556	88.8	59.80	97.70	5	-	-	-	-
Bumiputera Sarawak	20	67,536	93.9	67.36	99.14	1	-	-	-	-
Others	7	-	-	-	-	6	-	-	-	-
Citizenship^b										
Malaysian citizen	465	1,390,122	74.3	67.61	80.03	139	1,364,996	26.9	21.11	33.54
Marital status^c										
Never Married	57	242,034	73.2	55.70	85.58	22	88,582	26.8	14.42	44.30
Married/ Living with partner	271	753,858	68.6	58.48	77.19	76	358,914	32.7	24.06	42.60
Separated/ Divorced/ Widowed	48	95,234	75.3	58.86	86.64	16	34,449	27.2	15.33	43.62
Missing ^d	0	-	-	-	-	0	-	-	-	-
Education Level^e										
No formal education ^f	55	130,379	66.6	48.10	81.10	18	128,875	34.2	19.60	52.50
Primary education	57	172,615	77.0	56.71	89.56	13	-	-	-	-
Secondary education	243	664,345	70.7	60.71	78.97	62	647,545	30.8	22.45	40.62
Tertiary education	43	188,615	65.7	46.57	80.83	28	188,427	34.3	19.23	53.48
Missing ^d	2	-	-	-	-	2	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	PUBLIC						PRIVATE						
	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CI		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL				
				LOWER	UPPER				LOWER	UPPER			
Occupation^a													
Government employee	34	47,791	52.9	27.60	76.75	13	42,788	47.3	23.44	72.52			
Private business (employer/employee)	72	304,770	57.0	41.36	71.44	45	232,970	43.6	29.20	59.19			
Self-employed	42	108,878	64.5	39.95	83.24	11	-	-	-	-			
Unpaid worker / Homemaker	88	243,736	82.8	67.50	91.79	13	-	-	-	-			
Retiree	26	45,689	73.8	39.58	92.38	4	-	-	-	-			
Student	15	73,984	83.5	59.56	94.59	5	-	-	-	-			
Not working ^b	91	250,718	86.3	76.06	92.57	17	43,050	14.8	8.31	25.02			
Missing ^d	3	-	-	-	-	2	-	-	-	-			
Household Income Group													
Less than RM 1,000	49	135,487	85.8	71.67	93.56	14	-	-	-	-			
RM 1,000 – RM 1,999	77	183,143	94.4	83.47	98.26	7	-	-	-	-			
RM 2,000 – RM 3,999	144	418,386	83.7	73.49	90.52	21	411,999	17.6	10.52	27.83			
RM 4,000 – RM 5,999	89	339,484	64.6	49.39	77.40	37	334,273	35.8	22.99	50.95			
RM 6,000 – RM 7,999	46	138,559	76.8	58.29	88.73	18	-	-	-	-			
RM 8,000 – RM 9,999	28	54,837	58.7	28.34	83.64	10	-	-	-	-			
RM 10,000 and above	38	138,587	47.8	27.08	69.24	36	134,825	53.5	31.67	74.12			
Household Income Quintile													
Quintile 1	76	195,712	89.1	78.65	94.79	16	-	-	-	-			
Quintile 2	92	263,607	85.1	70.87	93.09	13	-	-	-	-			
Quintile 3	109	308,680	79.9	68.18	88.09	18	305,164	21.0	12.65	32.76			
Quintile 4	106	398,861	71.2	55.85	82.90	35	393,650	29.1	17.45	44.46			
Quintile 5	88	241,624	51.9	36.33	67.18	61	236,169	49.2	33.86	64.76			
Household Income Category^c													
Bottom 40%	338	1,005,545	79.9	71.60	86.31	66	991,084	21.2	14.76	29.50			
Middle 40%	109	320,927	62.5	48.92	74.37	51	310,261	39.0	27.03	52.40			
Top 20%	24	82,012	48.4	23.76	73.87	26	82,012	51.6	26.13	76.24			

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	TOTAL					PUBLIC					PRIVATE						
			MEAN	MEDIAN	95% CI		MEAN	MEDIAN	95% CI		MEAN	MEDIAN	95% CONFIDENCE INTERVAL						
					LOWER	UPPER			LOWER	UPPER			LOWER	UPPER					
Occupation^a																			
Government employee	657	1,749,887	0.05	0.00	0.03	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-
Private business (employer/employee)	1,915	9,505,674	0.07	0.00	0.05	0.09	0.04	0.00	0.02	0.05	0.02	0.03	0.00	0.00	0.02	0.02	0.02	0.04	0.04
Self-employed	1,015	3,781,663	0.05	0.00	0.03	0.08	0.04	0.00	0.02	0.05	0.02	-	-	-	-	-	-	-	-
Unpaid worker / Homemaker	1,178	3,589,438	0.09	0.00	0.06	0.12	0.07	0.00	0.05	0.10	0.05	-	-	-	-	-	-	-	-
Retiree	433	1,151,846	0.07	0.00	0.03	0.10	0.05	0.00	0.03	0.08	0.03	-	-	-	-	-	-	-	-
Student	584	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Not working ^b	952	2,973,605	0.12	0.00	0.09	0.16	0.10	0.00	0.07	0.14	0.07	-	-	-	-	-	-	-	-
Missing ^c	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Household Income Group																			
Less than RM 1,000	879	2,913,979	0.06	0.00	0.03	0.09	0.05	0.00	0.02	0.08	0.02	-	-	-	-	-	-	-	-
RM 1,000 – RM 1,999	1,241	4,012,276	0.05	0.00	0.04	0.07	0.05	0.00	0.03	0.06	0.03	-	-	-	-	-	-	-	-
RM 2,000 – RM 3,999	2,524	8,444,580	0.07	0.00	0.05	0.08	0.06	0.00	0.04	0.07	0.04	0.01	0.00	0.01	0.01	0.01	0.02	0.02	0.02
RM 4,000 – RM 5,999	1,771	6,353,454	0.12	0.00	0.06	0.18	-	-	-	-	-	0.03	0.00	0.00	0.02	0.02	0.04	0.04	0.04
RM 6,000 – RM 7,999	1,041	3,832,015	0.06	0.00	0.03	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-
RM 8,000 – RM 9,999	613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RM 10,000 and above	1,108	5,297,536	0.06	0.00	0.04	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-
Household Income Quintile																			
Quintile 1	1,273	4,156,297	0.06	0.00	0.04	0.09	0.06	0.00	0.03	0.08	0.03	-	-	-	-	-	-	-	-
Quintile 2	1,755	5,898,029	0.06	0.00	0.04	0.07	0.05	0.00	0.03	0.06	0.03	-	-	-	-	-	-	-	-
Quintile 3	1,851	6,131,751	0.07	0.00	0.05	0.09	0.06	0.00	0.04	0.08	0.04	0.01	0.00	0.01	0.01	0.01	0.02	0.02	0.02
Quintile 4	1,981	7,125,319	0.11	0.00	0.06	0.17	0.09	0.00	0.04	0.14	0.04	0.02	0.00	0.00	0.01	0.01	0.04	0.04	0.04
Quintile 5	2,317	10,067,515	0.05	0.00	0.04	0.07	0.03	0.00	0.02	0.04	0.02	0.03	0.00	0.00	0.01	0.01	0.04	0.04	0.04
Household Income Category																			
Bottom 40%	5,823	20,564,565	0.08	0.00	0.06	0.10	0.06	0.00	0.04	0.08	0.04	0.01	0.00	0.00	0.01	0.01	0.02	0.02	0.02
Middle 40%	2,555	9,696,833	0.06	0.00	0.04	0.08	0.04	0.00	0.03	0.05	0.03	0.02	0.00	0.00	0.01	0.01	0.03	0.03	0.03
Top 20%	799	3,117,514	0.07	0.00	0.04	0.10	-	-	-	-	-	-	-	-	-	-	-	-	-

^a Malay included Orang Asli (count public=1, count private=0)
^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count public=6, count private=4)
^c Marital status did not include children aged less than 13 years old (count public=95, count private=29)
^d Missing included those who answered "Don't know" and "Refuse to answer"
^e Education did not include children aged less than 7 years old (count public=71, count private=20)
^f No formal education included respondents who never attended school and did not complete primary school
^g Occupation did not include children aged less than 15 years old (count public=100, count private=33)
^h Not working included those who were unemployed, old age and those who were not working because of health problems
ⁱ Household income category was based on DOSM household income classification in 2022, by state
 Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.14: Mean number of admissions in inpatient healthcare facilities among those who were admitted in the last 12 months by sector and location, NHMS 2023 (n=605)

TYPE OF FACILITY / CHARACTERISTICS	COUNT	ESTIMATED POPULATION	MEAN	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Total (Overall)	605	1,940,592	1.23	1.07	1.39
Sector					
Public facility	471	1,408,483	1.26	1.04	1.48
Private facility	143	554,162	1.09	0.99	1.19
Location					
Urban	466	1,537,039	1.23	1.03	1.43
Rural	139	403,553	1.20	1.09	1.32

Table 5.2.3.15: Payer for inpatient healthcare utilisation among those who were admitted in the last 12 months, NHMS 2023 (n=605)

TYPE OF FACILITY / CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Self/family/household members	291	18,282,241	54.8	47.85	61.52
Fee exemption (such as senior citizen, antenatal/postnatal care, blood donor and others)	84	3,202,604	9.6	7.10	12.84
Employer-sponsored (panel clinic/employee insurance)	49	2,937,463	8.8	5.82	13.09
Personal health insurance	69	291,161	15.0	10.40	21.16

^a Multiple responses

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.16: Prevalence of oral healthcare utilisation in the last 12 months by sociodemographic characteristics, NHMS 2023 (n=9,177)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
MALAYSIA	2,548	8,593,908	25.7	23.90	27.68
Location					
Urban	1,916	6,890,116	26.4	24.25	28.59
Rural	632	1,703,792	23.5	19.99	27.47
Sex					
Male	1,150	3,981,788	22.8	20.52	25.25
Female	1,398	4,612,120	29.0	26.68	31.40
Age Group (Years)					
0 – 9	704	1,899,251	38.6	34.11	43.28
10 – 19	734	2,549,247	47.3	41.98	52.60
20 – 29	212	997,607	16.7	12.88	21.41
30 – 39	265	1,186,815	20.7	17.25	24.53
40 – 49	251	873,157	19.7	16.51	23.29
50 – 59	193	573,691	18.2	14.83	22.23
60 and over	189	514,140	13.6	11.26	16.44
Ethnicity					
Malay ^a	1,836	5,091,414	28.9	26.71	31.20
Chinese	233	1,805,709	26.3	21.78	31.41
Indian	120	419,185	20.9	16.16	26.71
Bumiputera Sabah	234	514,909	24.0	16.78	33.16
Bumiputera Sarawak	74	294,379	18.8	14.33	24.18
Others	51	468,312	14.7	8.25	24.78
Citizenship^b					
Malaysian citizen	2,514	8,240,848	27.0	25.21	28.80
Marital status					
Never Married	588	2,590,737	26.9	23.67	30.41
Married/ Living with partner	806	2,715,356	18.1	16.15	20.16

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Separated/ Divorced/ Widowed	98	277,310	14.2	10.84	18.51
Missing ^c	2	-	-	-	-
Education Level					
No formal education ^d	764	2,307,068	43.9	38.38	49.52
Primary education	306	1,086,835	25.9	21.43	30.91
Secondary education	932	3,381,905	20.4	18.46	22.38
Tertiary education	200	920,811	26.7	20.76	33.71
Missing ^c	12	-	-	-	-
Occupation^g					
Government employee	184	437,187	25.0	19.72	31.11
Private business (employer/employee)	310	1,582,945	16.7	13.66	20.15
Self-employed	155	536,276	14.2	11.03	18.06
Unpaid worker / Homemaker	229	753,703	21.0	17.85	24.53
Retiree	90	253,803	22.0	16.42	28.91
Student	218	1,047,409	39.0	32.19	46.28
Not working ^e	134	431,317	14.5	11.37	18.32
Missing ^c	10	-	-	-	-
Household Income Group					
Less than RM 1,000	224	840,742	28.9	23.30	35.13
RM 1,000 – RM 1,999	280	862,096	21.5	17.72	25.81
RM 2,000 – RM 3,999	715	2,251,001	26.7	23.57	29.99
RM 4,000 – RM 5,999	473	1,434,101	22.6	19.30	26.22
RM 6,000 – RM 7,999	290	844,928	22.0	18.10	26.58
RM 8,000 – RM 9,999	195	697,616	27.6	21.72	34.43
RM 10,000 and above	371	1,663,424	31.4	24.75	38.91
Household Income Quintile					
Quintile 1	305	1,042,158	25.1	20.40	30.41
Quintile 2	471	1,570,589	26.6	23.07	30.51
Quintile 3	499	1,500,472	24.5	20.69	28.70
Quintile 4	540	1,655,842	23.2	20.07	26.74
Quintile 5	733	2,824,847	28.1	24.04	32.47
Household Income Categoryⁱ					
Bottom 40%	1,573	5,108,240	24.8	22.59	27.24
Middle 40%	719	2,509,808	25.9	22.62	29.44
Top 20%	256	975,860	31.3	24.14	39.48

^a Malay included Orang Asli (count=1)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=34)

^c Marital status did not include children aged less than 13 years old (count=1,054)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=334)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=1,218)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.17: Distribution of oral healthcare utilisation in the last 12 months by sector and sociodemographic characteristics, NHMS 2023 (n=2,548)

SOCIODEMOGRAPHIC CHARACTERISTICS	PUBLIC					PRIVATE				
	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CI		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER
MALAYSIA	1,965	5,882,288	68.4	63.81	72.74	652	2,977,164	34.6	30.28	39.28
Location										
Urban	1,423	4,425,260	64.2	58.65	69.44	548	2,691,773	39.1	33.78	44.62
Rural	542	1,457,028	85.5	81.50	88.78	104	285,390	16.8	13.06	21.23
Sex										
Male	919	2,786,457	70.0	63.63	75.64	260	1,312,396	33.0	27.27	39.20
Female	1,046	3,095,831	67.1	61.77	72.07	392	1,664,767	36.1	31.10	41.41
Age Group (Years)										
0 – 9	677	1,777,971	93.6	87.69	96.79	53	211,979	11.2	6.72	17.98
10 – 19	692	2,286,216	89.7	82.71	94.05	57	314,850	12.4	7.76	19.09
20 – 29	101	450,529	45.2	31.70	59.37	115	559,971	56.1	41.69	69.61
30 – 39	142	484,460	40.8	31.18	51.23	129	725,060	61.1	50.88	70.41
40 – 49	136	388,759	44.5	35.29	54.15	124	536,894	61.5	52.08	70.11
50 – 59	94	210,809	36.7	26.61	48.20	107	392,167	68.4	57.87	77.26
60 and over	123	283,544	55.1	42.94	66.76	67	236,242	45.9	34.59	57.75
Ethnicity										
Malay ^a	1,455	3,808,364	74.8	70.40	78.75	434	1,454,826	28.6	24.37	33.18
Chinese	120	769,650	42.6	32.27	53.66	124	1,110,163	61.5	50.75	71.20
Indian	82	277,483	66.2	50.10	79.25	41	160,742	38.3	24.70	54.11
Bumiputera Sabah	205	438,592	85.2	70.06	93.39	31	-	-	-	-
Bumiputera Sarawak	69	273,261	92.8	82.89	97.19	5	-	-	-	-
Others	34	314,938	67.2	51.59	79.83	17	153,374	32.8	20.17	48.41
Citizenship^b										
Malaysian citizen	1,944	5,672,558	68.8	64.18	73.14	639	2,833,834	34.4	30.01	39.05
Marital status^c										
Never Married	454	1,760,434	68.0	60.90	74.27	143	869,444	33.6	27.23	40.54
Married/ Living with partner	443	1,201,741	44.3	38.35	50.34	386	1,614,487	59.5	53.57	65.08
Separated/ Divorced/ Widowed	56	158,674	57.2	41.93	71.24	44	129,110	46.6	32.57	61.11
Missing ^d	0	-	-	-	-	2	25,342	100.0	100.00	100.00
Education Level^e										
No formal education ^f	732	2,104,879	91.2	85.02	95.03	57	303,467	13.2	8.76	19.29
Primary education	265	876,716	80.7	71.47	87.42	46	235,669	21.7	14.62	30.92
Secondary education	567	1,906,538	56.4	50.57	62.01	385	1,546,819	45.7	40.14	51.45
Tertiary education	79	207,255	22.5	14.26	33.65	129	761,396	82.7	72.37	89.70
Missing ^g	6	-	-	-	-	6	-	-	-	-

SOCIODEMOGRAPHIC CHARACTERISTICS	PUBLIC				PRIVATE						
	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CI		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL		
				LOWER	UPPER				LOWER	UPPER	
Occupation^a											
Government employee	104	198,011	45.3	34.84	56.18	87	266,690	61.0	48.79	71.97	
Private business (employer/employee)	129	487,932	30.8	22.86	40.12	188	1,127,330	71.2	62.03	78.94	
Self-employed	90	291,425	54.3	41.79	66.37	71	262,401	48.9	36.80	61.19	
Unpaid worker / Homemaker	144	440,804	58.5	48.28	68.01	92	350,279	46.5	36.87	56.35	
Retiree	51	96,599	38.1	24.19	54.20	39	157,204	61.9	45.80	75.81	
Student	192	905,180	86.4	78.70	91.64	30	157,020	15.0	9.46	22.94	
Not working ^b	88	266,756	61.8	48.49	73.62	47	172,825	40.1	27.83	53.69	
Missing ^c	3	-	-	-	-	7	35,444	80.4	39.34	96.29	
Household Income Group											
Less than RM 1,000	184	639,862	76.1	59.42	87.39	41	211,317	25.1	13.63	41.66	
RM 1,000 – RM 1,999	249	723,164	83.9	71.58	91.50	37	165,390	19.2	10.91	31.52	
RM 2,000 – RM 3,999	592	1,775,102	78.9	72.70	83.93	143	542,625	24.1	18.52	30.74	
RM 4,000 – RM 5,999	371	1,023,794	71.4	63.99	77.80	109	435,377	30.4	23.89	37.71	
RM 6,000 – RM 7,999	216	561,459	66.5	57.02	74.73	80	312,492	37.0	27.14	48.04	
RM 8,000 – RM 9,999	137	465,853	66.8	55.92	76.10	64	265,991	38.1	27.89	49.55	
RM 10,000 and above	216	693,055	41.7	29.63	54.78	178	1,043,972	62.8	49.34	74.47	
Household Income Quintile											
Quintile 1	257	829,768	79.6	65.77	88.82	50	229,944	22.1	12.59	35.76	
Quintile 2	405	1,300,935	82.8	75.26	88.44	82	334,742	21.3	14.86	29.60	
Quintile 3	402	1,107,328	73.8	65.60	80.62	106	414,122	27.6	20.42	36.15	
Quintile 4	418	1,171,448	70.7	64.24	76.50	130	510,878	30.9	25.05	37.33	
Quintile 5	483	1,472,809	52.1	42.87	61.26	284	1,487,477	52.7	43.23	61.90	
Household Income Category^d											
Bottom 40%	1,305	3,921,241	76.8	72.75	80.35	301	1,327,873	26.0	22.24	30.14	
Middle 40%	516	1,542,495	61.5	53.09	69.20	217	1,018,536	40.6	32.81	48.86	
Top 20%	144	418,552	42.9	31.31	55.31	134	630,754	64.6	51.12	76.16	

^a Malay included Orang Asli (count public=0, count private=1)
^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count public=21, count private=13)
^c Marital status did not include children aged less than 13 years old (count public=1,012, count private=77)
^d Missing included those who answered "Don't know" and "Refuse to answer"
^e Education did not include children aged less than 7 years old (count public=316, count private=29)
^f No formal education included those who never attended school and did not complete primary school
^g Occupation did not include children aged less than 15 years old (count public=1,164, count private=91)
^h Not working included those who were unemployed, old age and those who were not working because of health problems
ⁱ Household income category was based on DOSM household income classification in 2022, by state
Dash (-) due to Relative Standard Error (RSE) more than 30%

Table 5.2.3.19: Distribution of frequency of visit to oral healthcare facilities among those who utilised in the last 12 months by sector, NHMS 2023 (n=2,548)

FREQUENCY OF VISIT	PUBLIC					PRIVATE				
	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CI		COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER				LOWER	UPPER
Once	1,747	5,206,297	88.5	85.46	90.98	551	2,588,768	87.0	81.95	90.73
Twice	169	511,023	8.7	6.55	11.44	62	232,337	7.8	5.13	11.70
More than twice	49	164,968	2.8	1.70	4.59	39	156,059	5.2	3.23	8.41

Table 5.2.3.20: Payer for oral healthcare utilisation among those who utilised oral healthcare facilities in the last 12 months, NHMS 2023 (n=2,548)

PAYER FOR OUTPATIENT HEALTHCARE ^a	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Self/family/household members	1,135	4,496,964	52.3	48.02	56.60
Fee exemption (such as senior citizen, antenatal/postnatal care, blood donor and others)	1,221	3,749,095	43.6	39.68	47.65
Employer-sponsored (panel clinic/employee insurance)	82	319,692	3.7	2.54	5.42
Personal health insurance	8	-	-	-	-

^a Multiple responses

Dash (-) due to Relative Standard Error (RSE) more than 30%

5.2.4 Out-of-pocket (OOP) healthcare expenditure

The total annual OOP health expenditure for the entire population in 2023 was estimated at approximately RM 6,393 million. When examining sociodemographic characteristics, per capita OOP healthcare expenditure showed notable variations. Females exhibited a higher spending of RM 226.35 (95% CI: RM 160.42, RM 292.27), and married respondents or those living with a partner had higher expenditure at RM 231.79 (95% CI: RM 155.22, RM 308.36). Those with tertiary education showed an expenditure of RM 321.42 (95% CI: RM 158.15, RM 484.68), while individuals within the richest quintile (Quintile 5) reported an expenditure of RM 288.09 (95% CI: RM 0.00, RM 389.74) (**Table 5.2.4.1**).

Outpatient Healthcare OOP Expenditure

The annual OOP health expenditure for outpatient healthcare across the entire population was estimated at RM 4,476 million. The mean per capita OOP for outpatient healthcare was recorded at RM 134.10 (95% CI: RM 96.65, RM 171.54). The per capita total OOP expenditure on outpatient healthcare, analysed by sociodemographic factors, revealed the highest spending among children aged 0–9 years old, amounting to RM 235.14 (95% CI: RM 129.64, RM 340.64). An examination of household income quintiles showed a noticeable increase in OOP expenditure on outpatient healthcare from Quintile 1 to Quintile 5, with Quintile 5 (the top 20% richest) reporting RM 192.92 (95% CI: RM 114.26, RM 271.57) (**Table 5.2.4.2**).

For individuals seeking outpatient healthcare among those who utilised outpatient healthcare, the annual mean OOP expenditure was reported as RM 1,071.59 (95% CI: RM 795.95, RM 1,347.23), as highlighted in **Table 5.2.4.3**.

Inpatient Healthcare OOP Expenditure

The overall OOP health expenditure for inpatient healthcare in the last 12 months and by sociodemographic characteristics findings were not presented due to high relative standard errors (RSE) of more than 30%, rendering unreliable estimated proportions.

Oral healthcare OOP Expenditure

The total OOP expenditure for oral healthcare in the last 12 months amounted to RM 948 million. The mean per capita OOP for oral healthcare was RM 28.41 (95% CI: RM 20.24, RM 36.58). Analysing per capita spending for oral healthcare across different ethnicities, the highest expenditure was observed among Chinese, reaching RM 59.67 (95% CI: RM 31.66, RM 87.68). When considering household income, the data revealed an upward spending trend with

increasing income levels, with respondents in the T20 group spending approximately RM 51.97 (95% CI: RM 26.47, RM 77.47) (**Table 5.2.4.4**).

Individuals who utilised oral healthcare had an average OOP expenditure of RM 110.34 (95% CI: RM 79.95, RM 140.72). For users of oral healthcare, females demonstrated a higher average OOP spending of RM 120.57 (95% CI: RM 86.45, RM 154.69) as compared to males at RM 98.48 (95% CI: RM 54.31, RM 142.66). Notably, people in the Quintile 5 household income category spent more on oral healthcare out of pocket RM 169.46 (95% CI: RM 109.62, RM 229.29) and people in the T20 household income category spent more RM 166.02 (95% CI: RM 88.57, RM 243.47) (**Table 5.2.4.5**).

OOP Health Expenditure by Sector

The total annual OOP health spending, covering outpatient, inpatient, and oral healthcare expenses, was analysed by sector. Specifically, OOP spending at public facilities was estimated at RM 15.28 (95% CI: RM 6.83, RM 23.73), while private facilities reported a higher figure of RM 176.23 (95% CI: RM 133.18, RM 219.29) (**Table 5.2.4.6**).

Examining the spending patterns among healthcare users, it was observed that in public facilities, individuals incurred an estimated expense of approximately RM 40.12 (95% CI: RM 17.86, RM 62.38). Conversely, private facilities registered notably higher OOP spending at RM 462.65 (95% CI: RM 352.15, RM 573.14) (**Table 5.2.4.7**).

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL	
										LOWER	UPPER
Occupation^a											
Government employee	657	-	-	-	-	-	-	-	-	-	-
Private business (employer/employee)	1,915	9,505,674	1,295,819,876	136.32	750.58	0.00	0.00	1.00	13,035.71	82.43	190.21
Self-employed	1,015	-	-	-	-	-	-	-	-	-	-
Unpaid worker / Homemaker	1,178	3,589,438	644,274,772	179.49	1,649.83	0.00	0.00	1.00	49,535.71	85.30	273.68
Retiree	433	-	-	-	-	-	-	-	-	-	-
Student	584	-	-	-	-	-	-	-	-	-	-
Not working ^b	952	-	-	-	-	-	-	-	-	-	-
Missing ^c	87	-	-	-	-	-	-	-	-	-	-
Household Income Group											
Less than RM 1,000	879	2,913,979	369,291,785	126.73	563.29	0.00	0.00	0.00	14,601.00	71.16	182.30
RM 1,000 – RM 1,999	1,241	-	-	-	-	-	-	-	-	-	-
RM 2,000 – RM 3,999	2,524	8,444,580	1,326,814,795	157.12	1,433.50	0.00	0.00	0.00	51,621.43	88.99	225.25
RM 4,000 – RM 5,999	1,771	6,353,454	933,821,549	146.98	810.83	0.00	0.00	0.00	23,464.29	0.00	209.77
RM 6,000 – RM 7,999	1,041	-	-	-	-	-	-	-	-	-	-
RM 8,000 – RM 9,999	613	2,525,071	745,429,029	295.21	1,218.07	0.00	0.00	0.00	13,817.86	0.00	447.23
RM 10,000 and above	1,108	5,297,536	1,759,767,462	332.19	3,355.75	0.00	0.00	1.00	140,771.43	0.00	508.34
Household Income Quintile											
Quintile 1	1,273	4,156,297	405,310,742	97.52	489.82	0.00	0.00	0.00	14,601.00	56.75	138.29
Quintile 2	1,755	-	-	-	-	-	-	-	-	-	-
Quintile 3	1,851	6,131,751	1,023,506,228	166.92	1,422.59	0.00	0.00	0.00	49,535.71	79.82	254.02
Quintile 4	1,981	7,125,319	1,107,066,014	155.37	903.15	0.00	0.00	0.00	23,464.29	0.00	224.36
Quintile 5	2,317	10,067,515	2,900,378,134	288.09	2,592.96	0.00	0.00	0.00	140,771.43	0.00	389.74
Household Income Category^d											
Bottom 40%	5,823	20,564,565	3,338,366,235	162.34	1,850.77	0.00	0.00	0.00	151,214.29	112.92	211.75
Middle 40%	2,555	9,696,833	1,716,495,423	177.02	980.19	0.00	0.00	0.00	29,982.14	117.81	236.23
Top 20%	799	-	-	-	-	-	-	-	-	-	-

^a Malay included Orang Asli (count=15)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=341)

^c Marital status did not include children aged less than 13 years old (count=2,083)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=1,048)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (=2,356)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Abbreviation: RM, Ringgit Malaysia

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL	
										LOWER	UPPER
Occupation^a											
Government employee	657	-	-	-	-	-	-	-	-	-	-
Private business (employer/employee)	1,915	9,505,674	725,281,623	76.30	657.18	0.00	0.00	0.00	13,035.71	31.39	121.21
Self-employed	1,015	-	-	-	-	-	-	-	-	-	-
Unpaid worker / Homemaker	1,178	-	-	-	-	-	-	-	-	-	-
Retiree	433	-	-	-	-	-	-	-	-	-	-
Student	584	-	-	-	-	-	-	-	-	-	-
Not working ^b	952	-	-	-	-	-	-	-	-	-	-
Missing ^d	87	-	-	-	-	-	-	-	-	-	-
Household Income Group											
Less than RM 1,000	879	2,913,979	227,230,140	77.98	450.61	0.00	0.00	0.00	14,600.00	36.51	119.44
RM 1,000 – RM 1,999	1,241	-	-	-	-	-	-	-	-	-	-
RM 2,000 – RM 3,999	2,524	8,444,580	978,943,082	115.93	1,382.03	0.00	0.00	0.00	51,621.43	53.10	178.75
RM 4,000 – RM 5,999	1,771	6,353,454	625,604,678	98.47	659.64	0.00	0.00	0.00	23,464.29	53.31	143.62
RM 6,000 – RM 7,999	1,041	-	-	-	-	-	-	-	-	-	-
RM 8,000 – RM 9,999	613	-	-	-	-	-	-	-	-	-	-
RM 10,000 and above	1,108	-	-	-	-	-	-	-	-	-	-
Household Income Quintile											
Quintile 1	1,273	4,156,297	258,647,978	62.23	396.92	0.00	0.00	0.00	14,600.00	31.87	92.59
Quintile 2	1,755	-	-	-	-	-	-	-	-	-	-
Quintile 3	1,851	-	-	-	-	-	-	-	-	-	-
Quintile 4	1,981	7,125,319	768,204,721	107.81	784.08	0.00	0.00	0.00	23,464.29	50.97	164.65
Quintile 5	2,317	10,067,515	1,942,218,221	192.92	1,994.25	0.00	0.00	0.00	135,571.43	114.26	271.57
Household Income Category^f											
Bottom 40%	5,823	20,564,565	2,455,773,400	119.42	1,808.94	0.00	0.00	0.00	151,214.29	72.93	165.91
Middle 40%	2,555	9,696,833	1,206,955,155	124.47	903.28	0.00	0.00	0.00	29,982.14	71.12	177.81
Top 20%	799	-	-	-	-	-	-	-	-	-	-

^a Malay included Orang Asli (count=15)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=341)

^c Marital status did not include children aged less than 13 years old (count=2,083)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=1,048)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (=2,356)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Abbreviation: RM, Ringgit Malaysia

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL	
										LOWER	UPPER
Occupation^a											
Government employee	89	-	-	-	-	-	-	-	-	-	-
Private business (employer/employee)	205	894,213	725,281,623	811.08	2,003.06	26.07	0.00	912.50	13,035.71	377.26	1,244.91
Self-employed	88	-	-	-	-	-	-	-	-	-	-
Unpaid worker / Homemaker	152	-	-	-	-	-	-	-	-	-	-
Retiree	72	-	-	-	-	-	-	-	-	-	-
Student	53	185,527	73,130,490	394.18	715.66	26.07	0.00	625.71	3,910.71	179.13	609.23
Not working ^b	147	-	-	-	-	-	-	-	-	-	-
Missing ^c	9	-	-	-	-	-	-	-	-	-	-
Household Income Group											
Less than RM 1,000	104	343,443	227,230,140	661.62	1,160.87	26.07	0.00	1,381.79	14,600.00	384.81	938.44
RM 1,000 – RM 1,999	160	-	-	-	-	-	-	-	-	-	-
RM 2,000 – RM 3,999	334	934,624	978,943,082	1,047.42	4,040.26	26.07	0.00	912.50	51,621.43	508.03	1,586.81
RM 4,000 – RM 5,999	251	862,472	625,604,678	725.36	1,661.29	26.07	0.00	1,303.57	23,464.29	430.36	1,020.36
RM 6,000 – RM 7,999	143	-	-	-	-	-	-	-	-	-	-
RM 8,000 – RM 9,999	112	-	-	-	-	-	-	-	-	-	-
RM 10,000 and above	150	705,138	1,057,014,452	1,499.02	6,687.80	26.07	0.00	2,085.71	135,571.43	623.80	2,374.23
Household Income Quintile											
Quintile 1	159	476,449	258,647,978	542.87	1,058.00	26.07	0.00	625.71	14,600.00	321.31	764.42
Quintile 2	220	-	-	-	-	-	-	-	-	-	-
Quintile 3	250	707,487	783,050,984	1,106.81	3,905.69	26.07	0.00	1,042.86	49,535.71	458.72	1,754.89
Quintile 4	272	965,344	768,204,721	795.78	2,000.68	26.07	0.00	1,303.57	23,464.29	404.73	1,186.84
Quintile 5	353	1,479,361	1,942,218,221	1,312.88	5,065.14	26.07	0.00	1,825.00	135,571.43	796.46	1,829.29
Household Income Category											
Bottom 40%	794	2,420,236	2,455,773,400	1,014.68	5,188.94	26.07	0.00	1,173.21	151,214.29	651.11	1,378.25
Middle 40%	351	1,332,099	1,206,955,155	906.06	2,289.93	26.07	0.00	1,303.57	29,982.14	545.32	1,266.79
Top 20%	109	-	-	-	-	-	-	-	-	-	-

^a Malay included Orang Asli (count=3)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=14)

^c Marital status did not include children aged less than 13 years old (count=409)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=245)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=439)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Abbreviation: RM, Ringgit Malaysia

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL	
										LOWER	UPPER
Occupation^a											
Government employee	657	-	-	-	-	-	-	-	-	-	-
Private business (employer/employee)	1,915	9,505,674	334,709,852	35.21	214.74	0.00	0.00 - 0.00	0.00	4,500.00	20.48	49.95
Self-employed	1,015	3,781,663	64,058,879	16.94	109.74	0.00	0.00 - 0.00	0.00	4,300.00	7.45	26.43
Unpaid worker / Homemaker	1,178	3,589,438	87,112,711	24.27	122.27	0.00	0.00 - 0.00	0.00	1,500.00	14.08	34.46
Retiree	433	-	-	-	-	-	-	-	-	-	-
Student	584	-	-	-	-	-	-	-	-	-	-
Not working ^b	952	-	-	-	-	-	-	-	-	-	-
Missing ^c	87	-	-	-	-	-	-	-	-	-	-
Household Income Group											
Less than RM 1,000	879	-	-	-	-	-	-	-	-	-	-
RM 1,000 – RM 1,999	1,241	-	-	-	-	-	-	-	-	-	-
RM 2,000 – RM 3,999	2,524	8,444,580	137,295,452	16.26	103.86	0.00	0.00 - 0.00	0.00	1,800.00	9.87	22.64
RM 4,000 – RM 5,999	1,771	-	-	-	-	-	-	-	-	-	-
RM 6,000 – RM 7,999	1,041	3,832,015	80,069,147	20.89	143.24	0.00	0.00 - 0.00	0.00	3,000.00	11.24	30.55
RM 8,000 – RM 9,999	613	-	-	-	-	-	-	-	-	-	-
RM 10,000 and above	1,108	5,297,536	308,898,704	58.31	306.42	0.00	0.00 - 0.00	0.00	7,000.00	34.08	82.54
Household Income Quintile											
Quintile 1	1,273	-	-	-	-	-	-	-	-	-	-
Quintile 2	1,755	5,898,029	57,804,935	9.80	67.51	0.00	0.00 - 0.00	0.00	1,500.00	5.24	14.36
Quintile 3	1,851	6,131,751	117,449,014	19.15	114.98	0.00	0.00 - 0.00	0.00	1,800.00	10.57	27.74
Quintile 4	1,981	-	-	-	-	-	-	-	-	-	-
Quintile 5	2,317	10,067,515	478,684,707	47.55	293.78	0.00	0.00 - 0.00	0.00	7,000.00	30.28	64.81
Household Income Category											
Bottom 40%	5,823	20,564,565	384,200,638	18.68	184.44	0.00	0.00 - 0.00	0.00	7,000.00	10.54	26.82
Middle 40%	2,555	9,696,833	402,029,935	41.46	304.57	0.00	0.00 - 0.00	0.00	7,000.00	23.46	59.46
Top 20%	799	3,117,514	162,008,288	51.97	251.50	0.00	0.00 - 0.00	0.00	2,800.00	26.47	77.47

^a Malay included Orang Asli (count=15)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=341)

^c Marital status did not include children aged less than 13 years old (count=2,083)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=1,048)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (=2,356)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Abbreviation: RM, Ringgit Malaysia

Table 5.2.4.5: Annual out-of-pocket health expenditure among oral healthcare users in the last 12 months by sociodemographic characteristics, NHMS 2023 (n=2,548)

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL	
										LOWER	UPPER
MALAYSIA	2,548	8,593,908	948,238,861	110.34	447.88	1.00	0.00 – 80.00	0.00	7,000.00	79.95	140.72
Location											
Urban	1,916	6,890,116	862,729,675	125.21	481.10	1.00	–	100.00	7,000.00	88.56	161.87
Rural	632	-	-	-	-	-	-	-	-	-	-
Sex											
Male	1,150	3,981,788	392,143,777	98.48	481.89	0.00	–	70.00	7,000.00	54.31	142.66
Female	1,398	4,612,120	556,095,084	120.57	416.19	1.00	–	100.00	7,000.00	86.45	154.69
Age Group (Years)											
0 – 9	704	-	-	-	-	-	-	-	-	-	-
10 – 19	734	-	-	-	-	-	-	-	-	-	-
20 – 29	212	997,607	180,241,174	180.67	509.28	50.00	–	180.00	4,500.00	90.00	271.35
30 – 39	265	1,186,815	185,793,181	156.55	367.05	50.00	–	200.00	4,300.00	90.09	223.00
40 – 49	251	873,157	141,983,394	162.61	376.16	23.00	–	150.00	2,000.00	67.49	257.73
50 – 59	193	573,691	134,213,203	233.95	692.12	100.00	–	160.00	7,000.00	112.94	354.95
60 and over	189	-	-	-	-	-	-	-	-	-	-
Ethnicity											
Malay ^a	1,836	5,091,414	374,324,253	73.52	304.45	1.00	–	30.00	5,000.00	43.97	103.07
Chinese	233	1,805,709	409,492,104	226.78	713.35	80.00	–	200.00	7,000.00	127.53	326.02
Indian	120	419,185	59,950,169	143.02	369.32	0.00	–	120.00	2,800.00	64.86	221.17
Bumiputera Sabah	234	-	-	-	-	-	-	-	-	-	-
Bumiputera Sarawak	74	-	-	-	-	-	-	-	-	-	-
Others	51	-	-	-	-	-	-	-	-	-	-
Citizenship^b											
Malaysian citizen	2,514	8,240,848	887,294,841	107.67	434.94	1.00	–	80.00	7,000.00	77.21	138.13
Marital status^c											
Never Married	588	2,590,737	326,216,509	125.92	480.72	0.00	–	85.00	5,001.00	72.29	179.54
Married/ Living with partner	806	2,715,356	545,111,855	200.75	618.25	50.00	–	150.00	7,000.00	127.64	273.86
Separated/ Divorced/ Widowed	98	-	-	-	-	-	-	-	-	-	-
Missing ^d	2	25,342	2,548,816	100.58	8.27	100.00	–	100.00	160.00	98.99	102.16
Education Level^e											
No formal education ^f	764	-	-	-	-	-	-	-	-	-	-
Primary education	306	-	-	-	-	-	-	-	-	-	-
Secondary education	932	3,381,905	540,479,350	159.82	543.76	4.00	–	120.00	7,000.00	99.25	220.38
Tertiary education	200	920,811	259,671,515	282.00	659.20	120.00	–	250.00	7,000.00	172.99	391.02
Missing ^g	12	45,661	3,982,646	87.22	107.99	100.00	–	100.00	500.00	39.28	135.16

SOCIODEMOGRAPHIC CHARACTERISTICS	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL		
										LOWER	UPPER	
Occupation^a												
Government employee	184	-	-	-	-	-	-	-	-	-	-	
Private business (employer/employee)	310	1,582,945	334,709,852	211.45	490.18	100.00	1.00	200.00	0.00	4,500.00	134.25	288.64
Self-employed	155	536,276	64,058,879	119.45	270.29	50.00	1.00	150.00	0.00	4,300.00	58.79	180.12
Unpaid worker / Homemaker	229	753,703	87,112,711	115.58	246.67	4.00	1.00	120.00	0.00	1,500.00	71.78	159.38
Retiree	90	-	-	-	-	-	-	-	-	-	-	-
Student	218	-	-	-	-	-	-	-	-	-	-	-
Not working ^b	134	-	-	-	-	-	-	-	-	-	-	-
Missing ^d	10	44,078	3,507,873	79.58	43.81	100.00	80.00	100.00	0.00	160.00	50.28	108.88
Household Income Group												
Less than RM 1,000	224	-	-	-	-	-	-	-	-	-	-	-
RM 1,000 – RM 1,999	280	-	-	-	-	-	-	-	-	-	-	-
RM 2,000 – RM 3,999	715	2,251,001	137,295,452	60.99	194.37	0.00	0.00	5.00	0.00	1,800.00	37.00	84.99
RM 4,000 – RM 5,999	473	-	-	-	-	-	-	-	-	-	-	-
RM 6,000 – RM 7,999	290	844,928	80,069,147	94.76	293.71	0.00	0.00	80.00	0.00	3,000.00	52.65	136.87
RM 8,000 – RM 9,999	195	-	-	-	-	-	-	-	-	-	-	-
RM 10,000 and above	371	1,663,424	308,898,704	185.70	525.21	80.00	0.00	150.00	0.00	7,000.00	115.37	256.03
Household Income Quintile												
Quintile 1	305	-	-	-	-	-	-	-	-	-	-	-
Quintile 2	471	1,570,589	57,804,935	36.80	127.06	0.00	0.00	3.00	0.00	1,500.00	19.76	53.85
Quintile 3	499	1,500,472	117,449,014	78.27	222.42	1.00	0.00	10.00	0.00	1,800.00	44.64	111.91
Quintile 4	540	-	-	-	-	-	-	-	-	-	-	-
Quintile 5	733	2,824,847	478,684,707	169.46	535.91	2.00	0.00	130.00	0.00	7,000.00	109.62	229.29
Household Income Category												
Bottom 40%	1,573	5,108,240	384,200,638	75.21	364.37	0.00	0.00	6.00	0.00	7,000.00	43.62	106.81
Middle 40%	719	2,509,808	402,029,935	160.18	582.84	1.00	0.00	100.00	0.00	7,000.00	92.30	228.06
Top 20%	256	975,860	162,008,288	166.02	428.49	80.00	0.00	150.00	0.00	2,800.00	88.57	243.47

^a Malay included Orang Asli (count=1)

^b Citizenship did not include those who were Permanent Resident and Non-Malaysian (count=34)

^c Marital status did not include children aged less than 13 years old (count=1,054)

^d Missing included those who answered "Don't know" and "Refuse to answer"

^e Education did not include children aged less than 7 years old (count=334)

^f No formal education included those who never attended school and did not complete primary school

^g Occupation did not include children aged less than 15 years old (count=1,218)

^h Not working included those who were unemployed, old age and those who were not working because of health problems

ⁱ Household income category was based on DOSM household income classification in 2022, by state

Dash (-) due to Relative Standard Error (RSE) more than 30%

Abbreviation: RM, Ringgit Malaysia

Table 5.2.4.6: Annual per capita out-of-pocket health expenditure by healthcare services and sector, NHMS 2023 (n=9,177)

TYPE OF SERVICES / FACILITY	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL	
										LOWER	UPPER
Total											
Public	9,177	33,378,911	510,144,569	15.28	281.51	0.00	-	0.00	13,817.86	6.83	23.73
Private	9,177	33,378,911	5,882,475,865	176.23	2,024.95	0.00	-	0.00	151,214.29	133.18	219.29
Outpatient											
Public	9,177	-	-	-	-	-	-	-	-	-	-
Private	9,177	33,378,911	4,194,329,317	125.66	1,784.25	0.00	-	0.00	151,214.29	88.86	162.45
Inpatient											
Public	9,177	33,378,911	208,122,162	6.24	116.72	0.00	-	0.00	6,000.00	2.88	9.59
Private	9,177	-	-	-	-	-	-	-	-	-	-
Oral healthcare											
Public	9,177	-	-	-	-	-	-	-	-	-	-
Private	9,177	33,378,911	927,892,026	27.80	231.24	0.00	-	0.00	7,000.00	19.63	35.97

Dash (-) due to Relative Standard Error (RSE) more than 30%

Abbreviation: RM, Ringgit Malaysia

Table 5.2.4.7: Annual out-of-pocket health expenditure among healthcare users by healthcare services and sector, NHMS 2023

TYPE OF SERVICE USERS ^a / FACILITY	COUNT	ESTIMATED POPULATION	SUM	MEAN (RM)	SD	MEDIAN	IQR	MIN	MAX	95% CONFIDENCE INTERVAL	
										LOWER	UPPER
Total (n=3,757)											
Public	2,836	8,541,906	510,144,569	40.12	455.05	0.00	-	1.00	13,817.86	17.86	62.38
Private	1,232	5,217,141	5,882,475,865	462.65	3,260.91	0.00	-	100.00	151,214.29	352.15	573.14
Outpatient (n=1,254)											
Public	757	-	-	-	-	-	-	-	-	-	-
Private	541	2,173,880	4,194,329,317	1,004.15	4,957.30	0.00	-	1,251.43	151,214.29	730.90	1,277.40
Inpatient (n=605)											
Public	471	1,408,483	208,122,162	107.25	473.12	0.00	-	52.00	6,000.00	50.61	163.88
Private	143	-	-	-	-	-	-	-	-	-	-
Oral healthcare (n=2,548)											
Public	1,965	-	-	-	-	-	-	-	-	-	-
Private	652	2,977,164	927,892,026	107.97	446.19	0.00	-	80.00	7,000.00	77.56	138.38

^a Healthcare users refer to those who used the healthcare services (outpatient, inpatient or oral healthcare) in the last 12 months, regardless of the amount of payment made

Dash (-) due to Relative Standard Error (RSE) more than 30%

Abbreviation: RM, Ringgit Malaysia

5.2.5 Informed of sick-child's diagnosis

In the last 3 months leading up to the interview, 10.6% (95% CI: 8.81, 12.75) of individuals accompanying a sick child to a health facility. Among them, the majority [83.2% (95% CI: 77.50, 87.69)] received comprehensive information from healthcare practitioners; encompassing both the diagnosis and the care plan. Additionally, 9.9% (95% CI: 6.35, 15.24) of caregivers received information about the diagnosis only; while 3.7% (95% CI: 2.27, 6.01) were informed about the care plan only. Notably, 3.1% (95% CI: 1.79, 5.48) of caregivers did not receive any diagnosis or care plan from healthcare practitioners (**Table 5.2.5.1**).

Table 5.2.5.1: Percentage of caregivers aged 18 years and above who had accompanied a sick child to a health facility in the last 3 months, and were informed about a sick child's diagnosis by healthcare practitioners, NHMS 2023 (n=632)

CAREGIVERS EXPLAINED THE DIAGNOSIS / CARE PLAN	COUNT	ESTIMATED POPULATION	PERCENTAGE (%)	95% CONFIDENCE INTERVAL	
				LOWER	UPPER
Only diagnosis / illness was explained	63	255,282	9.9	6.35	15.24
Only care plan was explained	29	95,157	3.7	2.27	6.01
Both	514	2,136,083	83.2	77.50	87.69
No diagnoses / care plan explained	26	80,782	3.1	1.79	5.48

SUMMARY

- The survey provides an overview of health status, recent acute health problems, healthcare access, utilisation, and expenditure.
- In Malaysia, the majority of individuals aged 13 years old and above generally self-rated excellent or good health. Self-rated health is one of the indicators by Organisation for Economic Co-operation and Development (OECD) for assessing health status and a good predictor of future healthcare needs (17). Moreover, findings revealed that despite the prevalence of acute health problems, majority of population in Malaysia reported having excellent or good health. Majority of population sought healthcare practitioner's advice when they are sick, instead of other behaviours. Cost of treatment revealed to be one of the reported reasons for unmet healthcare needs, as indicated in the survey findings.
- Notably, among those who went for medical check-up, one-third was self-initiated and almost all sought healthcare practitioner(s)' advice should there be abnormal findings.
- Survey findings indicated that online healthcare services were being used by the population, especially for health appointments.
- Outpatient healthcare remains a predominant aspect of healthcare utilisation, with variations in prevalence based on age, gender, and income levels. Inpatient healthcare, oral health services, and associated out-of-pocket expenditures exhibit diverse patterns influenced by factors such as age, ethnicity, and income.
- With regards to the financial aspects of healthcare, on average, one household spent RM 134.10 for outpatient healthcare services, followed by oral healthcare services of RM 28.41 per capita.
- Findings for the sick-child diagnosis highlighted that healthcare practitioners were communicating sufficiently with the caregivers regarding the diagnosis and treatment plan.

RECOMMENDATIONS

- Tailored Support for Vulnerable Demographic Groups:** In our pursuit of effective healthcare financing strategies, it is crucial to prioritise interventions that tackle disparities and bolster the financial well-being of diverse population segments. Implementing targeted support programmes specifically designed for vulnerable demographic groups, including the elderly and low-income households can alleviate the financial burdens associated with healthcare expenditures for these groups (18).
- Expansion of Online Healthcare Services:** Strengthen existing initiatives as well as investing in the expansion of online healthcare services to improve accessibility for all demographic groups. Subsidising or incentivising telehealth services and addressing infrastructure gaps may also be options for considerations (19).
- Enhancing Communication Protocols:** Despite the current good communication, there are still rooms for further improvements to enhance communication between healthcare practitioners and caregivers, and the betterment of the public's trust and rapport in the country's health systems (20). This may include improved information dissemination, follow-up procedures, and support services for caregivers (21).
- Research and Monitoring:** Further investments in ongoing research, either qualitative or quantitative in its approach, as well as monitoring of healthcare trends, disparities, and outcomes. Regularly update policies based on the evolving healthcare landscape to ensure relevance and effectiveness.

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APPENDIX 1

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4. Deputy Director General of Health (Public Health)
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6. Senior Director, Pharmaceutical Services Programme
7. Senior Director, Food Safety and Quality Division
8. Director, Medical Development Division
9. Director, Disease Control Division
10. Director, Planning Division
11. Director, Medical Practise Division
12. Director, Nutrition Division
13. Director, Allied Health Sciences Division
14. Director, Family Health Development Division
15. Director, Public Health Development Division
16. Director, Traditional and Complementary Medicine Division
17. Director, Nursing Division
18. Director, Health Education Division
19. Director, Perak State Health Department
20. Manager, National Institutes of Health (NIH)
21. Director, Institute for Public Health
22. Director, Institute for Health Systems Research
23. Director, Institute for Health Behavioural Research,
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APPENDIX 6

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10. Ms. Siti Noorul Nakhirah Zamrus
11. Ms. Nur Faqihah Hanim Muhamed Sanari
12. Mr. Muhammad Syadza Ruslan
13. Mr. Mohamad Faisa Mohd Saari
14. Mr. Muhamad Ihsan Mohd Salleh
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2. Ms. Noor Amira Zainol Anuar
3. Ms. Zalilawati Awang
4. Ms. Rozita Mohamed Yusop
5. Ms. Dayang Marlyana Mohd Aris
6. Ms. Afira Disya Azmi
7. Ms. Nurul Suhada Kamaruzzaman

PERLIS

1. Ms. Tina Anak Minggu
2. Ms. Hasmizah Abdul
3. Ms. Wan Nurul Ain Wan Kasim
4. Mr. Nik Muhammad Sanusi Nik Hassan
5. Mr. Navanithan Alagesan
6. Mr. Visyithieran Assai Thamby
7. Mr. Muhammad Alif Ridzwan Mazlan

Research Assistants

1. Ms. Nur Aishah Solihah Mohmad Nezan
2. Ms. Nor Najihah Muslim
3. Mr. Ahmad Hafizi Ariffin
4. Ms. Fatimah Az-Zahra Ahmad Pauzi
5. Ms. Fairuz Mohd Hashim
6. Mr. Muhammad Haniff Samsuddin
7. Ms. Siti Aisyah Ibrahim
8. Ms. Norhayati Kamarudin
9. Mr. Mohd Aizam Zahid
10. Mr. Muhamad Hidayat Mokhtar
11. Ms. Nuril Asyikin Mohamad
12. Mr. Muhammad Safuan Suhaimi
13. Ms. Nur Amirah Alias
14. Ms. Nurul Amirah Shahrin
15. Mr. Mohamad Afnan Khairi Othman
16. Ms. Nurul Huda Dahlan
17. Ms. Rina Hardiana Damril
18. Mr. Ishahrulnizam Isahak
19. Ms. Nur Syuhada Zahid
20. Mr. Mohamad Pauzan Razali
21. Mr. Mohd Taufik Mokhtar

ZON TIMUR

Field Supervisors

1. Mr. Tuan Mohd Amin Tuan Lah
2. Ms. Nor Azian Mohd Zaki
3. Ms. Wan Sarifah Ainin Wan Jusoh
4. Mr. Mohd Ruhaizie Riyadzi

Nurses

KELANTAN

1. Ms. Wan Noor Azean Wan Hamat
2. Ms. Norazilawati Zakaria
3. Ms. Rosnida Husain
4. Ms. Nik Norhamizah Nik Abd Kadir
5. Ms. Ku Marina Che Ku Muda

PAHANG

1. Ms. Nur Fatihah Ngah
2. Ms. Badariah Abu Bakar
3. Ms. Nurul Aini Zaini
4. Ms. Siti Fatimah Ismail
5. Ms. Noraini Ismail

TERENGGANU

1. Mr. Mohd Zulkifeli Mahmood
2. Mr. Muhammad Ridzuan Mohammad Razani
3. Ms. Rubiah Ismail
4. Ms. Nur Asyikin A'riffin
5. Ms. Zaliwati Said

Research Assistants

1. Ms. Nor Shazlifah Abdul Rahman
2. Ms. Ayu Fuzahazni Amri
3. Ms. Nor Hazlin Abd Ghani
4. Ms. Nurul Huda Tarmizi
5. Ms. Siti Syaza Athirah Mohd Khairuddin
6. Mr. Mohammad Zamri Ab Wahab
7. Ms. Zawahir Ngah Said
8. Ms. Nur Syuhada Mohd Zaidi
9. Mr. Muhammad Afif Bani Yami
10. Mr. Muhamad Sahasrizan Samat
11. Ms. Maisyarah Mohd Ali
12. Mr. Mohd Amirsahrudin Mat Jusoh
13. Ms. Izzati Wan Azelee
14. Ms. Nurrezkiyani Johar
15. Mr. Mohamad Afendi Zainurin

ZON TENGAH**Field Supervisors**

1. Ms. Sulhariza Husni Zain
2. Ms. Noor Syaqliah Shawaluddin
3. Dr. Tham Sin Wan
4. Ms. Nurul Haniyah Rosslan
5. Ms. Liew Siaw Hun
6. Ms. Nazirah Alias
7. Dr. Muhammad Azri Adam Adnan
8. Ms. Eida Nurhadzira Muhammad

Nurses**SELANGOR**

1. Ms. Norizah Mesri
2. Ms. Zaitun Syed Ahmad
3. Ms. Nurul Nadieya Abdul Hamid
4. Ms. Fazliana Abd Mutalib
5. Ms. Hasliza Haron
6. Mr. Ahmad Khairul Anuar Mohamed
7. Mr. Muhammad Farhan Nasaruddin
8. Ms. Ceroline Maisun
9. Mr. Norazli Sarani
10. Ms. Siti Salwa Jamaluddin

KUALA LUMPUR & PUTRAJAYA

1. Mr. Al Rashid Abd Razak
2. Ms. Che' Marini Che Malid
3. Ms. Azatie Nazieha Azlarin Affendi
4. Ms. Fatin Amirah Misni
5. Mr. Mohd Shafez Hj. Mohamad Hasan
6. Ms. Rozimah Talib
7. Ms. Nurul Latifah Muhamad
8. Mr. Pavithran Menachi
9. Mr. Puvana Karuppiah

Research Assistants

1. Ms. Nur Anis Syafiqa Zulkefli
2. Ms. Amni Zulaika Ahmad Azmi
3. Mr. Mohammad Syaiful Idham Ramlay
4. Ms. Noorain Mohamad
5. Mr. Ahmad Zulfadhli Mohd Zulkifli
6. Ms. Nurul Ashikin Nosarodin
7. Mr. Ahmad Haziq Mohd Zulasri
8. Ms. Maryam Nabihah Zaidi
9. Mr. Mohammad Amiruddin Mohammad
10. Ms. Siti Rofilah Ismail
11. Ms. Nurhanis Mohd Hawari
12. Mr. Muhamad Khairil Manangin
13. Ms. Aminah Fatanah Zaidi
14. Ms. Zatul 'Iffah Azimin
15. Mr. Muhammad Aiman Ahmad
16. Ms. Siti Aishah Abdul Rahman
17. Ms. Nur Ain Syahirah Abdul Razak
18. Mr. Muhammad Ariff Mahyuddin
19. Ms. Nur Adibah Hassan
20. Ms. Nur Izzah Mohd Suhaimi
21. Ms. Siti Nur Atikah Mohd Amir Ruddin
22. Ms. Nur Asna Farzana Asraf
23. Ms. Erma Natasa Norhan
24. Mr. Muhammad Nur Irfan Kamal
25. Ms. Nurul Atiqah Mat Yusoff
26. Ms. Nurfatim Najwa Omar
27. Mr. Muammar Hasif Shamsuddin

SARAWAK**Field Supervisors**

1. Mr. Mohamad Aznuddin Abd Razak
2. Mr. Mohd Hatta Abdul Mutalip
3. Dr. Khaw Wan-Fei
4. Ms. Filza Noor Asari

Nurses

1. Ms. Siti Hawa Mustapha
2. Mr. Tenggia Anak Sa
3. Mr. Muhammad Almufarridun Abdul Hamid
4. Ms. Mashitah Sapawi
5. Ms. Roslawati Hang Tuah
6. Ms. Cynthia Eastern AK Jackway
7. Mr. Albert Jabu AK Melina
8. Ms. Jane Lasang
9. Ms. Pauline Sigu
10. Ms. Suzanna Paul Lutau
11. Tong Kah Wee
12. Mr. Joespa Anak George Anyie
13. Mr. Nicarlson Anak Julius
14. Mr. Oliver Jalley Anak James Dana
15. Mr. Christopher Alber Lee
16. Mr. Oscar Ak Herry
17. Ms. Florence Ak Abang
18. Mr. Mohd Amirejsa Juwanda
19. Ms. Nur Syafiqah Pundu
20. Ms. Siti Nurain Kassim
21. Ms. Sheila Ak Sulaiman
22. Ms. Tilen Jok
23. Ms. Mary Gipek Anak Nawas
24. Ms. Mariati Anak Awang
25. Mr. Albert Chong Sing Hui

Research Assistants

1. Ms. Aelsa Anak Anthony
2. Ms. Sulia Anak Sabat
3. Mr. Mohd Alif Haikal Hadiah
4. Ling Song Jing
5. Ms. Amanda Dasya Anak Peter
6. Mr. Aiman Farhan Ismail

7. Ms. Happilyn Anak Libin
8. Ms. Elizabeth Anak Uma
9. Mr. Mohammed Hefalani Mohd Azman

SABAH

Field Supervisors

1. Ms. Nur Faraeein Zainal Abidin
2. Ms. Aimi Nadiyah Mohamad Norzlen
3. Mr. Ahmad Mohiddin Mohd Ngesom
4. Dr. Muhamad Khairul Nazrin Khalil

Nurses

1. Ms. Damag Mijar
2. Ms. Noor Jakasma Abdul Luyal
3. Ms. Norasyikin Bisno
4. Mr. Mohd Hafizul Abi
5. Ms. Aini Anjan
6. Ms. Sepina Simpson
7. Ms. Betline Toisi
8. Ms. Clara Basilea JaiBin

Research Assistants

1. Mr. Jeldy Galoh
2. Ms. Jessica Johnny
3. Mr. Mohd. Rahmat Adzmain
4. Ms. Nur Rabia'tula Dawiyah Rahim
5. Mr. Mohd Aldy Abdul Razak
6. Mr. Javiksen James
7. Ms. Joan Sonny Limbowoi Saimin
8. Ms. Fyrah James
9. Mr. Fariq Haizen Zanim
10. Ms. Noor Azni Adzmain
11. Mr. Mohd Safwan Afiq Saimang
12. Ms. Erma Safwan Erison

LABUAN

Field Supervisors

1. Mr. Mohd Firdaus Razali
2. Mr. Azli Baharudin @ Shahaudin

Nurses

1. Ms. Mariatty Abdul Rahman
2. Ms. Jt Abvibera Madius

Research Assistants

1. Ms. Nur Milen Jauhal
2. Ms. Nur Elliah Sahira Aziz
3. Mr. Niveno Eldo Sonny Mat
4. Mr. Mohd Jazlan Harith Abdul Razak
5. Ms. Nurafifah Abdul Momin
6. Mr. Steve Glantdenventur E Benjamin

10. Ms. Khalidah Maruan
11. Mr. Ang Zen Yang
12. Dr. Nurul Iman Jamalul-Lail
13. Ms. Devi Shantini Rata Mohan
14. Ms. Kartiekasari Syahidda Mohammad Zubairi
15. Dr. Kalvina Chelladorai
16. Ms. Inin Roslyza Rusli
17. Dr. Nur Elina Abdul Mutalib

Research Assistants

1. Mr. Muhamad Syawal Azim Mohd Hisham
2. Mr. Adam Abdul Rahman
3. Ms. Ainnur Fateha A. Hamid
4. Mr. Alif Haiqal Yazid
5. Ms. Azra Syazana Zainuddin
6. Mr. Muhammad Qusyairi Shahar
7. Mr. Muhammad Tahsin Abdul Rahman
8. Ms. Nor Afiqah Noor Hisham
9. Ms. Noramirah Remli
10. Ms. Norhidayah Abdul Majid
11. Ms. Norsuriana Abdul Majid
12. Ms. Nur Aina Amira Zailani
13. Ms. Nur Ainathul Arwa Kamaruzaman
14. Ms. Nur 'Azyyati Abdul Aziz
15. Ms. Nur Farahaina Sharuddin
16. Ms. Nur Habibah Mohd Makhtar
17. Ms. Nurafifa Ruqayyah Rushdan
18. Ms. Syaheerah Mohd Sallehuddin
19. Ms. Wan Rabiah Adawiah Wan Shaifuddin
20. Mr. Amirul Amin Mohamed Tarmizi
21. Mr. Muhammad Raidillah Che Ab Rahim

Data Entry Team

Data Entry Supervisors

1. Dr. Aliza Lodz
2. Dr. Nurhamizah Nasarudin
3. Dr. Tania Gayle Robert Lourdes

Research Assistants

1. Ms. Asfa Nur Dahlia Djoeharie
2. Ms. Nurbatrisya Iman Mohd Zaidi
3. Ms. Nurul Syamimi Suhaimi
4. Mr. Syed Muhammad Husain Syed Khir Anuar
5. Ms. Shamuntheswary Arumugam
6. Ms. Nurul Izzati Suhaimi
7. Ms. Norzulkamalia Yub Rembeli
8. Ms. Nik Suraya Ismail
9. Mr. Muhammad Muaz Mukhtar
10. Mr. Muhammad Akmal Arif Abdul Kadir

CATI Team

HEALTHCARE DEMAND MODULE

CATI Supervisors

1. Ms. Noor Hasidah Ab Rahman
2. Dr. Nur Hidayati Abdul Halim
3. Ms. Nur Azmiah Zainuddin
4. Dr. Tay Yea Lu
5. Ms. Wan Ermiyati Wan Mohamad
6. Dr. Mohd Shahri Bahari
7. Dr. Farhana Aminuddin
8. Dr. Marhaini Mostapha
9. Mr. Tan Yui Ping

APPENDIX 7

Terms of Reference For Central Coordinating Team (CCT), NHMS 2023

NO	TEAM	DUTIES	OFFICERS
1.	Project Management and Finance	<ol style="list-style-type: none"> 1. Managing correspondences related to the project apart from CCT 2. Coordinating workshops related to the project 3. Managing and monitoring MySTEP centrally 4. Providing reference terms for each data collector, field supervisor, nurse, and research assistant 5. Managing the appointment of LO and collaborating in project management in each state 6. Contacting state LOs to obtain information about individuals to be contacted and logistics related to selected BP 7. Managing the appointment of nurses for data collection activities 8. Coordinating meetings related to the project apart from CCT 9. Managing, including reviewing documents related to the purchase of research materials and other project-related matters 10. Managing and monitoring the distribution of stock items for the needs of the research groups in the field 11. Placing stock orders as per requirements 12. Ensuring ordered goods are supplied within the specified time frame 13. Monitoring the movement of goods in and out of the store and ensuring inventory records are updated 14. Managing the vehicle rental process for data collection activities 15. Acting as an intermediary between the principal investigator and field supervisors regarding the project 16. Providing a database of LOs, nurses, and field supervisors 17. Monitoring the preparation of technical reports and publishing materials. 	<p>Dr. Halizah Mat Rifin Ms. Syafinaz Mohd Sallehuddin Ms. Noor Atika Wahab Ms. Anis Syahidah Sakdan</p>
2.	Design of survey questionnaires, survey & technical manuals, and pre-testing.	<ol style="list-style-type: none"> 1. Coordinating activities related to the development of questionnaires and research instruments for NHMS 2023 2. Reviewing and conducting validation of questionnaires/instruments to ensure suitability for use in the survey 	<p>Dr. Wan Kim Sui Dr. Kishwen Kanna Yoga Ratnam Mr Mohd Ruhaizie Riyadzi</p>

NO	TEAM	DUTIES	OFFICERS
		<ol style="list-style-type: none"> 3. Coordinating back-to-back translation activities of questionnaires and pre-testing 4. Documenting all information and results from questionnaires development activities: <ul style="list-style-type: none"> • Back-to-back translation • Validation and compatibility with research instruments, • Pre-testing/cognitive debriefing 5. Providing manuals and SOPs for activities related to the questionnaire's development process and pre-testing. 6. Collecting and reviewing finalized questionnaires/instruments according to the format for use in the NHMS 2023 survey. 	
3.	Data Collection and Operations	<p>Mapping and Inventory:</p> <ol style="list-style-type: none"> 1. Managing the list of maps and inventories for selected localities for NHMS 2023. 2. Reviewing documents related to maps and inventories received from the Department of Statistics Malaysia (DOSM) to avoid identification duplication. <p>GIS Mapping:</p> <ol style="list-style-type: none"> 1. Providing GIS mapping for data collection in the field. <p>Pilot and Data Collection Operations:</p> <ol style="list-style-type: none"> 1. Documenting information and results from pilot study. 2. Providing manuals and SOPs for activities related to pilot study and data collection processes. 3. Coordinating the planning of field data collection activities based on the sampling plan and distribution of enumeration blocks (EBs) with appointed field supervisors. 4. Reviewing the movement plan of research groups in the field according to the specified time frame. 5. Providing manuals and forms for data collection activities. 6. Assisting in monitoring field data collection activities with the DPQ data collection monitoring group. 7. Providing a checklist of equipment to be used by the field groups. 8. Managing the distribution of relevant pamphlets and publicity materials for data collection activities before the start of data collection. 9. Providing training materials for data collectors. 10. Coordinating the planning of field data collection activities based on the sampling plan and distribution of EBs with appointed field supervisors. 	<p>Ms. Hamizatul Akmal Abd Hamid Ms. Nursyahirah Ibrahim</p> <p>Mr. Mohd Hazrin Hashim</p> <p>Mr. Faizul Akmal Abdul Rahim</p>

NO	TEAM	DUTIES	OFFICERS
4.	Method and Data Analysis	<p>Before data collection:</p> <ol style="list-style-type: none"> 1. Reviewing dummy tables provided by module leaders to align with research objectives 2. Assisting module leaders in conducting data analysis according to objectives and dummy tables 3. Reviewing syntax for data analysis purposes 4. Providing sampling weights for complex samples data analysis 5. Monitoring data analysis by each module leader 6. Reviewing and verifying the results of data analysis for report preparation purposes 7. Providing a data dictionary and final dataset for all modules. <p>After data collection:</p> <ol style="list-style-type: none"> 1. Planning data processing activities. 2. Downloading data from the server and monitoring data received on the server. 3. Conducting periodic QC checks, data verification, and data cleaning. 4. Reporting successful data achievement status on the server during CCT meetings. 5. Downloading data from the server as daily data backups throughout the data collection phase. 6. Providing processed data ready for analysis after data cleaning. 	<p>Dr. Muhammad Fadhli Mohd Yusoff Ms. Hamizatul Akmal Abd Hamid Ms. Norhafizah Sahril Ms. Nursyahirah Ibrahim</p> <p>Dr. Muhammad Fadhli Mohd Yusoff Ms. Hamizatul Akmal Abd Hamid Ms. Norhafizah Sahril Ms. Nursyahirah Ibrahim Ms. Nurdiyana Farhana Mat Tamizi</p>
5.	Data Processing and Quality	<p>REDCap System (Before, during and after data collection):</p> <ol style="list-style-type: none"> 1. Providing a list of variables for the development of the NHMS 2023 system. 2. Developing modules for NHMS 2023 within the REDCap system software. 3. Providing advisory services regarding question structure and data observation methods to module leaders. 4. Reviewing codebook dictionaries and list of variables received from module leaders. 5. Managing, reviewing, and operating the NHMS 2023 system during the pilot study session. 6. Monitoring the operation of the REDCap system to ensure smooth functioning. 7. Conducting troubleshooting of the system during the study implementation. 8. Documenting all information from module development activities for data processing and quality. 	<p>Dr. Shubash Shander Ganapathy Mr. Mohd Ruhaizie Riyadzi Dr. Halizah Mat Rifin</p>

NO	TEAM	DUTIES	OFFICERS
		<p>Data Monitoring (During data collection):</p> <ol style="list-style-type: none"> 1. Providing a monitoring system for field data collection activities. 2. Reviewing field activity achievements and providing weekly reports on field activity achievements. 3. Reporting field activity achievements during CCT meetings. 4. Assisting the data manager in data quality control activities, including data verification. 5. Assisting the data manager in conducting first-stage data cleaning, which includes data cleaning for respondent IDs and basic socio-demographic information. 6. Assisting the data manager in providing data that has undergone the first-stage cleaning process for data analysis purposes. <p>Data Processing and Quality (During and after data collection):</p> <ol style="list-style-type: none"> 1. Monitor the data reception process (bundle) received from the data collection teams in the field according to guidelines. 2. Monitor data processing activities, especially verification of IDs and correctness of information received from the field. 3. Monitor the planning and data input activities into the system. 4. Conduct quality control (QC) on the input and verification of data into the system. 5. Ensure data entry is accurate and correct. 6. Monitor the preparation of processed data for reporting to the Data Processing Head, and ensure that the reported data aligns with the data received on the IKU server. 7. Prepare daily reports on the completed data. 8. Attend CCT meetings as required from time to time (DPQ Head). 	<p>Dr. Shubash Shander Ganapathy Dr. Chan Yee Mang Ms. Siti Nur Sharmiela Ayob</p> <p>Dr. Shubash Shander Ganapathy Dr. Tan Lee Ann Ms. Nuryn Imanina Kamarul Arifin</p>
6.	Central Field Supervisors (CFS)	<p>Before data collection:</p> <ol style="list-style-type: none"> 1. Assist in planning the modus operandi at the respective zone levels. 2. Provide briefings on NHMS 2023 at the state level within their respective zones. 3. Monitor Field Supervisors (FS) in preparation and movement planning. 4. Monitor FS in the provision of lodging for data collection activities. 	<p>Mr. Khairul Hasnan Amali Mr. Lim Kuang Kuay Ms. Hasimah Ismail Ms. S Maria Awaluddin Dr. Chong Zhuo Lin Ms. Nurul Huda Ibrahim</p>

NO	TEAM	DUTIES	OFFICERS
<p>During data collection:</p> <ol style="list-style-type: none"> 1. Acting as a liaison between the Principal Investigator and the state-level field data collection teams within his / her respective zone. 2. Monitoring activities and performance achievement of data collection as planned and scheduled. 3. Monitoring the achievement of targeted response rates. 4. Identifying problems for non-achievement and providing solutions to address non-achievement issues. 5. Obtaining feedback from field supervisors regarding data collection status and providing solutions for field issues or problems. 6. Reviewing and verifying online returns for field activity achievements. 7. Providing feedback and solutions for data-related issues from the server. 8. Monitoring equipment requirements and assisting field supervisors in ordering necessary field supplies. 9. Conducting field supervision to monitor teams randomly, resolving field issues, and monitoring team discipline, performance, and behavior to maintain the credibility of public servants and the NHMS. 10. Attending CCT meetings organised by NHMS 2023. <p>After data collection:</p> <ol style="list-style-type: none"> 1. Responsible for ensuring all equipment provided during data collection is accounted for and returned to the Operation Room. 2. Collect feedback on issues and experiences during the study from field supervisors for improvement purposes in the future. 			
7.	Operation Centre of Operation Room	<ol style="list-style-type: none"> 1. Identify a list of specific study objectives together with the Key Person and finalise the study questionnaire. 2. Conduct, collect, and document study data from literature review related to the topic/module with the research group members. 3. Brainstorm and list suitable questions to address the research objectives. 4. Commit and cooperate with the Key Person and research group members according to the topic/module. 5. Assist in analysing the research findings together with the Key Person and research group members. 6. Prepare discussion of the study findings with research group members. 	Dr. Halizah Mat Rifin Ms. Syafinaz Mohd Sallehuddin

NO	TEAM	DUTIES	OFFICERS
		<ol style="list-style-type: none"> 7. Prepare a report of the results of data analysis together with the Key Person. 8. Attend workshops organised throughout the implementation of the NHMS 2023 study (Questionnaire workshops, data analysis & preparation of technical reports on the study topic/module). 9. Attend and participate in seminars for disseminating the findings of the NHMS 2023 study. 	
8.	Publicity and Media	<ol style="list-style-type: none"> 1. Responsible for designing and printing publicity materials for NHMS 2023; including brochures, posters, banners, questionnaire booklets, code books, manuals, and media kits for field supervisors. 2. Responsible for coordinating publicity materials (e- publicity); NHMS website, KKM postmaster, social media graphics, and NHMS 2023 short videos. 3. Responsible for managing and coordinating the content of social media platforms (Instagram, Facebook, FB Live, TikTok) and the NHMS 2023 website. 4. Responsible for publicising NHMS 2023 through mainstream media involving print and electronic media: newspaper content, TV interviews, and radio slots. 5. Responsible for designing NHMS 2023 souvenir items and collateral materials. 6. Conducting community engagement activities in state zones to promote and provide information to local communities and relevant agencies about the NHMS 2023 study. 7. Involved in editorial/formatting and designing print materials for disseminating research findings, such as technical reports, research highlights, infographics, brochures, and fact sheets. 	<p>Mr. Mohd Amierul Fikri Mahmud Mr. Muhamad Naziran Hasni Junai Ms. Norhaslida Razali</p>

APPENDIX 8

Respondent Information Sheets, Consent and Assent Forms, NHMS 2023

RESPONDENT INFORMATION SHEET (18 YEARS AND ABOVE)

Title	: National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)
Principal Investigator	: Dr. Halizah Binti Mat Rifin Institute for Public Health, Ministry of Health Malaysia

Introduction

The Ministry of Health is conducting the National Health and Morbidity Survey 2023 this year. This leaflet will explain the details of this survey. It is important for you to understand why this survey is conducted and your involvement in it. Please take adequate time to read the information given before you decide to participate. If you have any questions or need more information, you may ask any data collectors from this survey. Once you understand the survey information and you wish to participate, you must sign a consent form which can be found on the last page of this information sheet. You will be informed if new relevant information pertaining to this survey becomes available. Your participation is voluntary and you may withdraw at any time. You have the option not to answer any of the questions or withdraw from any of the health examinations. Your refusal to participate or withdraw will not affect any medical or health benefit that is your right. This survey is fully sponsored by the Ministry of Health Malaysia and has been approved by the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia.

What is the purpose of the survey?

The purpose of this survey is to obtain information about the health of the people in Malaysia. This information will be reviewed and evaluated to improve the health services in our country. This survey will be carried out for 70 days involving around 21,000 respondents. The survey will take around 45 minutes to 1 hour to be completed.

What will happen if I decide to take part?

This survey will include:

A face to face interview for the following modules:

- Diabetes
- Hypertension
- Hypercholesterolaemia
- Physical Activity
- Smoking and Tobacco Use
- Health Screening
- Dietary Practices
- Disability
- Asthma (Adults)
- Asthma (Children)

Interviews are conducted with selected household members by the data collectors. The questions that will be asked are related to specific health issues. You need to give responses for the questions that have to be answered by individuals and also responses on behalf of children under your care.

Self-administered questionnaire (SAQ)

- The SAQ questionnaire will ask about sensitive information which are alcohol use and mental health.

Phone interview

- Healthcare demand

Clinical examination

- Clinical examination which consists of measurements of blood pressure, height, weight, waist circumferences and half-arm span (for all respondents aged 15 years and above) – for the non-communicable diseases module.

Blood sampling

- All respondents aged 18 years old and above will be recruited for blood collection. Blood sampling (with consent from respondents) via a finger prick test to check the level of cholesterol and sugar for the Non-communicable Diseases modules (high blood sugar and high blood cholesterol). The respondent needs to fast overnight for **at least 8 hours** prior to the blood taking procedure. The amount of blood needed for these purposes is less than one-tenth of a teaspoon. The finger will be pricked using a lancet. Then, the blood drop will be placed on the test strip of both machines measuring blood sugar and cholesterol. Test strips and lancets will only be used once. Only auto-disabling, single-use lancets will be used with this device. The lancets and the strips will be disposed properly into the sharp bin after the reading of the glucose and cholesterol levels are obtained. When the blood collection procedure is complete, pressure will be applied to the site to stop the bleeding using a clean cotton ball.

What are my responsibilities when taking part in this survey?

It is important that you answer all the questions asked by the data collectors as completely as possible. Participation in this survey will not incur any cost to you.

What are the potential risks and side effects of being in this survey?

Blood taking can cause discomfort but not everyone may experience it. You may feel pain or might get a bruise on the finger that is pricked. Fasting before blood taking can cause dizziness, headaches or stomach discomfort. If you feel unwell, you should tell the medical team immediately. No compensation will be given to the respondent as there are no expected expenses for treatment due to the survey procedures.

What are the benefits of being in this survey?

There are no immediate health benefits when you take part in this survey. However, the information obtained from this survey will be helpful to improve the health services in our country.

Will my medical information be kept private?

All your information obtained in this survey will be kept and handled in a confidential manner in accordance with applicable laws and/or regulations. When publishing or presenting the survey results, your identity will not be revealed. You will not be informed of the study findings.

What are the circumstances if your participation may be terminated?

The survey will be terminated or suspended if there is an unanticipated problem involving risks to you or others or if there are any serious incidents.

Who should I call if I have questions?

If you have any inquiries or should you require any further information about the survey, you can contact the Principal Investigator, Dr Halizah Binti Mat Rifin, at the National Institutes of Health, Institute for Public Health, Block B5 & B6, No. 1, Jalan Setia Murni U13/52, Seksyen U13, Setia Alam, 40170, Shah Alam, Selangor, at 03-33628720 or any officers at our operational room at the same address, at 03-33628787. If you have any questions regarding your rights as a respondent in this survey please contact: Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia, at 03-33628399/8398.

RESPONDENT CONSENT FORM (COPY FOR RESPONDENT)	
Title	: National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)
Principal Investigator	: Dr. Halizah Binti Mat Rifin
By signing below, I certify that [Please tick (√) in the box below]:	
1. I have been given oral and written information about the survey and I have read and understood all the information provided in this brochure.	<input type="checkbox"/>
2. I have had sufficient time to consider my participation in this survey and was given the opportunity to ask questions to clarify any doubts and all of my questions have been answered.	<input type="checkbox"/>
3. I understand that my participation is voluntary and I may withdraw from this survey at any time without giving any reason.	<input type="checkbox"/>
4. I understand the risks and benefits of this survey and I voluntarily consent to participate in the survey. I understand that I must follow the instructions related to my participation in this survey.	<input type="checkbox"/>
5. I understand that researchers and concerned parties have access to the information I provide while carrying out this survey. The confidentiality of all my personal information and data will be ensured.	<input type="checkbox"/>
6. I will receive a signed and dated copy of the respondent consent form.	<input type="checkbox"/>
Respondent :	
Signature / Left thumbprint:	I/C no or Birth Certificate no :
Name :	Date :
Researcher who conducts the process of signing the consent form :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :
Witness impartial / fair : (Required, if the respondent is illiterate and content of respondent information leaflets delivered orally to respondent) :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :

RESPONDENT CONSENT FORM (COPY FOR RESEARCHER)	
Title	: National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)
Principal Investigator	: Dr. Halizah Binti Mat Rifin
By signing below, I certify that [Please tick (√) in the box below]:	
1. I have been given oral and written information about the survey and I have read and understood all the information provided in this brochure.	<input type="checkbox"/>
2. I have had sufficient time to consider my participation in this survey and was given the opportunity to ask questions to clarify any doubts and all of my questions have been answered.	<input type="checkbox"/>
3. I understand that my participation is voluntary and I may withdraw from this survey at any time without giving any reason.	<input type="checkbox"/>
4. I understand the risks and benefits of this survey and I voluntarily consent to participate in the survey. I understand that I must follow the instructions related to my participation in this survey.	<input type="checkbox"/>
5. I understand that researchers and concerned parties have access to the information I provide while carrying out this survey. The confidentiality of all my personal information and data will be ensured.	<input type="checkbox"/>
6. I will receive a signed and dated copy of the respondent consent form.	<input type="checkbox"/>
Respondent :	
Signature / Left thumbprint:	I/C no or Birth Certificate no :
Name :	Date :
Researcher who conducts the process of signing the consent form :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :
Witness impartial / fair : (Required, if the respondent is illiterate and content of respondent information leaflets delivered orally to respondent) :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :

Figure 4: Respondent consent form

RESPONDENT INFORMATION SHEET (AGE 13 TO 17)
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Title : National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)
Principal Investigator : Dr. Halizah Binti Mat Rifin

What is a research survey?

A research survey allows us to learn new things. We will discover new things through this survey. This sheet provides information about the survey being conducted and the choice that you have as to whether you want to participate or not. You can ask questions at any time.

What is the purpose of the survey?

The purpose of this survey is to obtain information related to the health status of the population in Malaysia. This information will be reviewed and evaluated in order to improve the health services in our country.

What will happen if you decide to join the survey?

You will have to respond to the survey questions that have to be answered by you or your parents/guardian on your behalf. You will also be required to partake in a clinical examination, which consists of measurements of height, weight and also the measurement of blood pressure for those aged 15 years old and above. This survey will take around 45 minutes to 1 hour.

What are the potential risks and side effects of being in this survey?

None.

What are the benefits of being in this survey?

There will be no immediate health benefits if you take part in this survey. However, all the information obtained from this survey may be helpful in order to improve the health services in our country.

Do my parents/guardian know about this survey?

This survey has been explained to your parents and they have given consent for you to be in it. You can still discuss with them before you decide to join.

Who will see the information collected about you?

The information collected about you during this survey will be kept confidential. Nobody will know except the people who conduct this survey. The researchers will not tell your friends or anyone else.

Do you have to be in the survey?

Your participation in this survey is on a voluntary basis. You do not have to participate in this survey if you do not want to. No one will be dissatisfied or upset. If you do not want to participate in this survey, you just need to inform us. You can also take more time to think about your participation in this survey.

Other information about the survey

If you decide to participate in this survey, please fill out the assent form. You can change your mind and stop being part of it at any time. All you have to do is inform the person in charge. You will be informed if new information regarding this survey becomes available. You have the option not to answer any of the questions or withdraw from the health examination if you choose to do so. Your refusal to participate or withdraw will not affect any medical or health benefit that is certainly your right. This survey is fully sponsored by the Ministry of Health and has been approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia.

Who should you contact if you have any questions?

If you have any inquiries or need further information about this survey, you can contact the Principal Investigator, Dr Halizah Binti Mat Rifin, at the National Institutes of Health, Institute for Public Health, Block B5 & B6, No. 1, Jalan Setia Murni U13/52, Seksyen U13, Setia Alam, 40170, Shah Alam, Selangor, at 03-33628720 or any officers at our Operational Room at the same address, at 03-33628787. If you have any questions regarding your rights as a respondent in this survey please contact the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia, at 03-3362 8399/8398.

RESPONDENT ASSENT FORM (COPY FOR RESPONDENT)

Title : National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)

Principal Investigator : Dr. Halizah Binti Mat Rifin

By signing below, I certify that:

1. I have been given information about the survey and understand the information provided in this brochure.	<input type="checkbox"/>
2. I have had sufficient time to consider my participation in this survey and was given the opportunity to ask questions that I do not understand.	<input type="checkbox"/>
3. My participation is voluntary and I may withdraw from this survey at any time.	<input type="checkbox"/>
4. I must follow the researchers' instructions associated with my participation in this survey.	<input type="checkbox"/>
5. I understand that the confidentiality of all personal information and data will be ensured.	<input type="checkbox"/>
6. I or my parents will receive a copy of the subject information and assent form.	<input type="checkbox"/>

Respondent :

Signature / Left thumbprint : I/C no or Birth Certificate no :

Name : Date :

Researcher who conducts the process of signing the assent form :

Signature / Left thumbprint : I/C no or Birth Certificate no :

Name : Date :

Witness (Parents / Guardian) :

Signature / Left thumbprint : I/C no or Birth Certificate no :

Name : Date :

RESPONDENT ASSENT FORM (COPY FOR RESEARCHER)

Title : National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)

Principal Investigator : Dr. Halizah Binti Mat Rifin

By signing below, I certify that:

1. I have been given information about the survey and understand the information provided in this brochure.	<input type="checkbox"/>
2. I have had sufficient time to consider my participation in this survey and was given the opportunity to ask questions that I do not understand.	<input type="checkbox"/>
3. My participation is voluntary and I may withdraw from this survey at any time.	<input type="checkbox"/>
4. I must follow the researchers' instructions associated with my participation in this survey.	<input type="checkbox"/>
5. I understand that the confidentiality of all personal information and data will be ensured.	<input type="checkbox"/>
6. I or my parents will receive a copy of the subject information and assent form.	<input type="checkbox"/>

Respondent :

Signature / Left thumb print : I/C no or Birth Certificate no :

Name : Date :

Researcher who conduct the process of signing the assent form :

Signature / Left thumbprint : I/C no or Birth Certificate no :

Name : Date :

Witness (Parents / Guardian) :

Signature / Left thumbprint : I/C no or Birth Certificate no :

Name : Date :

Figure 5: Respondent information sheet (13 to 17 years and above)

RESPONDENT INFORMATION SHEET (AGE 5 TO 12)

Title : National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)
Principal Investigator : Dr. Halizah Binti Mat Rifin

What is a research survey?

A research survey allows us to learn new things. We will discover new things through this survey. This sheet provides information about the survey being conducted and the choice that you have as to whether you want to participate or not. You can ask questions at any time.

Why are we doing this survey?

We are doing this survey to obtain information related to the health of the population in Malaysia. This information is important to improve the health services in our country.

What would happen to you if you joined the survey?

If you decide to participate in this survey, we would ask you to do the following:

A person from the research team would ask you or your parents/guardian some questions. Then you or your parents/guardian would provide us with the answers to the questions asked.

This survey will take around 45 minutes to 1 hour.

Could bad things happen if I joined this research?

No.

Could the research benefit me?

This survey will not benefit you. However, we hope to learn something from this survey and one day it could help other children.

Do your parents/guardian know about this survey?

An explanation about this survey has been given to your parents/guardian whose consent is required for your participation in this survey. You can discuss with them before deciding to participate in this survey.

Who will see the information collected about you?

The information that has been collected about you during this survey will be kept safe. No one will know except the researchers conducting the survey. The researchers will not disclose your information to your friends or anyone else.

Do you have to be in the survey?

Your participation in this survey is totally optional. It is okay if you refuse to participate in this survey. No one will be disappointed or angry. You just have to tell us if you do not want to be in this survey. You can also take your time to think whether you want to participate in this survey or not.

What else should you know about this survey?

Please fill out the assent form if you decide to participate in this survey after our explanation. It is also okay to agree now but change your mind later. You may withdraw from the survey at any time. If you want to stop, please inform the person in charge. Take your time to make a choice. Even if you have obtained parental/guardian permission to participate in this survey, you may still stop participating in this survey. You have the option not to answer any of the questions or withdraw from the health examination if you choose to do so. Your refusal to participate or withdraw will not affect any medical or health benefit which is certainly your right. This survey is fully sponsored by the Ministry of Health and has been approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia.

Do you have any questions?

You can ask us any questions or request further information about this survey at any time. You can contact our research team member or Principal Investigator, Dr. Halizah Binti Mat Rifin, at the National Institutes of Health, Institute for Public Health, Block B5 & B6, No. 1, Jalan Setia Murni U13/52, Seksyen U13, Setia Alam, 40170, Shah Alam, Selangor, at 03-33628720 or any officers at our Operational Room at the same address, at 03-33628787. If you have any questions regarding your rights as a respondent in this survey, please contact the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia, at 03-3362 8399/8398.

RESPONDENT ASSENT FORM (COPY FOR PARENTS/GUARDIAN)	
Title	: National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)
Principal investigator	: Dr. Halizah Binti Mat Rifin
By signing below, I certify that:	
<ol style="list-style-type: none"> 1. I have been given information about the survey and understand the information provided in this brochure. 2. I have had sufficient time to consider my participation in this survey and was given the opportunity to ask questions and my questions were answered well. 3. My participation is voluntary and I may withdraw from this survey at any time. 4. I must follow the researchers' instructions associated with my participation in this survey. 5. I understand that the confidentiality of all my personal information and data will be ensured. 6. I or my parents will receive a copy of the subject information and assent form. 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Respondent :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :
Researcher who conducts the process of signing the assent form :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :
Witness (Parents/Guardian) :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :

RESPONDENT ASSENT FORM (COPY FOR RESEARCHER)	
Title	: National Health and Morbidity Survey 2023 (Non-communicable Diseases and Healthcare Demand)
Principal investigator	: Dr. Halizah Binti Mat Rifin
By signing below, I certify that:	
<ol style="list-style-type: none"> 1. I have been given information about the survey and understand the information provided in this brochure. 2. I have had sufficient time to consider my participation in this survey and was given the opportunity to ask questions and my questions were answered well. 3. My participation is voluntary and I may withdraw from this survey at any time. 4. I must follow the researchers' instructions associated with my participation in this survey. 5. I understand that the confidentiality of all my personal information and data will be ensured. 6. I or my parents will receive a copy of the subject information and assent form. 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Respondent :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :
Researcher who conducts the process of signing the assent form :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :
Witness (Parents/Guardian) :	
Signature / Left thumbprint :	I/C no or Birth Certificate no :
Name :	Date :

Figure 6: Respondent information sheet (5 to 12 years and above)

APPENDIX 9 Questionnaires, NHMS 2023



TINJAUAN KEBANGSAAN KESIHATAN DAN MORBIDITI 2023
NATIONAL HEALTH AND MORBIDITY SURVEY 2023

PENYAKIT TIDAK BERJANGKIT & PERMINTAAN JAGAAN KESIHATAN
NON-COMMUNICABLE DISEASE & HEALTHCARE DEMAND

BUKU SOAL SELIDIK DAN MANUAL
QUESTIONNAIRE AND MANUAL BOOK

INSTITUT KESIHATAN UMUM
INSTITUTE FOR PUBLIC HEALTH
KEMENTERIAN KESIHATAN MALAYSIA
MINISTRY OF HEALTH MALAYSIA

ISI KANDUNGAN		
Modul	Kandungan	Muka Surat
BUKU SOAL SELIDIK PENYAKIT TIDAK BERJANGKIT & PERMINTAAN JAGAAN KESIHATAN		
Temuramah secara bersemuka / Face to face interview		
	Maklumat Isi Rumah / <i>Household Particulars</i>	5
	Jadual Isi Rumah / <i>Household Roster</i>	7
A1	Isi rumah / <i>Household</i>	8
A2	Sosiodemografi / <i>Sociodemographic</i>	8
B	Kencing Manis / <i>Diabetes</i>	12
C	Tekanan Darah Tinggi / <i>Hypertension</i>	14
D	Paras Kolesterol Tinggi / <i>Hypercholesterolaemia</i>	16
E	Aktiviti Fizikal / <i>Physical Activity</i>	18
F	Merokok dan Penggunaan Tembakau / <i>Smoking and Tobacco Use</i>	22
G	Saringan Kesihatan / <i>Health Screening</i>	25
H	Amalan Pemakanan / <i>Dietary Practices</i>	28
I	Ketidakupayaan / <i>Disability</i>	29
J	Asma (Dewasa) / <i>Asthma (Adults)</i>	31
KA	Asma (Kanak-kanak berumur 6-12 tahun) / <i>Asthma (Children aged 6-12 years old)</i>	33
KB	Asma (Kanak-kanak berumur 13-17 tahun) / <i>Asthma (Children aged 13-17 years old)</i>	34
L1	Antropometri / <i>Anthropometric</i>	35
L2	Pemeriksaan Tekanan Darah / <i>Blood Pressure Examination</i>	37
L3	Pemeriksaan Biokimia / <i>Biochemistry Examination</i>	38
Soalan Penilaian Kendiri / Self-Administered Questionnaire (SAQ)		
N	Alkohol-AUDIT / <i>AUDIT-Alcohol</i>	42
O	Kesihatan Am / <i>General Health - PHQ-9</i>	48
P	Kesihatan Am (Kanak-kanak) / <i>General Health (Children)</i>	50
Temuramah menerusi telefon / Computer-Assisted Telephone Interviewing (CATI)		
Q	Permintaan Jagaan Kesihatan / <i>Healthcare Demand</i>	
	QA - Penilaian Kesihatan Kendiri / <i>Self-rated Health</i>	53
	QB - Kesihatan Umum & Penyakit / <i>General Health & Illness</i>	53
	QC - Jagaan Kesihatan Pesakit Luar, Jagaan Kesihatan Mulut atau Gigi & Jagaan Kesihatan Pesakit Dalam / <i>Out-patient Care, Dental Care & Inpatient Care</i>	54
	QD - Pemeriksaan Kesihatan / <i>Medical Check-up</i>	59
	QE - Perkhidmatan Jagaan Kesihatan Atas Talian / <i>Online Healthcare Services</i>	59
	QF - Halangan Mendapatkan Jagaan Kesihatan / <i>Barriers to Get Healthcare</i>	60
	QG - Makluman Diagnosa Kanak-Kanak yang Sakit / <i>Informed of Sick Child's Diagnosis</i>	60

(UNTUK DIISI OLEH PENEMURAMAH)	
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Negeri [2 Digit] DP [2 Digit] DB [3 Digit] BP [3 Digit] Strata [1 Digit] UB [3 Digit] TK [3 Digit] IR [2 Digit] IDV [2 Digit]	
NAMA PEMBANTU PENYELIDIK	
KOORDINAT LOKASI GEOGRAFI	i. Latitud <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ii. Longitud <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
TARIKH TEMURAMAH	<input type="text"/> <input type="text"/> Haribulan <input type="text"/> <input type="text"/> Bulan <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Tahun
MASA TEMURAMAH	<input type="text"/> <input type="text"/> Jam <input type="text"/> <input type="text"/> Minit
STATUS TEMPAT KEDIAMAN	<input type="checkbox"/> Berjaya <input type="checkbox"/> Gagal Jika tempat kediaman gagal, nyatakan sebab gagal: <input type="checkbox"/> Tempat Kediaman (TK) Enggan <input type="checkbox"/> Tempat Kediaman (TK) Kosong <input type="checkbox"/> Tempat Kediaman (TK) Berkunci <input type="checkbox"/> Tempat Kediaman (TK) Roboh <input type="checkbox"/> Bukan Tempat Kediaman (TK) <input type="checkbox"/> Tempat Kediaman (TK) Tidak Ditemui <input type="checkbox"/> Tidak Layak (Semua penghuni tinggal di tempat kediaman (TK) tersebut kurang daripada 2 minggu)
STATUS TEMURAMAH INDIVIDU	Adakah responden berjaya ditemuramah? <input type="checkbox"/> Ya <input type="checkbox"/> Tidak Jika responden tidak berjaya ditemuramah, apakah sebabnya? <input type="checkbox"/> Enggan <input type="checkbox"/> Tiada di rumah sepanjang pengumpulan data dijalankan <input type="checkbox"/> Masalah bahasa <input type="checkbox"/> Masalah kesihatan <input type="checkbox"/> Lain-lain, sila nyatakan:

TEMURAMAH MELALUI
TELEFON

Adakah responden bersetuju untuk ditemuramah melalui telefon untuk NHMS 2023?

Ya

Tidak

Jika ya, sila isikan maklumat dibawah:

Nama responden :

Bilakah waktu yang sesuai untuk responden dihubungi? (masa/hari/tarikh)

Masa :

Hari :

Tarikh :

No. telefon yang boleh dihubungi :

Bahasa yang dipilih untuk ditemubual :

A: MAKLUMAT ISI RUMAH / HOUSEHOLD PARTICULARS		
[PENEMURAMAH: Maklumat isi rumah ini perlu diperolehi daripada ketua isi rumah atau orang yang paling mengetahui tentang isi rumah. Tentukan terlebih dahulu orang yang paling mengetahui tentang isi rumah]		
<p>Saya akan bertanya beberapa soalan mengenai ahli isi rumah anda. Ahli isi rumah adalah mereka yang tinggal di tempat kediaman ini, berkongsi peralatan dan kemudahan di rumah, makan bersama dan telah tinggal sekurang-kurangnya 2 minggu dari tarikh temuduga.</p> <p><i>I would like to ask you a few questions about your household members. Household members are those who live here, share facilities, eat together, and live here for at least 2 weeks from the date of interview.</i></p>		
Soalan untuk diisi oleh penemuramah: Pilih SATU jawapan sahaja.		
A01	Siapakah yang telah menjawab borang soal selidik ini? <i>Who answered this questionnaire?</i>	1. Ketua isi rumah atau orang yang paling mengetahui perbelanjaan isi rumah <i>The head of household or the person who knows the household's expenses the most</i> 2. Ahli isi rumah lain <i>Another household member ... Sila ke A20</i>
A02	A02	Berapakah bilangan ahli isi rumah anda? <i>How many people are there in your household?</i>
	A02 A-D	Saya perlukan maklumat tentang nama, jantina, umur dan taraf perkahwinan setiap ahli isi rumah ini. <i>I would like to know the name, sex, age and marital status of each household member.</i>
	A02E	Siapakah ketua isi rumah ini? <i>Who is the head of this household?</i> [PENEMURAMAH : Ketua isi rumah adalah orang yang paling berpengaruh dan yang paling banyak membuat keputusan untuk isi rumah ini]
	Saya perlukan maklumat mengenai hubungan setiap ahli isi rumah dengan ... [bacakan nama ketua isi rumah]. <i>I would like to know the relationship of each household member to ... [read the name of the head of household].</i>	[PENEMURAMAH : Rujuk Kod Nombor untuk status hubungan dan tuliskan pada kolom E bagi setiap ahli isi rumah]

JADUAL ISI RUMAH / HOUSEHOLD ROSTER

Jadual isi rumah perlu diisi oleh pengumpul data. Perkara yang perlu dicatatkan:

Household roster needs to be filled by data collectors. Things to note:

- A Sila isikan nama ahli isi rumah. *Please fill in the name of household members.*
- B Sila nyatakan jantina individu tersebut (L=Lelaki, P=Perempuan). *Please state the gender of the individuals.*
- C Sila catatkan umur (tahun genap) individu tersebut. *Please note down the age (even year) of the individuals.*
- D Sila nyatakan taraf perkahwinan individu tersebut mengikut nombor taraf perkahwinan yang tertera dibawah. *Please state the marital status of the individuals according to number of marital status stated below.*
- E Sila nyatakan hubungan dengan ketua isi rumah mengikut nombor hubungan dengan ketua isi rumah yang tertera dibawah. *Please state the relationship with the head of household according to number of relationships with the head of household stated below.*
- F Sila tandakan (✓) jika layak untuk temubual. *Please tick (✓) if eligible for interview.*
- G Sila nyatakan jenis soalan isian sendiri mengikut nombor modul yang tertera dibawah. *Please state the type of self-administered questionnaire (SAQ) according to number of modules stated below.*
- H Sila tandakan (✓) pada ruangan 'Darah Kapilari' jika responden layak untuk pengambilan sampel darah. *Please tick (✓) in the 'Blood Capillary' column if the respondent is eligible for blood sampling.*
- I Sila tandakan (✓) pada ruangan tersebut jika responden layak untuk pengambilan sampel darah untuk kajian Sindrom Metabolik dan Penyakit Hati Berlemak Berkaitan Disfungsi Metabolisma. *Please tick (✓) in the column if the respondent is eligible for blood sampling for the sub-study on Metabolic Syndrome and Metabolic Dysfunction-Associated Fatty Liver Disease.*
- J Sila tandakan (✓) pada ruangan 'Setuju untuk CATI' jika responden bersetuju untuk temuramah menerusi telefon bagi menjawab modul Permintaan Jagaan Kesihatan. *Please tick (✓) in the column if the respondent agrees for a phone interview to answer the Healthcare Demand module.*

A1: ISI RUMAH / <i>HOUSEHOLD</i>		
A03	Jenis rumah <i>House type</i>	<ol style="list-style-type: none"> 1. Rumah sebuah / banglo <i>Single house / bungalow</i> 2. Rumah berkembar <i>Semi-detached house</i> 3. Rumah teres setingkat <i>Single storey terrace house</i> 4. Rumah teres dua tingkat atau lebih <i>Double or more storey terrace house</i> 5. Kondominium / pangsapuri <i>Condominium</i> 6. Rumah pangsa / flat <i>Flat</i> 7. Rumah kampung <i>Village house</i> 8. Rumah kedai <i>Shop house</i> 9. Rumah Panjang <i>Long house</i> 10. Rumah bot <i>Boat house</i> 11. Rumah setinggan <i>Squatter</i>
		(-7) TT (-9) EJ

A2: SOSIODEMOGRAFI / <i>SOCIODEMOGRAPHIC</i>																		
Soalan untuk diisi oleh penemuramah: Pilih SATU jawapan sahaja.																		
A20	Siapakah yang telah menjawab borang soal selidik ini? <i>Who answered this questionnaire?</i>	<ol style="list-style-type: none"> 1. Ahli isi rumah sendiri <i>Household member</i> 2. Ahli isi rumah dibantu oleh penterjemah (boleh jadi sesiapa sahaja) <i>Household member with the help of a translator (Can be anyone)</i> 3. Proksi (bagi pihak ahli isi rumah) <i>Proxy (on behalf of the household member)</i> 4. Proksi dengan bantuan penterjemah <i>Proxy (with the help of a translator)</i> 																
A21	Nama ahli isi rumah: <i>Name of household member:</i>																	
A22	Apakah jantina anda? <i>What is your gender?</i>	<ol style="list-style-type: none"> 1. Lelaki <i>Male</i> 2. Perempuan <i>Female</i> 																
		(-7) TT (-9) EJ																
A23	Apakah hubungan anda dengan... (nama ketua isi rumah)? <i>What is your relationship with... (name of head of household)?</i>	<ol style="list-style-type: none"> 1. Ketua isi rumah (KIR) <i>Head of Household</i> 2. Suami atau isteri / pasangan <i>Husband or wife / spouse</i> 3. Ibu bapa <i>Parent</i> 4. Anak kepada ketua isi rumah <i>Child of the head of household</i> 5. Datuk / nenek atau moyang <i>Grand-parent or great-grandparent</i> 6. Cucu atau cicit <i>Grandchild or great-grandchild</i> 7. Adik-beradik <i>Siblings</i> 8. Mertua <i>Parent-in-law</i> 9. Menantu <i>Son- or Daughter in-law</i> 10. Ipar-Duai <i>Brother- or Sister-in-law</i> 11. Saudara-mara lain <i>Other relatives</i> 12. Kawan <i>Friend</i> 13. Pekerja (pembantu rumah, tukang kebun, pemandu, lain-lain) <i>Workers (live-in housemaid, gardener, driver, others)</i> 14. Lain-lain, <i>Others,</i> <ol style="list-style-type: none"> a. Sila nyatakan: <i>Please specify:</i> 																
		(-7) TT (-9) EJ																
A24	Bila tarikh lahir anda? <i>When is your birth date?</i>	<table style="width: 100%; text-align: center;"> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>D</td> <td>D</td> <td>M</td> <td>M</td> <td>Y</td> <td>Y</td> <td>Y</td> <td>Y</td> </tr> </table>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	D	D	M	M	Y	Y	Y	Y
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D	D	M	M	Y	Y	Y	Y											
[PENEMURAMAH: Sekiranya 'TT' tuliskan '01' untuk hari, '07' untuk bulan, '2033' untuk tahun]																		
A25	Berapakah umur anda? <i>How old are you?</i>	<table style="width: 100%;"> <tr> <td style="width: 50px;"><input type="text"/></td> <td>Tahun genap</td> </tr> </table>	<input type="text"/>	Tahun genap														
<input type="text"/>	Tahun genap																	
		(-7) TT (-9) EJ																

A26	Apakah nombor kad pengenalan anda? <i>What is your identification card number?</i>	<div style="border: 1px solid black; width: 250px; height: 20px; margin-bottom: 10px;"></div> No. Kad Pengenalan Baru / MyKid <i>New Identification Card / MyKid No.</i> (Untuk No. Kad Pengenalan-isikan tanpa ‘-’) <div style="border: 1px solid black; width: 250px; height: 20px; margin-bottom: 10px;"></div> No. Passport <i>Passport No.</i> <div style="border: 1px solid black; width: 250px; height: 20px; margin-bottom: 10px;"></div> No. Kad Pengenalan lain (Tentera / Polis / Sijil lahir / Lain-lain) <i>Other identification card no. (Army / Police / Birth cert / Others)</i> (-7) TT (-9) EJ
[PERINGATAN: Pastikan nombor kad pengenalan betul]		
A27	Apakah bangsa anda? <i>What is your ethnicity?</i>	<ol style="list-style-type: none"> 1. Melayu <i>Malay</i> 2. Cina <i>Chinese</i> 3. India <i>Indian</i> 4. Orang Asli Semenanjung <i>Aborigines</i> 5. Bumiputera Sabah, <i>Bumiputera of Sabah</i>, <ol style="list-style-type: none"> a. Sila nyatakan kod <i>Please specify code:</i> [Sila rujuk buku kod <i>Please refer code book</i>] 6. Bumiputera Sarawak, <i>Bumiputera of Sarawak</i>, <ol style="list-style-type: none"> a. Sila nyatakan kod <i>Please specify code:</i> [Sila rujuk buku kod <i>Please refer code book</i>] 7. Lain-lain, <i>Others</i>, <ol style="list-style-type: none"> a. Sila nyatakan: <i>Please specify:</i> (-7) TT (-9) EJ
A28	Apakah taraf kewarganegaraan anda? <i>What is your citizenship status?</i>	<ol style="list-style-type: none"> 1. Warganegara Malaysia <i>Malaysian citizen</i> 2. Pemastautin tetap <i>Permanent resident of Malaysia</i> 3. Bukan warganegara Malaysia <i>Non Malaysian citizen</i> (-7) TT (-9) EJ
A29	Apakah taraf perkahwinan anda? <i>What is your marital status?</i>	<ol style="list-style-type: none"> 1. Tidak pernah berkahwin <i>Never married</i> 2. Berkahwin <i>Married</i> 3. Berpisah <i>Separated</i> 4. Janda / Duda <i>Divorcee</i> 5. Balu (Kematian pasangan) <i>Widowed</i> 6. Tinggal bersama pasangan <i>Living with partner</i> (-7) TT (-9) EJ
A30	Apakah tahap pendidikan tertinggi anda? <i>What is your highest education level?</i>	<ol style="list-style-type: none"> 1. Tidak pernah bersekolah <i>Never attended school</i> 2. Tidak habis sekolah rendah <i>Did not complete primary school</i> 3. Tamat darjah 6 <i>Completed standard 6</i> 4. Tamat tingkatan 3 <i>Completed form 3</i> 5. Tamat tingkatan 5 <i>Completed form 5</i> 6. Tamat tingkatan 6 / sijil / diploma <i>Completed form 6 / certificate / diploma</i> 7. Tamat pengajian peringkat sarjana muda <i>Completed Bachelor's degree</i> 8. Tamat pengajian peringkat sarjana <i>Completed Master's degree</i> 9. Tamat pengajian peringkat kedoktoran (PhD) <i>Completed Doctoral Degree</i> 10. Lain-Lain, <i>Others</i>, <ol style="list-style-type: none"> a. Sila nyatakan: <i>Please specify:</i> (-7) TT (-9) EJ

A31	Adakah anda bekerja? <i>Are you working?</i>	1. Ya Yes ... Sila ke A31a 2. Tidak No ... Sila ke A31b (-7) TT (-9) EJ ... Sila ke A31a
A31a	Adakah anda bekerja dalam tempoh 1 bulan yang lepas , daripada 2023, hingga hari ini? <i>Were you working in the last 1 month, from 2023, till today?</i>	1. Ya, dengan bayaran Yes, with payment ... Sila ke A31c 2. Ya, tanpa bayaran Yes, without payment ... Sila ke A31c 3. Tidak No ... Sila ke A31b (-7) TT (-9) EJ ... Sila ke A31b
[PERINGATAN: Tanyakan samada menerima bayaran]		
A31b	Jika tidak, kenapa? <i>If not, why?</i> Pilih satu jawapan UTAMA sahaja. <i>Choose only one MAIN answer.</i>	1. Masalah kesihatan / kurang upaya Health problems / disabled 2. Menjaga pesakit / orang kurang upaya / orang tua Care for the sick / disabled / elderly 3. Menjaga rumah, anak-anak, cucu, ahli keluarga lain Homemaker / care for children, grandchildren, other family members 4. Sedang mencari kerja Job-seeking 5. Mempunyai pekerjaan tapi tidak bekerja (contohnya pekerja bermusim) Have a job, but not working (such as seasonal worker) 6. Menganggur Unemployed 7. Pelajar Student 8. Pesara Pensioner 9. Tua Old age 10. Kanak-kanak tidak bersekolah Child not at school 11. Lain-lain Others a. Sila nyatakan: Please specify: (-7) TT (-9) EJ Sila ke A32 selepas soalan ini
A31c	Adakah anda.... <i>Are you a....</i> Pilih satu jawapan UTAMA sahaja. <i>Choose only one MAIN answer.</i>	1. Majikan Employer 2. Pekerja kerajaan Government employee 3. Pekerja separa kerajaan Semi-government employee 4. Pekerja swasta Private employee 5. Bekerja sendiri (contohnya pembeli-belah peribadi, pekerja bebas) Self-employed (such as personal shopper, freelancer) 6. Pekerja tanpa gaji Unpaid worker 7. Pekerja keluarga tanpa gaji Unpaid family worker 8. Lain-lain Others a. Sila nyatakan: Please specify: (-7) TT (-9) EJ
A32	Berapakah purata pendapatan kasar bulanan anda, dari segi... <i>What is your average personal gross monthly income, in terms of...</i>	
A32a	Pendapatan daripada bekerja (upah / gaji) atau pencen <i>Income from work (wage / salary) or pension</i>	RM <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Sebulan Monthly Sekiranya TIADA pendapatan tuliskan '0' <i>Write '0' if no income received</i> (-7) TT (-9) EJ
A32b	Wang yang diterima daripada ahli isi rumah <i>Money received from household members</i>	RM <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Sebulan Monthly Sekiranya TIADA pendapatan tuliskan '0' <i>Write '0' if no income received</i> (-7) TT (-9) EJ

	<p>A32c Wang daripada sumber lain, contohnya daripada kutipan sewa aset, wang daripada ahli keluarga bukan isi rumah, biasiswa, kebajikan masyarakat / sosial, Baitulmal, dividen dan lain-lain <i>Money from other sources, such as from asset rental collection, non-household family members, scholarship, community / social welfare, Baitulmal, dividends and others</i></p>	<p>RM <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>Sekiranya TIADA pendapatan tuliskan '0' <i>Write '0' if no income received</i></p>	<p>Sebulan <i>Monthly</i></p> <p>(-7) TT (-9) EJ</p>
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MODUL B: KENCING MANIS / DIABETES		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE		
Bulatkan jawapan yang bersesuaian / <i>Please circle an appropriate answer.</i>		
Sekarang saya ingin bertanya mengenai kesihatan anda, terutamanya berkenaan kencing manis. <i>Now I would like to ask you about your health, particularly with regards to diabetes.</i>		
B01	Dalam tempoh 12 bulan yang lepas, pernahkah anda menjalani pemeriksaan paras gula dalam darah? <i>Have you ever had your blood sugar measured in the past 12 months?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
B02	Pernahkah anda diberitahu oleh doktor ataupun Penolong Pegawai Perubatan (PPP) bahawa anda menghidap penyakit kencing manis atau diabetes? <i>Have you ever been told by a doctor or an Assistant Medical Officer that you have diabetes?</i> Tidak termasuk kencing manis semasa hamil <i>Excluding gestational diabetes mellitus</i>	1. Ya / <i>Yes</i> ... Sila ke B03 2. Tidak / <i>No</i> ... Sila ke Modul C (-7) TT (-9) EJ ...Sila ke Modul C jika TT / EJ
B03	Jika Ya, bilakah anda diberitahu oleh doktor / PPP bahawa anda menghidap penyakit kencing manis atau diabetes? <i>If Yes, when were you told by a doctor or an Assistant Medical Officer that you have diabetes?</i>	1. <1 tahun / <i><1 year</i> ... Sila ke B04 2. ≥1 tahun / <i>≥1 year</i> ... Sila ke B03a (-7) TT (-9) EJ ... Sila ke B04 jika TT / EJ
B03a	Sudah berapa tahun anda menghidap kencing manis atau diabetes? (Contoh: 2 tahun) <i>How many years have you had diabetes? (Example: 2 years)</i>	Sila nyatakan / <i>Please state</i> <input type="text"/> Tahun / <i>Years</i> (-7) TT (-9) EJ
B04	Apakah jenis rawatan atau nasihat yang anda terima daripada doktor (atau anggota kesihatan lain) untuk mengawal penyakit kencing manis atau diabetes? <i>What kind of treatment or advice for the control of diabetes have you received from your doctor (or other health workers)?</i>	
B04a	Adakah anda mengambil insulin? <i>Have you been using insulin?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
B04b	Adakah anda mengambil ubat-ubatan dalam masa 2 minggu lepas? <i>Have you been consuming medications in the past 2 weeks?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
B04c	Adakah anda menerima nasihat diet khusus untuk penyakit kencing manis atau diabetes? <i>Have you received advice on diabetic diet?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
B04d	Adakah anda menerima nasihat untuk kurangkan berat badan? <i>Have you received advice to lose weight?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
B04e	Adakah anda menerima nasihat untuk mula bersenam atau lebihkan senaman? <i>Have you received advice to start or do more exercise?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
B05	Adakah anda mengambil apa-apa rawatan herba / tradisional untuk penyakit kencing manis atau diabetes anda? <i>Are you currently taking any herbal / traditional remedies for your diabetes?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ

B06	<p>Di manakah anda selalunya mendapatkan rawatan untuk penyakit kencing manis atau diabetes? <i>Where do you usually seek treatment for your diabetes?</i></p> <p>Pilih SATU jawapan sahaja <i>Choose ONE answer only</i></p>	<ol style="list-style-type: none"> Klinik kerajaan / <i>Government clinic</i> Klinik swasta / <i>Private clinic</i> Hospital kerajaan / <i>Government hospital</i> Hospital swasta / <i>Private hospital</i> Farmasi / <i>Pharmacy</i> Pengamal rawatan tradisional, herba dan komplementari / <i>Traditional, herbal and complementary medicine</i> Saya tidak mendapatkan sebarang rawatan / <i>I did not seek any treatment</i> <p>(-7) TT (-9) EJ</p>
B07	<p>Adakah anda mempunyai alat periksa gula sendiri di rumah? <i>Do you have your own blood sugar machine at home?</i></p>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No ...Sila ke B08</i> <p>(-7) TT (-9) EJ ...Sila ke B08 jika TT / EJ</p>
B07a	<p>Jika Ya, berapa kerap anda menggunakan alat tersebut? <i>If yes, how often do you use the machine?</i></p> <p>Jawab SATU pilihan sahaja <i>Answer ONE option only</i></p>	<p>___ hari dalam seminggu / <i>days in a week</i> ___ hari dalam sebulan / <i>days in a month</i> ___ tidak pernah ...Sila ke B08</p> <p>(-7) TT (-9) EJ ...Sila ke B08 jika TT / EJ</p>
B07b	<p>Pada hari anda menggunakan alat periksa gula, secara purata berapa kali dalam sehari anda menggunakannya? <i>On the days that you use the blood sugar machine, on average how many times in a day do you use it?</i></p>	<p>___ kali dalam sehari / <i>times in a day</i></p> <p>(-7) TT (-9) EJ</p>
B08	<p>Pernahkah mata anda diperiksa oleh doktor dengan menggunakan salah satu alat yang ditunjukkan dalam gambar rajah ini? Sila lihat kad B1. <i>Have your eyes been checked by a doctor using one of the equipments shown in these pictures? Please see card B1.</i></p>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No ...Sila ke B09</i> <p>(-7) TT (-9) EJ ...Sila ke B09 jika TT / EJ</p>
B08a	<p>Bilakah kali terakhir pemeriksaan itu dijalankan? (Contoh: 2 tahun) <i>When was the last examination done? (Example: 2 years)</i></p>	<p><input type="text"/> Bulan / <i>Months</i> <input type="text"/> Tahun / <i>Years</i></p> <p>(-7) TT (-9) EJ</p>
B09	<p>Pernahkah anda dirujuk ke Klinik Pakar Mata untuk masalah mata akibat kencing manis? <i>Have you been referred to an Eye Specialist Clinic for diabetic related eye complications?</i></p> <p>Definisi: Masalah mata akibat kencing manis merujuk kepada kerosakan lapisan tisu peka cahaya dalam mata (retina). Rawatan seperti laser, suntikan ubat ke dalam mata atau pembedahan retina / saraf mata diperlukan di Klinik Pakar Mata.</p>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No</i> <p>(-7) TT (-9) EJ</p>

MODUL C: TEKANAN DARAH TINGGI / HYPERTENSION		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 15 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 15 YEARS AND ABOVE		
Bulatkan jawapan yang bersesuaian / <i>Please circle an appropriate answer.</i>		
Sekarang saya ingin bertanya mengenai kesihatan anda, terutamanya berkenaan tekanan darah tinggi. <i>Now I would like to ask you about your health, particularly with regards to hypertension.</i>		
C01	Dalam tempoh 12 bulan yang lepas, pernahkah anda menjalani pemeriksaan tekanan darah? <i>Have you ever had your blood pressure measured in the past 12 months?</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
C02	Pernahkah anda diberitahu oleh doktor ataupun Penolong Pegawai Perubatan (PPP) bahawa tekanan darah anda adalah tinggi atau anda menghidap penyakit tekanan darah tinggi? <i>Have you ever been told by a doctor or an Assistant Medical Officer that you have raised blood pressure or hypertension?</i> Tidak termasuk semasa kehamilan <i>Excluding the period of pregnancy</i>	1. Ya / Yes ...Sila ke C03 2. Tidak / No ...Sila ke modul D (-7) TT (-9) EJ ...Sila ke modul D jika TT / EJ
C03	Jika Ya, bilakah anda diberitahu oleh doktor / PPP bahawa tekanan darah anda adalah tinggi atau anda menghidap penyakit tekanan darah tinggi? <i>If Yes, when were you told by a doctor or an Assistant Medical Officer that you have raised blood pressure or hypertension?</i>	1. <1 tahun / <1 year...Sila ke C04 2. ≥1 tahun / ≥1 year ...Sila ke C03a (-7) TT (-9) EJ ...Sila ke C04 jika TT / EJ
C03a	Sudah berapa tahun anda menghidap penyakit tekanan darah tinggi? (Contoh: 2 tahun) <i>How many years have you had hypertension? (Example: 2 years)</i>	Sila nyatakan / <i>Please state</i> <input type="text"/> Tahun / Years (-7) TT (-9) EJ
C04	Apakah jenis rawatan atau nasihat yang anda terima daripada doktor (atau anggota kesihatan lain) untuk mengawal tekanan darah tinggi? <i>What kind of treatment or advice for the control of high blood pressure or hypertension have you received from your doctor (or other health workers)?</i>	
C04a	Adakah anda mengambil ubat-ubatan sejak 2 minggu lepas? <i>Have you been consuming medications in the past 2 weeks?</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
C04b	Adakah anda menerima nasihat untuk kurangkan garam dalam makanan? <i>Have you received advice to reduce salt intake?</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
C04c	Adakah anda menerima nasihat untuk kurangkan berat badan? <i>Have you received advice to lose weight?</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
C04d	Adakah anda menerima nasihat untuk mula bersenam atau lebihkan senaman? <i>Have you received advice to start or to do more exercise?</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
C05	Adakah anda mengambil apa-apa rawatan herba / tradisional untuk penyakit darah tinggi anda? <i>Are you currently taking any herbal / traditional remedies for your high blood pressure or hypertension?</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ

C06	<p>Di manakah anda selalunya mendapat rawatan untuk penyakit darah tinggi? <i>Where do you usually seek treatment for your high blood pressure or hypertension?</i></p> <p>Pilih SATU jawapan sahaja <i>Choose ONE answer only</i></p>	<ol style="list-style-type: none"> Klinik kerajaan / <i>Government clinic</i> Klinik swasta / <i>Private clinic</i> Hospital kerajaan / <i>Government hospital</i> Hospital swasta / <i>Private hospital</i> Farmasi / <i>Pharmacy</i> Pengamal rawatan tradisional, herba dan komplementari / <i>Traditional, herbal and complementary medicine</i> Saya tidak mendapatkan sebarang rawatan / <i>I did not seek any treatment</i> <p>(-7) TT (-9) EJ</p>
C07	<p>Dalam tempoh 12 bulan yang lepas, adakah anda memeriksa tekanan darah anda atas inisiatif sendiri (selain daripada temujanji susulan di fasiliti kesihatan atau untuk apa-apa rawatan kesihatan lain)? <i>In the past 12 months, have you checked your blood pressure (apart from follow up appointments in healthcare facilities or other medical treatments) on your own initiative?</i></p>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No ...Sila ke C08</i> <p>(-7) TT (-9) EJ ...Sila ke C08 jika TT / EJ</p>
C07a	<p>Jika Ya, di manakah anda selalunya membuat pemeriksaan tekanan darah atas inisiatif sendiri? <i>If yes, where do you usually measure your blood pressure on your own initiative?</i></p> <p>Pilih SATU jawapan sahaja <i>Choose ONE answer only</i></p>	<ol style="list-style-type: none"> Klinik kerajaan / <i>Government clinic</i> Klinik swasta / <i>Private clinic</i> Hospital kerajaan / <i>Government hospital</i> Hospital swasta / <i>Private hospital</i> Farmasi / <i>Pharmacy</i> Rumah / <i>Home</i> Lain-lain / <i>Others</i> <p>(-7) TT (-9) EJ</p>
C08	<p>Adakah anda mempunyai alat mengukur tekanan darah sendiri di rumah? <i>Do you have your own blood pressure measurement machine at home?</i></p>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No ...Sila ke Modul D</i> <p>(-7) TT (-9) EJ ...Sila ke Modul D jika TT / EJ</p>
C08a	<p>Jika Ya, berapa kerap anda menggunakan alat tersebut? <i>If yes, how often do you use the blood pressure measurement machine?</i></p> <p>Jawab SATU pilihan sahaja <i>Answer ONE option only</i></p>	<p>... hari dalam seminggu / <i>days in a week</i> ... hari dalam sebulan / <i>days in a month</i> tidak pernah / <i>never ... Sila ke Modul D</i></p> <p>(-7) TT (-9) EJ ... Sila ke Modul D jika TT / EJ</p>
C08b	<p>Pada hari anda menggunakan alat mengukur tekanan darah, secara purata berapa kali dalam sehari anda menggunakannya? <i>On the days that you use the blood pressure machine, on average how many times in a day do you use it?</i></p>	<p>... kali dalam sehari / <i>times in a day</i></p> <p>(-7) TT (-9) EJ</p>

MODUL D: PARAS KOLESTEROL TINGGI / HYPERCHOLESTEROLAEMIA		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE		
Bulatkan jawapan yang bersesuaian / <i>Please circle an appropriate answer.</i>		
Sekarang saya ingin bertanya mengenai kesihatan anda, terutamanya berkenaan paras kolesterol yang tinggi. <i>Now I would like to ask you about your health, particularly with regards to high cholesterol.</i>		
D01	Dalam tempoh 12 bulan yang lepas, pernahkah anda menjalani pemeriksaan paras kolesterol dalam darah? <i>Have you ever had your blood cholesterol measured in the past 12 months?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
D02	Pernahkah anda diberitahu oleh doktor ataupun Penolong Pegawai Perubatan (PPP) bahawa paras kolesterol darah anda adalah tinggi? <i>Have you ever been told by a doctor or an Assistant Medical Officer that you have high cholesterol?</i>	1. Ya / <i>Yes</i> ... Sila ke D03 2. Tidak / <i>No</i> ... Sila ke modul E (-7) TT (-9) EJ ...Sila ke modul E jika TT / EJ
D03	Jika Ya, bilakah anda diberitahu oleh doktor / PPP bahawa paras kolesterol darah anda adalah tinggi? <i>If Yes, when were you told by a doctor or an Assistant Medical Officer that you have high cholesterol?</i>	1. <1 tahun / <i><1 year</i> ... Sila ke D04 2. ≥1 tahun / <i>≥1 year</i> ... Sila ke D03a (-7) TT (-9) EJ ...Sila ke D04 jika TT / EJ
D03a	Sudah berapa tahun paras kolesterol darah anda tinggi? (Contoh: 2 tahun) <i>How many years have you had high cholesterol? (Example: 2 years)</i>	Sila nyatakan / <i>Please state</i> <input type="text"/> Tahun / <i>Years</i> (-7) TT (-9) EJ
D04	Apakah jenis rawatan atau nasihat yang anda terima daripada doktor (atau anggota kesihatan lain) untuk mengawal paras kolesterol tinggi anda? <i>What kind of treatment or advice for the control of high cholesterol have you received from your doctor (or other health workers)?</i>	
D04a	Adakah anda mengambil ubat-ubatan sejak 2 minggu lepas? <i>Have you been consuming medications in the past 2 weeks?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
D04b	Adakah anda menerima nasihat diet khusus seperti rendah lemak atau rendah kolesterol? <i>Have you received advice on special low fat or low cholesterol diet?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
D04c	Adakah anda menerima nasihat untuk kurangkan berat badan? <i>Have you received any advice to lose weight?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
D04d	Adakah anda menerima nasihat untuk mula bersenam atau lebihkan senaman? <i>Have you received advice to start or to do more exercise?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
D05	Adakah anda mengambil apa-apa rawatan herba / tradisional untuk paras kolesterol tinggi anda? <i>Are you currently taking any herbal / traditional remedies for your high cholesterol?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ

D06	<p>Di manakah anda selalunya mendapat rawatan untuk paras kolesterol tinggi anda? <i>Where do you usually seek treatment for your high cholesterol?</i></p> <p>Jawab SATU pilihan sahaja <i>Answer ONE option only</i></p>	<ol style="list-style-type: none">1. Klinik kerajaan / <i>Government clinic</i>2. Klinik swasta / <i>Private clinic</i>3. Hospital kerajaan / <i>Government hospital</i>4. Hospital swasta / <i>Private hospital</i>5. Farmasi / <i>Pharmacy</i>6. Pengamal rawatan tradisional, herba dan komplementari / <i>Traditional, herbal and complementary medicine</i>7. Saya tidak mendapatkan sebarang rawatan / <i>I did not seek any treatment</i> <p style="text-align: right;">(-7) TT (-9) EJ</p>
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MODUL E: AKTIVITI FIZIKAL / PHYSICAL ACTIVITY

**KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS
ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE**

Seterusnya, saya akan menyoal anda berkenaan dengan tempoh masa yang anda luangkan untuk melakukan pelbagai kegiatan aktiviti fizikal yang berbeza dalam satu minggu yang biasa. Sila jawab soalan-soalan ini walaupun anda menganggap diri anda tidak aktif.

Next, I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

Fikirkan dahulu tentang masa yang anda gunakan untuk bekerja. Anggapkan pekerjaan sebagai perkara yang anda perlu lakukan untuk kehidupan seperti kerja yang berbayar atau tidak berbayar, belajar / berlatih, kerja di rumah, menuai hasil tanaman, memancing atau memburu untuk makanan, mencari pekerjaan, dan sebagainya. Ketika menjawab soalan-soalan berikut, 'aktiviti berat' ialah aktiviti-aktiviti yang memerlukan keupayaan fizikal yang tinggi dan mengakibatkan peningkatan kadar pernafasan ataupun denyutan jantung yang banyak; 'aktiviti sederhana' ialah aktiviti-aktiviti yang memerlukan keupayaan fizikal yang sederhana dan mengakibatkan peningkatan kadar pernafasan ataupun denyutan jantung yang sedikit.

First, think about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study / training, household chores, harvesting food / crops, fishing or hunting for food, seeking employment. [Insert other examples if needed]. In answering the following questions, 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate; 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases or heart rate.

**PEKERJAAN
WORK**

E01	Adakah pekerjaan anda melibatkan aktiviti kerja berat yang mengakibatkan peningkatan yang banyak dalam kadar pernafasan ataupun denyutan jantung seperti berlari, membawa atau mengangkat barang yang berat, menggali, mencangkul, menuai, berkebun, memburu atau melakukan kerja pembinaan sekurang-kurangnya 10 minit secara berterusan? [MASUKKAN CONTOH] Sila lihat kad E1 <i>Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like running, carrying or lifting heavy loads, digging, harvesting, gardening, hunting or doing construction work for at least 10 minutes continuously? [INSERT EXAMPLES] Please see card E1</i>	1. Ya / Yes 2. Tidak / No ... Sila ke E02 (-7) TT (-9) EJ
E01a	Biasanya dalam seminggu, berapa harikah anda melakukan kerja-kerja berat dalam pekerjaan anda? <i>In a typical week, on how many days do you do vigorous-intensity activities as part of your work?</i>	<input type="text"/> Jumlah Hari / Number of days (-7) TT (-9) EJ
E01b	Pada hari biasa yang anda lakukan kerja berat, berapa lamakah anda melakukannya? <i>How much time do you spend doing vigorous-intensity activities at work on a typical day?</i>	<input type="text"/> Jam Hours <input type="text"/> Minit Minutes

E02	<p>Adakah pekerjaan anda melibatkan aktiviti kerja sederhana yang mengakibatkan peningkatan yang sedikit dalam kadar pernafasan ataupun denyutan jantung seperti berjalan pantas, membawa barang yang ringan, memancing, membuat kerja rumah, mencuci kereta atau mengecat rumah sekurang-kurangnya 10 minit secara berterusan? [MASUKKAN CONTOH] Sila lihat kad E2</p> <p><i>Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking, carrying light loads, fishing, doing house chores, washing cars or painting houses for at least 10 minutes continuously? [INSERT EXAMPLES] Please see card E2</i></p>	<p>1. Ya / Yes 2. Tidak / No Sila ke E03</p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
E02a	<p>Biasanya dalam seminggu, berapa harikah anda melakukan kerja-kerja sederhana dalam pekerjaan anda?</p> <p><i>In a typical week, how many days do you do moderate-intensity activities as part of your work?</i></p>	<p><input type="text"/> Jumlah Hari / <i>Number of days</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
E02b	<p>Pada hari biasa yang anda lakukan kerja sederhana, berapa lamakah anda melakukannya?</p> <p><i>How much time do you spend doing moderate-intensity activities at work on a typical day?</i></p>	<p><input type="text"/> Jam / <i>Hours</i></p> <p><input type="text"/> Minit / <i>Minutes</i></p>
<p>AKTIVITI FIZIKAL BERKAITAN PERJALANAN</p> <p>Soalan-soalan seterusnya TIDAK termasuk aktiviti fizikal semasa bekerja yang telah anda nyatakan. Sekarang, saya ingin bertanya mengenai kaedah yang biasa anda gunakan untuk bergerak dari satu tempat ke tempat yang lain (seperti ke tempat kerja, pasar, membeli-belah, masjid, dan sebagainya).</p> <p>TRAVEL TO AND FROM PLACES</p> <p><i>The following questions EXCLUDE the physical activities at work that you have already mentioned. Now, I would like to ask you about the usual way that you travel to and from places (for example, to work, to the market, for shopping, to a place of worship and others).</i></p>		
E03	<p>Adakah anda berjalan atau berbasikal secara berterusan sekurang-kurangnya 10 minit untuk menuju ke, dan dari sesuatu tempat?</p> <p><i>Do you walk or cycle (pedal cycle) for at least 10 minutes continuously to get to, and from places?</i></p>	<p>1. Ya / Yes 2. Tidak / No Sila ke E04</p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
E03a	<p>Dalam satu minggu yang biasa, berapa harikah anda berjalan atau berbasikal secara berterusan sekurang-kurangnya 10 minit untuk menuju ke, dan dari sesuatu tempat?</p> <p><i>In a typical week, how many days do you walk or cycle for at least 10 minutes continuously to get to, and from places?</i></p>	<p><input type="text"/> Jumlah Hari / <i>Number of days</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
E03b	<p>Dalam satu hari yang biasa, berapa lamakah anda berjalan atau berbasikal untuk bergerak dari satu tempat ke tempat yang lain?</p> <p><i>How much time do you spend walking or cycling to get to, and from places on a typical day?</i></p>	<p><input type="text"/> Jam / <i>Hours</i></p> <p><input type="text"/> Minit / <i>Minutes</i></p>

AKTIVITI FIZIKAL PADA WAKTU LAPANG Soalan-soalan seterusnya TIDAK termasuk aktiviti semasa bekerja dan semasa perjalanan yang telah anda nyatakan. Sekarang, saya ingin bertanya tentang aktiviti yang anda lakukan untuk rekreasi, kecegasan, dan sukan. RECREATIONAL ACTIVITIES The next questions EXCLUDE the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure), [insert relevant terms].		
E04	Pada masa lapang, adakah anda melakukan aktiviti sukan, kecegasan atau riadah yang lasak yang mengakibatkan peningkatan yang banyak dalam kadar pernafasan ataupun denyutan jantung, seperti berlari, jogging, aerobik atau bermain bola sepak, sekurang-kurangnya 10 minit secara berterusan? Sila lihat kad E3 <i>Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like running, jogging, aerobic or playing football for at least 10 minutes continuously? Please see card E3</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> Sila ke E05 (-7) TT (-9) EJ
E04a	Biasanya dalam seminggu pada waktu lapang, berapa hariakah anda melakukan aktiviti-aktiviti sukan, kecegasan atau riadah yang lasak? <i>In a typical week, how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?</i>	<input type="text"/> Jumlah Hari / <i>Number of days</i> (-7) TT (-9) EJ
E04b	Dalam satu hari yang biasa, berapa lamakah anda melakukan aktiviti-aktiviti sukan, kecegasan atau riadah yang lasak? <i>How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?</i>	<input type="text"/> Jam / <i>Hours</i> <input type="text"/> Minit / <i>Minutes</i>
E05	Pada masa lapang, adakah anda melakukan aktiviti sukan, kecegasan atau riadah yang sederhana yang mengakibatkan peningkatan yang sedikit dalam kadar pernafasan ataupun denyutan jantung, seperti berjalan pantas, berbasikal, berenang, menanam pokok bunga atau bermain bola tampar, sekurang-kurangnya 10 minit secara berterusan? Sila lihat kad E4 <i>Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate, such as brisk walking, cycling, swimming, gardening or playing volleyball for at least 10 minutes continuously? Please see card E4</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> Sila ke E06 (-7) TT (-9) EJ
E05a	Biasanya dalam seminggu pada waktu lapang, berapa hariakah anda melakukan aktiviti-aktiviti sukan, kecegasan atau riadah yang sederhana? <i>In a typical week, how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?</i>	<input type="text"/> Jumlah Hari / <i>Number of days</i> (-7) TT (-9) EJ
E05b	Dalam satu hari yang biasa, berapa lamakah anda melakukan aktiviti-aktiviti sukan, kecegasan atau riadah yang sederhana? <i>How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?</i>	<input type="text"/> Jam / <i>Hours</i> <input type="text"/> Minit / <i>Minutes</i>

AKTIVITI SEDENTARI ATAU TIDAK AKTIF

Soalan berikut adalah berkaitan dengan aktiviti duduk atau baring / sandar di tempat kerja, di rumah, semasa dalam perjalanan, atau semasa bersama rakan-rakan. Contohnya, duduk menulis, mengguna komputer, duduk bersama rakan-rakan, perjalanan dalam kereta, bas, kereta api, duduk membaca, bermain kad atau menonton televisyen, TETAPI TIDAK TERMASUK waktu tidur. [MASUKKAN CONTOH]

SEDENTARY BEHAVIOUR

The following question is about sitting or reclining at work, at home, getting to and from places, or while being with friends. Such as, time spent sitting at a desk, using the computer, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television, BUT DO NOT INCLUDE time spent sleeping. [INSERT EXAMPLES]

E06	Dalam satu hari yang biasa, berapakah jumlah masa yang anda gunakan untuk duduk atau baring / bersandar? <i>In a typical day, how much time do you usually spend sitting or reclining?</i>	<input type="text"/>	Jam / <i>Hours</i>
		<input type="text"/>	Minit / <i>Minutes</i>

TIDUR: RESPONDEN MELAPOR SENDIRI TEMPOH MASA TIDUR MEREKA BERDASARKAN SOALAN SATU ITEM
SLEEP: RESPONDENT TO SELF-REPORT THEIR SLEEP DURATION BASED ON THE SINGLE-ITEM QUESTION

E07	Secara purata, berapa jam anda tidur dalam tempoh 24 jam? <i>On average, how many hours of sleep do you get in a 24-hour period?</i>	<input type="text"/>	Jam / <i>Hours</i>
		<input type="text"/>	Minit / <i>Minutes</i>

MODUL F: MEROKOK DAN PENGGUNAAN TEMBAKAU / SMOKING AND TOBACCO USE																																																																							
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 15 TAHUN DAN KE ATAS																																																																							
ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 15 YEARS AND ABOVE																																																																							
Bulatkan jawapan yang bersesuaian / <i>Please circle an appropriate answer.</i>																																																																							
F01	<p>Pada masa sekarang, adakah anda <u>menghisap</u> tembakau setiap hari, kurang dari sehari atau tidak sama sekali? <i>Currently, do you <u>smoke</u> on a daily basis, less than daily or not at all?</i></p> <p>[Definisi: Pada masa sekarang – dalam 30 hari yang lepas] <i>[Definition: Currently – within the last 30 days]</i></p>	<p>1. Setiap hari / <i>Daily ... Sila ke F02</i> 2. Kurang dari setiap hari / <i>Less than daily ... Sila ke F02</i> 3. Tidak sama sekali / <i>Not at all ... Sila ke F04</i></p>	(-7) TT	(-9) EJ	... Sila ke F04																																																																		
F02	<p>Pada masa sekarang, adakah anda menghisap produk tembakau berikut? Sila lihat kad F1: <i>Currently, do you smoke the following tobacco products? Please see card F1:</i></p> <p>[Definisi: Pada masa sekarang – dalam 30 hari yang lepas] <i>[Definition: Currently – within the last 30 days]</i></p> <table border="1"> <thead> <tr> <th colspan="2">Produk tembakau / <i>Tobacco product</i></th> <th>Ya / <i>Yes</i></th> <th>Tidak / <i>No</i></th> <th>TT</th> <th>EJ</th> </tr> </thead> <tbody> <tr> <td>i.</td> <td>Rokok dikilangkan / <i>Manufactured cigarette</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>ii.</td> <td>Rokok digulung sendiri / <i>Hand-rolled cigarettes</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>iii.</td> <td>Rokok daun / <i>Traditional hand-rolled cigarettes</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>iv.</td> <td>Kretek</td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>v.</td> <td>Curut / cigarillos / <i>Cigar / cigarillos</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>vi.</td> <td>Bidis</td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>vii.</td> <td>Paip tembakau / <i>Tobacco pipe</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>viii.</td> <td>Shisha / <i>Hookah</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>ix.</td> <td>Lain-lain / <i>Other</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>ixb.</td> <td colspan="5">Sila nyatakan lain-lain tembakau yang anda hisap masa sekarang: <i>Please state other forms of tobacco that you currently smoke:</i></td> </tr> </tbody> </table>	Produk tembakau / <i>Tobacco product</i>		Ya / <i>Yes</i>	Tidak / <i>No</i>	TT	EJ	i.	Rokok dikilangkan / <i>Manufactured cigarette</i>	(1)	(2)	(-7)	(-9)	ii.	Rokok digulung sendiri / <i>Hand-rolled cigarettes</i>	(1)	(2)	(-7)	(-9)	iii.	Rokok daun / <i>Traditional hand-rolled cigarettes</i>	(1)	(2)	(-7)	(-9)	iv.	Kretek	(1)	(2)	(-7)	(-9)	v.	Curut / cigarillos / <i>Cigar / cigarillos</i>	(1)	(2)	(-7)	(-9)	vi.	Bidis	(1)	(2)	(-7)	(-9)	vii.	Paip tembakau / <i>Tobacco pipe</i>	(1)	(2)	(-7)	(-9)	viii.	Shisha / <i>Hookah</i>	(1)	(2)	(-7)	(-9)	ix.	Lain-lain / <i>Other</i>	(1)	(2)	(-7)	(-9)	ixb.	Sila nyatakan lain-lain tembakau yang anda hisap masa sekarang: <i>Please state other forms of tobacco that you currently smoke:</i>								
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F03	<p>Dalam 12 bulan yang lepas, pernahkah anda cuba <u>berhenti</u> menghisap tembakau? <i>During the past 12 months, have you tried to stop smoking?</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p>			Sila ke F05 selepas soalan ini (-7) TT (-9) EJ																																																																		
F04	<p>Pada masa dahulu, adakah anda <u>menghisap</u> tembakau setiap hari, kurang dari sehari atau tidak sama sekali? <i>In the past, have you <u>smoked tobacco</u> on a daily basis, less than daily, or not at all?</i></p>	<p>1. Setiap hari / <i>Daily</i> 2. Kurang dari setiap hari / <i>Less than daily</i> 3. Tidak sama sekali / <i>Not at all</i></p>	(-7) TT	(-9) EJ																																																																			
F05	<p>Pada masa sekarang, adakah anda menggunakan <u>rokok elektronik / vape</u> setiap hari, kurang dari sehari atau tidak sama sekali? <i>Currently, do you use <u>electronic cigarette (e-cig) / vape</u> on a daily basis, less than daily, or not at all?</i></p> <p>[Definisi: Pada masa sekarang – dalam 30 hari yang lepas] <i>[Definition: Currently – within the last 30 days]</i></p>	<p>1. Setiap hari / <i>Daily ... Sila ke F06</i> 2. Kurang dari setiap hari / <i>Less than daily ... Sila ke F06</i> 3. Tidak sama sekali / <i>Not at all ... Sila ke F07</i></p>	(-7) TT	(-9) EJ	... Sila ke F07																																																																		
F06	<p>Dalam 12 bulan yang lepas, pernahkah anda cuba <u>berhenti</u> menggunakan rokok elektronik / vape? <i>During the past 12 months, have you tried to quit using e-cig/ vape?</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p>			Sila ke F08 selepas soalan ini (-7) TT (-9) EJ																																																																		
F07	<p>Pada masa dahulu, adakah anda menggunakan <u>rokok elektronik / vape</u> setiap hari, kurang dari sehari atau tidak sama sekali? <i>In the past, have you used <u>e-cig / vape</u> on daily basis, less than daily or not at all?</i></p>	<p>1. Setiap hari / <i>Daily</i> 2. Kurang dari setiap hari / <i>Less than daily</i> 3. Tidak sama sekali / <i>Not at all</i></p>	(-7) TT	(-9) EJ																																																																			

F08	<p>Pada masa sekarang, adakah anda menggunakan produk tembakau dipanaskan setiap hari, kurang dari sehari atau tidak sama sekali? Sila lihat kad F2</p> <p><i>Currently, do you use any heated tobacco products on a daily basis, less than daily or not at all? Please see card F2</i></p> <p>[Definisi: Pada masa sekarang; dalam 30 hari yang lepas] [Definition: Currently – within the last 30 days]</p>	<ol style="list-style-type: none"> 1. Setiap hari / <i>Daily ... Sila ke F10</i> 2. Kurang dari setiap hari / <i>Less than daily ... Sila ke F10</i> 3. Tidak sama sekali / <i>Not at all ... Sila ke F09</i> <p>(-7) TT (-9) EJ ... Sila ke F09</p>																		
F09	<p>Pada masa dahulu, adakah anda menggunakan produk tembakau dipanaskan setiap hari, kurang dari sehari atau tidak sama sekali?</p> <p><i>In the past, have you used heated tobacco products on a daily basis, less than daily or not at all?</i></p>	<ol style="list-style-type: none"> 1. Setiap hari / <i>Daily</i> 2. Kurang dari setiap hari / <i>Less than daily</i> 3. Tidak sama sekali / <i>Not at all</i> <p>(-7) TT (-9) EJ</p>																		
F10	<p>Pada masa sekarang, adakah anda menggunakan produk tembakau tanpa asap setiap hari, kurang dari sehari atau tidak sama sekali? Sila lihat kad F2</p> <p><i>Currently, do you use smokeless tobacco products on a daily basis, less than daily or not at all? Please see card F2</i></p> <p>[Definisi: Pada masa sekarang – dalam 30 hari yang lepas] [Definition: Currently – within the last 30 days]</p>	<ol style="list-style-type: none"> 1. Setiap hari / <i>Daily ... Sila ke F11</i> 2. Kurang dari setiap hari / <i>Less than daily ... Sila ke F11</i> 3. Tidak sama sekali / <i>Not at all ... Sila ke F12</i> <p>(-7) TT (-9) EJ ... Sila ke F12</p>																		
F11	<p>Pada masa sekarang, adakah anda menggunakan produk tembakau berikut. Sila lihat kad F3:</p> <p><i>Currently, do you use the following tobacco products. Please see card F3:</i></p> <p>[Definisi: Pada masa sekarang – dalam 30 hari yang lepas] [Definition: Currently – within the last 30 days]</p> <table border="1"> <thead> <tr> <th colspan="2">Produk tembakau / Tobacco product</th> <th>Ya / Yes</th> <th>Tidak / No</th> <th>TT</th> <th>EJ</th> </tr> </thead> <tbody> <tr> <td>i.</td> <td>Tembakau kunyah / <i>Chewed tobacco</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> <tr> <td>ii.</td> <td>Rokok hidu / <i>Snuff</i></td> <td>(1)</td> <td>(2)</td> <td>(-7)</td> <td>(-9)</td> </tr> </tbody> </table> <p>Sila ke F13a selepas soalan ini</p>	Produk tembakau / Tobacco product		Ya / Yes	Tidak / No	TT	EJ	i.	Tembakau kunyah / <i>Chewed tobacco</i>	(1)	(2)	(-7)	(-9)	ii.	Rokok hidu / <i>Snuff</i>	(1)	(2)	(-7)	(-9)	
Produk tembakau / Tobacco product		Ya / Yes	Tidak / No	TT	EJ															
i.	Tembakau kunyah / <i>Chewed tobacco</i>	(1)	(2)	(-7)	(-9)															
ii.	Rokok hidu / <i>Snuff</i>	(1)	(2)	(-7)	(-9)															
F12	<p>Pada masa dahulu, adakah anda menggunakan produk tembakau tanpa asap setiap hari, kurang dari sehari atau tidak sama sekali?</p> <p><i>In the past, have you used smokeless tobacco products on a daily basis, less than daily or not at all?</i></p>	<ol style="list-style-type: none"> 1. Setiap hari / <i>Daily</i> 2. Kurang dari setiap hari / <i>Less than daily</i> 3. Tidak sama sekali / <i>Not at all</i> <p>(-7) TT (-9) EJ</p>																		
F13a	<p>Berapa kerapkah seseorang merokok di dalam rumah anda?</p> <p><i>How often does anyone smoke inside your house?</i></p>	<ol style="list-style-type: none"> 1. Setiap hari / <i>Daily</i> 2. Setiap minggu / <i>Weekly</i> 3. Setiap bulan / <i>Monthly</i> 4. Kurang dari setiap bulan / <i>Less than monthly</i> 5. Tidak pernah / <i>Never</i> <p>(-7) TT (-9) EJ</p>																		
F13b	<p>Berapa kerapkah seseorang menggunakan rokok elektronik / vape atau produk tembakau dipanaskan di dalam rumah anda?</p> <p><i>How often does someone use electronic cigarette / vape or heated tobacco products inside your house?</i></p>	<ol style="list-style-type: none"> 1. Setiap hari / <i>Daily</i> 2. Setiap minggu / <i>Weekly</i> 3. Setiap bulan / <i>Monthly</i> 4. Kurang dari setiap bulan / <i>Less than monthly</i> 5. Tidak pernah / <i>Never</i> <p>(-7) TT (-9) EJ</p>																		
F14	<p>Adakah anda bekerja di luar rumah anda?</p> <p><i>Do you work outside of your home?</i></p>	<ol style="list-style-type: none"> 1. Ya / <i>Yes ... Sila ke F15</i> 2. Tidak atau tidak bekerja / <i>No or not working ... Sila ke F17</i> <p>(-9) EJ ... Sila ke F17</p>																		

F15	Adakah anda <u>selalu bekerja di dalam atau di luar bangunan?</u> <i>Do you usually work in an indoor setting or an outdoor setting?</i>	1. Di dalam bangunan / <i>indoor setting</i> ... Sila ke F16a 2. Di luar bangunan / <i>outdoor setting</i> ... Sila ke F17 3. Di kedua-dua luar dan dalam bangunan / <i>both indoor and outdoor settings</i> ... Sila ke F16a (-9) EJ ... Sila ke F17
F16a	Dalam tempoh 30 hari yang lepas, adakah sesiapa yang merokok di dalam bangunan anda bekerja? <i>During the past 30 days, did anyone smoke in the indoor areas where you work?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
F16b	Dalam tempoh 30 hari yang lepas, adakah sesiapa menggunakan rokok elektronik / vape atau produk tembakau dipanaskan di dalam bangunan anda bekerja? <i>During the past 30 days, did anyone use electronic cigarette / vape or heated tobacco products in an indoor setting where you are working?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
F17	Adakah anda melawat mana-mana premis makanan dalam tempoh 30 hari yang lepas? <i>Did you visit any eateries in the past 30 days?</i>	1. Ya / <i>Yes</i> ... Sila ke F18a 2. Tidak / <i>No</i> ... Sila ke Modul G (-9) EJ ... Sila ke Modul G
F18a	Dalam tempoh 30 hari yang lepas, adakah sesiapa yang merokok di premis makanan yang anda lawati? <i>During the past 30 days, did you notice anyone smoking in the eateries you have visited?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
F18b	Dalam tempoh 30 hari yang lepas, adakah sesiapa yang menggunakan rokok elektronik / vape atau produk tembakau tanpa asap di kedai makan (premis makanan) yang ada kunjungi? <i>During the past 30 days, did you notice anyone using electronic cigarette / vape or heated tobacco products in the eateries (food establishments) that you have visited?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ

MODUL G: SARINGAN KESIHATAN / HEALTH SCREENING		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE		
Sekarang, saya ingin bertanya tentang aktiviti dalam masa 12 bulan yang lepas. <i>Now, I would like to ask about activity in the last 12 months.</i>		
G01	Pernakah anda pergi untuk saringan tekanan darah, paras kolesterol atau diabetes? <i>Have you ever been for a blood pressure, blood cholesterol or diabetes screening?</i>	1. Ya / Yes ... Sila ke G02 2. Tidak / No ... Sila ke G01a (-7) TT (-9) EJ
G01a	Jika tidak, apakah sebab tidak melakukan saringan kesihatan? <i>If no, what is / are the reason/s for not doing the screening?</i> Boleh pilih lebih daripada satu jawapan. <i>Can choose more than one answer.</i>	1. Rasa sihat / <i>Feeling healthy</i> 2. Tiada gejala / <i>No symptoms</i> 3. Tiada sejarah keluarga yang mempunyai penyakit kronik (tekanan darah tinggi, paras kolesterol tinggi atau diabetes) / <i>No family history of chronic diseases (hypertension, hypercholesterolemia and diabetes disease)</i> 4. Sudah tahu mempunyai faktor risiko / <i>I am aware of my risk factors</i> 5. Saringan akan mencetus emosi negatif seperti rasa takut, bimbang atau resah / <i>The screening will cause unnecessary negative emotions like fear, worry or stress</i> 6. Proses saringan agak menyusahkan / <i>The screening process is troublesome</i> 7. Kekangan masa / <i>Time constraint</i> 8. Saringan kesihatan sesuatu yang menyakitkan / <i>Screening causes physical pain</i> 9. Pengalaman yang kurang baik semasa saringan kesihatan yang lalu / <i>Unpleasant experience during a previous health check-up</i> 10. Kekangan kewangan / <i>Financial constraint</i> 11. Sesuatu yang membazirkan / <i>It's wasteful to do a screening.</i> 12. Insurans akan lindungi saya jikalau ada penyakit / <i>Insurance will cover if there is an illness.</i> 13. Fasiliti kesihatan hanya untuk pesakit dan bukan untuk orang yang sihat / <i>Healthcare facilities are meant for those who are ill and not for healthy people</i> 14. Tiada kenderaan / <i>No transport</i> 15. Tiada orang untuk mengiring / bawak / <i>No one to accompany / bring</i> 16. Pusat saringan, hospital atau klinik jauh / <i>Screening facility, hospital or clinic is too far</i>
[PERINGATAN: Untuk responden perempuan berumur 18 tahun dan ke atas sahaja].		
G02	Pernakah anda melakukan pemeriksaan sendiri payudara? <i>Do you do breast self-examination?</i>	1. Ya, setiap bulan / Yes, monthly 2. Ya, tetapi tidak setiap bulan / Yes, but not monthly 3. Tidak melakukan / Not at all (-7) TT (-9) EJ
[PERINGATAN: Untuk responden lelaki dan perempuan berumur 40 tahun dan ke atas sahaja].		

G03	Pernahkah anda melakukan ujian pengesanan darah dalam sampel najis (bagi saringan kanser usus besar)? <i>Have you had a test performed to check blood in the stool (for colorectal cancer screening)?</i>		1. Ya, dalam 1 tahun yang lalu / <i>Yes, within 1 year</i> 2. Ya, antara 1 hingga 2 tahun yang lalu / <i>Yes, between the past 1 to 2 years ago</i> 3. Ya, lebih daripada 2 tahun yang lalu / <i>Yes, more than 2 years ago</i> 4. Tidak / <i>No ... Sila ke G04</i> (-7) TT (-9) EJ
G03a	Jika ya, dimana pemeriksaan tersebut dijalankan? <i>If yes, where was your test done?</i>		1. Fasilitas kesihatan kerajaan / <i>Public health facility</i> 2. Fasilitas kesihatan swasta / <i>Private health facility</i> 3. Fasilitas NGO (CORUM, NCSM, MAKNA, EMPOWERED) / <i>NGO's facility (CORUM, NCSM, MAKNA, EMPOWERED)</i> 4. Tempat- tempat lain: Nyatakan..... / <i>Other places: Please specify.....</i> (-7) TT (-9) EJ
G03b	Jika pernah, adakah keputusan anda positif? <i>If yes, was your result positive?</i>		1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
G03c	Jika Ya, adakah anda pernah menjalani prosedur kolonoskopi? <i>If Yes, did you undergo a colonoscopy procedure?</i>		1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
<p>[PERINGATAN: Untuk responden perempuan berumur 20 tahun dan ke atas sahaja]. Sekarang, saya ingin bertanya mengenai aktiviti dalam masa 3 tahun yang lepas. <i>Now, I would like to ask about activities in the last 3 years.</i></p>			
<p>Dalam masa 3 tahun lepas, dari ... 2020 hingga hari ini, adakah anda pernah melakukan pemeriksaan: <i>In the past 3 years, from ... 2020 till today, did you do any of these examinations:</i></p>			
G04	Ujian pap smear? <i>Pap smear examination?</i>		1. Ya, oleh kakitangan kesihatan / <i>Yes, by a health personnel</i> 2. Ya, menggunakan kit ujian sendiri pap smear / <i>Yes, using the pap smear self-test kit</i> 3. Tidak / <i>No ... Sila ke G05</i> (-7) TT (-9) EJ
G04a	Jika ya, adakah anda telah dimaklumkan keputusannya? <i>If yes, were you informed of the results?</i>		1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
G05	Adakah anda tahu ujian saringan kanser serviks boleh dilakukan sendiri? <i>Do you know that cervical cancer screening can be done on your own?</i>		1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
G05a	Adakah anda berminat untuk melakukan / menggunakannya? <i>Would you be interested to do / use it?</i>		1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
<p>[PERINGATAN: Untuk responden perempuan berumur 40 tahun dan ke atas sahaja].</p>			
G06	Adakah anda pernah melakukan ujian saringan mammogram (X-ray khas payudara)? <i>Have you ever undergone a mammogram examination?</i>		1. Ya... ≤3 tahun yang lalu / <i>Yes ... ≤3 years ago</i> 2. Ya... lebih daripada 3 tahun yang lalu / <i>Yes... more than 3 years ago</i> 3. Tidak / <i>No ... Sila ke G07</i> (-7) TT (-9) EJ

	<p>G06a</p> <p>Jika ya, dimana pemeriksaan tersebut dijalankan? <i>If yes, where was your mammogram done?</i></p>	<p>1. Fasilitas kesehatan kerajaan / <i>Public health facility</i> 2. Fasilitas kesehatan swasta / <i>Private health facility</i> 3. Fasilitas NGO (MAKNA dan NCSM) / <i>NGO's facility (MAKNA and NCSM)</i> 4. Fasilitas lain: Nyatakan..... / <i>Other facility: Specify.....</i> (-7) TT (-9) EJ</p>
<p>G07</p>	<p>Adakah anda mempunyai sejarah keluarga yang menghidap kanser payudara? <i>Do you have any family members who have been previously diagnosed with breast cancer?</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ</p>

MODUL H: AMALAN PEMAKANAN / DIETARY PRACTICES	
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR BERUMUR 18 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE	
Bulatkan jawapan yang bersesuaian / <i>Please circle an appropriate answer.</i>	
Saya ingin bertanya beberapa soalan tentang amalan pemakanan anda. <i>I would like to ask you a few questions about your dietary practices.</i>	
H01	<p>Adakah anda vegetarian (termasuk lacto-ovo, lacto, ovo, dan vegans vegetarian) sejak sebulan yang lepas? <i>Are you a vegetarian (including lacto-ovo, lacto, ovo, and vegan vegetarian) in the past one month?</i></p> <p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
H02a	<p>Kebiasaannya, dalam seminggu berapa hari anda makan buah? <i>How many days in a week do you consume fruits?</i></p> <p>1. 0 hari / <i>0 day ... Sila ke H03a</i> 2. 1 hari / <i>1 day</i> 3. 2 hari / <i>2 days</i> 4. 3 hari / <i>3 days</i> 5. 4 hari / <i>4 days</i> 6. 5 hari / <i>5 days</i> 7. 6 hari / <i>6 days</i> 8. 7 hari / <i>7 days</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
H02b	<p>Biasanya pada hari yang anda makan buah (oren, epal, pisang dan sebagainya), berapa sajian yang anda makan? <i>Usually on the day that you eat fruits (e.g. apple, orange, banana and so on), how many servings do you take?</i></p> <p><input type="text"/> bil. sajian / <i>no. of serving</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p> <p><i>*sila rujuk kad H1 untuk anggaran hidangan / please refer to the card H1 for serving size estimation</i></p>
H03a	<p>Kebiasaannya, dalam seminggu berapa hari anda makan sayuran dimasak dan / atau ulam-ulaman? <i>In a typical week, how many days do you eat cooked and / or raw vegetables?</i></p> <p>1. 0 hari / <i>0 day ... Sila ke H03a</i> 2. 1 hari / <i>1 day</i> 3. 2 hari / <i>2 days</i> 4. 3 hari / <i>3 days</i> 5. 4 hari / <i>4 days</i> 6. 5 hari / <i>5 days</i> 7. 6 hari / <i>6 days</i> 8. 7 hari / <i>7 days</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
H03b	<p>Biasanya pada hari yang anda makan sayuran dimasak dan / atau ulam-ulaman, berapa sajian yang anda makan? <i>Usually on the day that you eat cooked and / or raw vegetables, how many servings do you take?</i></p> <p><input type="text"/> bil. sajian / <i>no. of serving</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p> <p><i>*sila rujuk kad H2 untuk anggaran hidangan / please refer to the card H2 for serving size estimation</i></p>
H04	<p>Kebiasaannya, berapa gelas air kosong anda minum dalam sehari? <i>In a typical day, how many glasses of plain water do you drink?</i></p> <p><input type="text"/> bil. gelas (250ml) / <i>no. of glasses (250ml)</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p> <p><i>*sila rujuk kad H3 untuk anggaran gelas / please refer to the card H3 for glass estimation</i></p>

MODUL I: KETIDAKUPAYAAN / DISABILITY		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE		
Bulatkan jawapan yang bersesuaian / <i>Please circle an appropriate answer.</i>		
I01	Adakah anda mendapati sukar untuk melihat, (walaupun memakai cermin mata / kanta lekap)? Adakah... <i>Do you have difficulty in seeing, (despite wearing glasses / spectacles / contact lenses)? Would you say...</i>	1. Tidak Sukar / <i>No Difficulty ... Sila ke I02</i> 2. Agak Sukar / <i>Some Difficulty</i> 3. Sangat Sukar / <i>A lot of Difficulty</i> 4. Tidak Berupaya / <i>Cannot do at all</i> (-7) TT (-9) EJ
I01a	Dalam 12 bulan yang lepas, adakah anda menerima nasihat daripada pengamal kesihatan mata profesional untuk masalah melihat? <i>In the past 12 months, did you consult any professional eye care practitioners for your seeing difficulty?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
I02	Adakah anda mendapati sukar untuk mendengar, (walaupun menggunakan alat bantu pendengaran)? Adakah... <i>Do you have difficulty in hearing / listening, (despite using a hearing aid)? Would you say...</i>	1. Tidak Sukar / <i>No Difficulty ... Sila ke I03</i> 2. Agak Sukar / <i>Some Difficulty</i> 3. Sangat Sukar / <i>A lot of Difficulty</i> 4. Tidak Berupaya / <i>Cannot do at all</i> (-7) TT (-9) EJ
I02a	Dalam 12 bulan yang lepas, adakah anda menerima nasihat daripada pengamal kesihatan pendengaran profesional untuk masalah mendengar? <i>In the past 12 months, did you consult any professional hearing care practitioners for your hearing difficulty?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
I03	Adakah anda mendapati sukar untuk berjalan atau naik / turun tangga? Adakah... <i>Do you have difficulty in walking or going up and down the stairs? Would you say...</i>	1. Tidak Sukar / <i>No Difficulty ... Sila ke I04</i> 2. Agak Sukar / <i>Some Difficulty</i> 3. Sangat Sukar / <i>A lot of Difficulty</i> 4. Tidak Berupaya / <i>Cannot do at all</i> (-7) TT (-9) EJ
I03a	Dalam 12 bulan yang lepas, adakah anda menerima perkhidmatan pemulihan fisioterapi untuk membantu anda berjalan atau naik / turun tangga? <i>In the past 12 months, did you get physical therapy services (physiotherapy) to help you with walking or going up and down the stairs?</i> Contoh: Ajar senaman atau berjalan guna tongkat untuk sakit lutut atau lemah otot. <i>Example: Learning exercises or walking using walking stick for knee pain or muscle weakness.</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
I04	Adakah anda mendapati sukar untuk mengingat atau menumpukan perhatian pada aktiviti harian? Adakah... <i>Do you have any difficulty in remembering or paying attention / concentrating in your daily activity? Would you say...</i> Contoh: Pernahkah anda terlupa menutup pili air / suis lampu atau api masakan di dapur? <i>Example: Have you ever forgotten to turn off a tap/light switch/ gas stove in the kitchen?</i>	1. Tidak Sukar / <i>No Difficulty ... Sila ke I05</i> 2. Agak Sukar / <i>Some Difficulty</i> 3. Sangat Sukar / <i>A lot of Difficulty</i> 4. Tidak Berupaya / <i>Cannot do at all</i> (-7) TT (-9) EJ

I04a	<p>Dalam 12 bulan yang lepas, adakah anda menerima perkhidmatan pemulihan seperti terapi cara kerja atau kaunseling untuk membantu anda mengingat atau menumpukan perhatian pada aktiviti harian? <i>In the past 12 months, did you get any therapy services such as occupational therapy or counselling to help you to remember or to concentrate better in your daily activities?</i></p> <p>Contoh: Ajar susun bongkah kayu ikut gambar yang diberikan, ajar guna alat perakam atau telefon pintar sebagai peringatan. <i>Example: Learning to arrange wooded blocks according to a picture, learn to use a recording device or a smart phone to set reminders.</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
I05	<p>Adakah anda mendapati sukar untuk menjaga diri sendiri (seperti membersihkan diri atau memakai pakaian)? Adakah... <i>Do you have any difficulty in caring for yourself (such as cleaning yourself or wearing clothes)? Would you say...</i></p>	<p>1. Tidak Sukar / <i>No Difficulty... Sila ke I06</i> 2. Agak Sukar / <i>Some Difficulty</i> 3. Sangat Sukar / <i>A lot of Difficulty</i> 4. Tidak Berupaya / <i>Cannot do at all</i></p> <p>(-7) TT (-9) EJ</p>
I05a	<p>Dalam 12 bulan yang lepas, adakah anda menerima perkhidmatan pemulihan seperti terapi cara kerja atau fisioterapi untuk menjaga diri sendiri? <i>In the past 12 months, did you get any therapy services like occupational therapy or physiotherapy in caring for yourself?</i></p> <p>Contoh: Ajar buat aktiviti seperti mandi, gosok gigi, pakai baju dan makan. <i>Example: Learning to perform activities such as bathing, brushing teeth, wearing clothes and eating.</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
I06	<p>Adakah anda mendapati sukar untuk berkomunikasi (contohnya memahami atau difahami oleh orang lain) disebabkan keadaan kesihatan fizikal, mental atau emosi? Adakah... <i>Do you have any difficulty in communicating, (such as understanding or being understood by others) due to issues with physical, mental, or emotional health? Would you say...</i></p>	<p>1. Tidak Sukar / <i>No Difficulty... Sila ke Modul J</i> 2. Agak Sukar / <i>Some Difficulty</i> 3. Sangat Sukar / <i>A lot of Difficulty</i> 4. Tidak Berupaya / <i>Cannot do at all</i></p> <p>(-7) TT (-9) EJ</p>
I06a	<p>Dalam 12 bulan yang lepas, adakah anda menerima perkhidmatan pemulihan seperti terapi pertuturan atau terapi cara kerja untuk berkomunikasi? <i>In the past 12 months, did you get any therapy services such as speech therapy or occupational therapy for any difficulty in communicating?</i></p> <p>Contoh: Ajar guna papan komunikasi, alat komunikasi untuk pekak / buta, bahasa isyarat. <i>Example: Learning to use a communication board, communication devices for hearing/seeing, sign language.</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>

MODUL J: ASMA (DEWASA) / ASTHMA (ADULTS)		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE		
Code	Soalan / Questions	Kategori kod / Coding category
J01	Pernahkah anda menghidapi penyakit asma / lelah? <i>Have you ever had asthma?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No ... Sila ke J02</i> (-7) TT (-9) EJ ... Sila ke J02
J01a	Pernahkah anda diberitahu oleh doktor atau kakitangan kesihatan bahawa anda menghidapi asma ? <i>Have you ever been told by a doctor or a health personnel that you have asthma?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
J01b	Berapakah umur anda pada kali pertama mendapat serangan asma ? <i>How old were you when you had your first attack of asthma?</i>	Umur / <i>Age</i> : <input type="text"/> tahun / <i>years</i> (-7) TT (-9) EJ
J02	Adakah anda pernah diberitahu oleh doktor atau kakitangan kesihatan bahawa anda mengalami penyakit berikut: <i>Have you ever been told by a doctor or a health personnel that you are having any of these diseases or conditions:</i>	
J02a	TB / Tuberculosis / Batuk kering	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
J02b	COPD / Chronic Obstructive Pulmonary Disease	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
J02c	Sebarang penyakit paru-paru yang lain termasuk COVID-19 / <i>Any other lung diseases including COVID-19</i>	1. Ya / <i>Yes</i> Sila nyatakan / <i>Please state:</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
J03	Dalam tempoh 12 bulan yang lepas, pernahkah anda mengalami serangan asma (lelah) atau sesak nafas ? <i>In the past 12 months, have you ever had an asthmatic attack or breathlessness?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No ... Sila ke J04</i> (-7) TT (-9) EJ ... Sila ke J04
J03a	Dalam tempoh 12 bulan yang lepas, berapa kali anda mengalami serangan asma (lelah) atau sesak nafas ? <i>In the past 12 months, how many times have you had an asthmatic attack or breathlessness?</i>	Bilangan / <i>Number of times</i> <input type="text"/> (-7) TT (-9) EJ
J03b	Dalam tempoh 12 bulan yang lepas, berapa kali anda telah melawat klinik / jabatan kecemasan hospital disebabkan oleh serangan asma atau sesak nafas? <i>In the past 12 months, how many times have you visited a clinic / emergency department in a hospital due to an asthmatic attack or breathlessness?</i>	Bilangan / <i>Number of times</i> <input type="text"/> (-7) TT (-9) EJ
J04	Dalam tempoh 12 bulan yang lepas, pernahkah anda mengalami masalah sesak nafas atau nafas berbunyi ? (selain daripada jika anda dijangkiti COVID-19) <i>In the past 12 months, have you ever felt breathless or had wheezing? (Other than if you had been diagnosed to have COVID-19)</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No ... Sila ke J05</i> (-7) TT (-9) EJ ... Sila ke J05

J04a	Adakah anda selalu mengalami sesak nafas apabila nafas berbunyi ? (selain daripada jika anda dijangkiti COVID-19) <i>Do you always feel breathless when you wheeze? (Other than if you had been diagnosed to have COVID-19)</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
J04b	Adakah anda pernah mengalami masalah sesak nafas atau nafas berbunyi apabila anda tidak mengalami selsema ? (selain daripada jika anda dijangkiti COVID-19) <i>Did you ever have breathlessness or wheezing when you did not have flu/rhinitis? (Other than if you had been diagnosed to have COVID-19)</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
J05	Dalam tempoh 12 bulan yang lepas, pernahkah anda terbangun dari tidur kerana berasa ketat dalam dada ? (selain daripada jika anda dijangkiti COVID-19) <i>In the past 12 months, have you ever been awakened from sleep due to a feeling of tightness in your chest? (Other than if you had been diagnosed to have COVID-19)</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
J06	Dalam tempoh 12 bulan yang lepas, pernahkah anda terbangun dari tidur kerana sesak nafas ? (selain daripada jika anda dijangkiti COVID-19) <i>In the past 12 months, have you ever been awakened from sleep due to breathlessness? (Other than if you had been diagnosed to have COVID-19)</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
J07	Dalam tempoh 12 bulan yang lepas, pernahkah anda terbangun dari tidur kerana batuk yang berpanjangan ? (selain daripada jika anda dijangkiti COVID-19) <i>Have you ever been awakened from sleep due to continuous cough in the past 12 months? (Other than if you had been diagnosed to have COVID-19)</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
J08	Pada ketika ini, adakah anda mengambil sebarang ubat (termasuk sedutan / pil) daripada doktor atau paramedik untuk asma (lelah) atau sesak nafas? Sila lihat kad J1 <i>Are you currently taking any medicine (including inhaler / pills) from doctors or paramedics for your asthma / breathlessness? Please see card J1</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
J09	Pernahkah anda mengalami masalah alahan / alergi pada kulit, mata atau hidung? <i>Do you suffer from any skin, eyes or nose allergies?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ

MODUL KA: ASMA (KANAK-KANAK BERUMUR 6-12 TAHUN) / ASTHMA (CHILDREN AGED 6-12 YEARS OLD)

KRITERIA KELAYAKAN: IBUBAPA ATAU PENJAGA YANG MEMPUNYAI ANAK BERUMUR 6 - 12 TAHUN ELIGIBILITY CRITERIA: PARENTS OR GUARDIANS WHO HAVE CHILDREN AGED 6 - 12 YEARS OLD

KA01	Pada bila-bila masa yang lepas, adakah (nama anak) mengalami sesak nafas atau nafas berbunyi (berdehit)? <i>At any time in the past, has (child's name) ever felt breathless or had wheezing?</i>	1. Ya / Yes 2. Tidak / No ... Sila ke KA06	(-7) TT (-9) EJ ... Sila ke KA06
KA02	Dalam 12 bulan yang lepas, adakah (nama anak) mengalami sesak nafas atau nafas berbunyi (berdehit)? <i>In the last 12 months, has (child's name) ever felt breathless or had wheezing?</i>	1. Ya / Yes 2. Tidak / No ... Sila ke KA06	(-7) TT (-9) EJ ... Sila ke KA06
KA03	Dalam 12 bulan yang lepas, berapa kalikah (nama anak) mengalami sesak nafas atau nafas berbunyi (berdehit)? <i>In the last 12 months, how many attacks of breathlessness or wheezing has (child's name) had?</i>	1. 1 – 3 kali / 1-3 times 2. 4 – 12 kali / 4-12 times 3. > 12 kali / >12 times	(-7) TT (-9) EJ
KA04	Dalam 12 bulan yang lepas, secara purata, berapa kerap tidur (nama anak) diganggu kerana sesak nafas atau nafas berbunyi (berdehit)? <i>In the last 12 months, on the average, how often has (child's name)'s sleep been disturbed due to breathlessness or wheezing?</i>	1. Tiada / None 2. <1 malam dalam seminggu / <1 night per week 3. ≥ 1 malam dalam seminggu / ≥1 night per week	(-7) TT (-9) EJ
KA05	Dalam 12 bulan yang lepas, adakah nafas berbunyi (berdehit) yang (nama anak) alami mengehadkan percakapan kepada satu atau dua perkataan sahaja dalam satu nafas? <i>In the last 12 months, has wheezing ever been severe enough to limit (child's name)'s speech to only one or two words at a time between breaths?</i>	1. Ya / Yes 2. Tidak / No	(-7) TT (-9) EJ
KA06	Adakah (nama anak) pernah menghidap penyakit asma (lelah) / sesak nafas (yang telah disahkan oleh pegawai perubatan)? <i>Has (child's name) ever had asthma / breathlessness (diagnosed by medical practitioner)?</i>	1. Ya / Yes 2. Tidak / No	(-7) TT (-9) EJ
KA07	Dalam 12 bulan yang lepas, adakah (nama anak) mengalami sesak nafas atau nafas berbunyi (berdehit) semasa atau selepas bersenam / bermain? <i>In the last 12 months, has (child's name) felt breathless or wheezed during or after exercise / play?</i>	1. Ya / Yes 2. Tidak / No	(-7) TT (-9) EJ
KA08	Dalam 12 bulan yang lepas, adakah (nama anak) mengalami batuk yang kering di waktu malam, selain daripada batuk semasa mengalami selsema atau jangkitan paru-paru? <i>In the last 12 months, has (child's name) had a dry cough at night, apart from a cough associated with a cold or a chest infection?</i>	1. Ya / Yes 2. Tidak / No	(-7) TT (-9) EJ

MODUL KB: ASMA (KANAK-KANAK BERUMUR 13-17 TAHUN) / ASTHMA (CHILDREN AGED 13-17 YEARS OLD)

KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 13 - 17 YEARS

ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 13 - 17 YEARS

KB01	Pada bila-bila masa yang lepas, adakah anda mengalami sesak nafas atau nafas berbunyi (berdehit)? <i>At any time in the past, have you ever felt breathless or had wheezing?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No ... Sila ke KB06</i>	(-7) TT (-9) EJ ... <i>Sila ke KB06</i>
KB02	Dalam 12 bulan yang lepas, adakah anda mengalami sesak nafas atau nafas berbunyi (berdehit)? <i>In the last 12 months, have you ever felt breathless or had wheezing?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No ... Sila ke KB06</i>	(-7) TT (-9) EJ ... <i>Sila ke KB06</i>
KB03	Dalam 12 bulan yang lepas, berapa kalikah anda mengalami sesak nafas atau nafas berbunyi (berdehit)? <i>In the last 12 months, how many attacks of breathlessness or wheezing have you had?</i>	1. 1 – 3 kali / <i>1-3 times</i> 2. 4 – 12 kali / <i>4-12 times</i> 3. > 12 kali / <i>>12 times</i>	(-7) TT (-9) EJ
KB04	Dalam 12 bulan yang lepas, secara purata, berapa kerap tidur anda diganggu kerana nafas berbunyi (berdehit)? <i>In the last 12 months, on the average, how often has your sleep been disturbed due to wheezing?</i>	1. Tiada / <i>None</i> 2. <1 malam dalam seminggu / <i><1 night per week</i> 3. ≥ 1 malam dalam seminggu / <i>≥1 night per week</i>	(-7) TT (-9) EJ
KB05	Dalam 12 bulan yang lepas, adakah nafas berbunyi (berdehit) yang anda alami menghadkan pertuturan kepada satu atau dua perkataan sahaja dalam satu sela nafas? <i>In the last 12 months, has wheezing ever been severe enough to limit your speech to only one or two words at a time between breaths?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
KB06	Adakah anda pernah menghidap penyakit asma (lelah) / sesak nafas (yang telah disahkan oleh pegawai perubatan)? <i>Have you ever had asthma / breathlessness (diagnosed by a medical practitioner)?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
KB07	Dalam 12 bulan yang lepas, adakah anda mengalami sesak nafas atau nafas berbunyi (berdehit) semasa atau selepas bersenam / bermain? <i>In the last 12 months, have you felt breathless or wheezed during or after exercise / play?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ
KB08	Dalam 12 bulan yang lepas, adakah anda mengalami batuk yang kering di waktu malam, selain daripada batuk semasa mengalami selsema atau jangkitan paru-paru? <i>In the last 12 months, have you had a dry cough at night, apart from a cough associated with a cold or a chest infection?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>	(-7) TT (-9) EJ

MODUL L1: ANTROPOMETRI / ANTHROPOMETRIC		
Keseluruhan Modul ini perlu dijalankan dan diisi oleh Jururawat This whole Module must be carried out and filled up by a nurse		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 15 TAHUN DAN KE ATAS ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 15 YEARS AND ABOVE		
Adakah responden mempunyai "kriteria pengecualian"? <i>Does the respondent have an "exclusion criteria"?</i>		
L101	Wanita mengandung <i>Pregnant</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>
L102	Wanita yang baru melahirkan anak (<60 hari dari tarikh lawatan) <i>Post-natal (<60 days from the time of visit)</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>
L103	Terlantar - akibat sakit teruk atau berpanjangan, kecederaan atau kemalangan <i>Bed ridden - due to chronic or prolonged illness, injury or accident</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>
L104	Mengalami ketidakupayaan fizikal yang menghadkan kebolehan untuk berdiri dengan tegak termasuk yang menggunakan kerusi roda <i>Having physical disabilities which can affect normal standing including those using wheel chair</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>
L105	Cacat anggota badan seperti tiada tangan atau tiada kaki dan spondylosis (bengkok tulang belakang) kecuali buta, bisu dan pekak <i>Body deformities such as no hand or leg and spondylosis (with the exception of blind, mute and deaf).</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>
Jika 'Ya' kepada salah satu Pilihan di atas, terus ke Modul L2		
L106	Tarikh Pengukuran Antropometri / Anthropometric Measurement Date: <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <input type="text"/><input type="text"/> Hari / <i>Day</i> </div> <div style="text-align: center;"> <input type="text"/><input type="text"/> Bulan / <i>Month</i> </div> <div style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> Tahun / <i>Year</i> </div> </div>	
L107	Berat Badan / Body Weight Ukuran 1 / <i>1st Measurement</i> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> kg	
L108	Ukuran 2 / <i>2nd Measurement</i> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> kg (-6) Tidak berkaitan / <i>Not applicable</i> (-9) Enggan diukur / <i>Refuse to be measured</i>	
L109	Tinggi / Height Ukuran 1 / <i>1st Measurement</i> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> cm	
L110	Ukuran 2 / <i>2nd Measurement</i> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> cm (-6) Tidak berkaitan / <i>Not applicable</i> (-9) Enggan diukur / <i>Refuse to be measured</i>	
L110a	Adakah tinggi berjaya diukur? <i>Is the height successfully measured?</i>	1. Ya / <i>Yes</i> ... Sila ke L113 2. Tidak / <i>No</i> ... Sila ke L111 (-7) TT (-9) EJ

L111	<p>Setengah depa lengan / Half-arm span</p> <p>Ukuran 1 / <i>1st Measurement</i></p> <p><input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> cm</p>
L112	<p>Ukuran 2 / <i>2nd Measurement</i></p> <p><input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> cm</p> <p>(-6) Tidak berkaitan / <i>Not applicable</i> (-9) Enggan diukur / <i>Refuse to be measured</i></p> <p>Jika bacaan tinggi tidak dapat diukur. Pengukuran hendaklah dibuat dengan unit sentimeter (cm)</p>
L113	<p>Ukur lilit pinggang / Waist circumference</p> <p>Ukuran 1 / <i>1st Measurement</i></p> <p><input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> cm</p>
L114	<p>Ukuran 2 / <i>2nd Measurement</i></p> <p><input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> cm</p> <p>(-6) Tidak berkaitan / <i>Not applicable</i> (-9) Enggan diukur / <i>Refuse to be measured</i></p> <p>Pengukuran ukurlilit pinggang dilakukan bagi responden dewasa 18 tahun dan ke atas. Pengukuran hendaklah dibuat dengan unit sentimeter (cm)</p>

MODUL L2: PEMERIKSAAN TEKANAN DARAH / <i>BLOOD PRESSURE EXAMINATION</i>		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS <i>ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 15 YEARS AND ABOVE</i>		
L2	Adakah responden bersetuju untuk menjalani pemeriksaan tekanan darah? <i>Did the respondent agree to undergo the blood pressure examination?</i>	1. Ya / <i>Yes ... Sila ke L201</i> 2. Tidak / <i>No ... Sila ke L3</i>
Bacaan tekanan darah / <i>Blood pressure reading</i>		
L201	Sistolik / <i>Systolic</i>	1 <input type="text"/> <input type="text"/> <input type="text"/> Bacaan pertama / <i>First reading</i>
L202	Diastolik / <i>Diastolic</i>	1 <input type="text"/> <input type="text"/> <input type="text"/> Bacaan pertama / <i>First reading</i>
L203	Sistolik / <i>Systolic</i>	2 <input type="text"/> <input type="text"/> <input type="text"/> Bacaan kedua / <i>Second reading</i>
L204	Diastolik / <i>Diastolic</i>	2 <input type="text"/> <input type="text"/> <input type="text"/> Bacaan kedua / <i>Second reading</i>
L205	Sistolik / <i>Systolic</i>	3 <input type="text"/> <input type="text"/> <input type="text"/> Bacaan ketiga / <i>Third reading</i>
L206	Diastolik / <i>Diastolic</i>	3 <input type="text"/> <input type="text"/> <input type="text"/> Bacaan ketiga / <i>Third reading</i>
**Bagi Modul berikutnya, jika wanita mengandung, TAMAT modul. Jika tidak mengandung, perlu lakukan Modul L3.		

MODUL L3: PEMERIKSAAN BIKOKimia / <i>BIOCHEMISTRY EXAMINATION</i>		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 18 TAHUN DAN KE ATAS <i>ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 18 YEARS AND ABOVE</i>		
L3	Adakah responden memberi kebenaran untuk mengambil darah kapilari? <i>Did the respondent give permission to take capillary blood?</i>	1. Ya / <i>Yes</i> ... Sila ke L301 2. Tidak / <i>No</i> ... Sila ke Modul M
L301	Dalam tempoh 8 jam yang lepas, adakah anda makan dan minum selain dari air kosong? <i>During the past 8 hours have you had anything to eat or drink, other than water?</i>	1. Ya / <i>Yes</i> (Tidak berpuasa / <i>Non-fasting</i>) 2. Tidak / <i>No</i> (Berpuasa / <i>Fasting</i>)
L301a	Paras glukosa kapilari <i>Capillary blood glucose level</i>	<input type="text"/> <input type="text"/> - <input type="text"/> 1 mmol/L
L301b	Bacaan paras jumlah kolesterol <i>Total cholesterol level measurement</i>	<input type="text"/> <input type="text"/> - <input type="text"/> 1 mmol/L
L301c	Bacaan paras HDL <i>HDL level measurement</i>	<input type="text"/> <input type="text"/> - <input type="text"/> 1 mmol/L
L301d	Bacaan paras LDL <i>LDL level measurement</i>	<input type="text"/> <input type="text"/> - <input type="text"/> 1 mmol/L
L301e	Bacaan paras trigliserida <i>Triglycerides level measurement</i>	<input type="text"/> <input type="text"/> - <input type="text"/> 1 mmol/L

SOALAN PENILAIAN KENDIRI / SELF-ADMINISTERED QUESTIONNAIRE (SAQ)**MODUL N: ALKOHOL / ALCOHOL**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Negeri [2 Digit]	DP [2 Digit]	DB [3 Digit]	BP [3 Digit]	Strata [1 Digit]	UB [3 Digit]	TK [3 Digit]	IR [2 Digit]	IDV [2 Digit]

KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 13 TAHUN DAN KE ATAS**ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 13 YEARS AND ABOVE**

Bulatkan jawapan yang bersesuaian / *Please circle an appropriate answer.*

N01	<p>Pernahkah anda minum sebarang minuman yang mengandungi alkohol? (seperti arak, bir, wain, minuman herba berarak, todi, samsu, tuak, whisky, stout dan lain-lain) <i>Have you ever consumed any alcoholic beverage? (Such as liquor, beer, wine, alcoholic herbal beverages, toddy, samsu, tuak, whisky, stout and others)</i></p> <p>1. Ya / <i>Yes</i> Ke soalan seterusnya / Go to next question 2. Tidak / <i>No</i> Sila ke modul 0 / Proceed to module 0</p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
N02	<p>Dalam masa 12 bulan yang lepas, adakah anda minum sebarang minuman yang mengandungi alkohol? (seperti arak, bir, wain, minuman herba berarak, todi, samsu, tuak, whisky, stout dan lain-lain) <i>In the last 12 months, did you consume any alcoholic beverage? (such as liquor, beer, wine, alcoholic herbal beverages, todi, samsu, tuak, whisky, stout and others)</i></p> <p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> Sila ke modul 0 / Proceed to module 0</p> <p style="text-align: right;">(-7) TT (-9) EJ</p>

ARAHAN

- Kertas soal selidik ini mengandungi 13 soalan untuk dijawab dengan sendiri oleh responden yang berumur **13 tahun dan ke atas. SEMUA JAWAPAN ADALAH SULIT.**
- Untuk jawapan yang dipilih, sila tandakan (✓) di kotak yang disediakan. Sila pilih **SATU JAWAPAN** sahaja.
- Bagi sesetengah soalan, anda mungkin perlu melompat ke soalan yang tertentu berdasarkan jawapan yang dipilih.
 - Untuk soalan N05 dan N06, sila teruskan ke soalan N12 jika soalan N05 dijawab sebagai "1 atau 2" dan soalan N06 dijawab sebagai "Tidak Pernah".
 - Untuk soalan N14, tamat modul jika soalan ini dijawab sebagai "Tidak / TT / EJ"
 - Jika tiada arahan khusus bagi sesuatu jawapan yang dipilih, anda dikehendaki menjawab soalan yang seterusnya (mengikut turutan nombor).
- Jika anda mempunyai sebarang kemusykilan semasa menjawab, sila dapatkan bantuan daripada penemuramah.

INSTRUCTIONS

- The following questionnaire has 13 self-administered questions to be answered by respondents aged **13 years old and above on their own. ALL YOUR ANSWERS ARE CONFIDENTIAL.**
- For the selected answers, please tick (✓) in the boxes provided. Please select only **ONE ANSWER.**
- For some questions, you may have to skip to another question according to the answers chosen.
 - For question N05 and N06, please proceed to question N12 if question N05 is answered as "1 or 2" and question N06 is answered as "Never".
 - For question N14, end this module if question N14 is answered as "No" or "Don't Know" or "Refuse to Answer".
 - If there is no instruction for the answer chosen, simply answer the following question (in line with the number sequence).
- If you have any doubts while answering the questionnaire, kindly seek assistance from the interviewer.

Sila tandakan (✓) pada kotak yang bersesuaian. <i>Please tick (✓) in the appropriate box.</i>	
<p>N03</p>	<p>Apakah jenis minuman beralkohol / arak / minuman keras yang paling kerap anda minum? Sila lihat kad N2 <i>What type of alcoholic beverage do you most frequently consume? Please see card N2</i></p>
	<p>Sila tandakan (✓) sekali sahaja iaitu pada minuman yang paling kerap diminum. <i>Please tick (✓) once only indicating the alcoholic beverage that is most often consumed.</i></p> <p><input type="checkbox"/> Shandy <i>Shandy</i></p> <p><input type="checkbox"/> Bir ATAU Lager ATAU Ale ATAU Stout <i>Bir OR Lager OR Ale OR Stout</i></p> <p><input type="checkbox"/> Wain ATAU Cider ATAU Champagne ATAU Peri ATAU Todi <i>Wine OR Cider OR Champagne OR Peri OR Toddy</i></p> <p><input type="checkbox"/> Tuak ATAU Tuak Kelapa ATAU Bahar ATAU Lihing ATAU Ijok <i>Tuak OR Tuak Kelapa OR Bahar OR Lihing OR Ijok</i></p> <p><input type="checkbox"/> Bir ATAU Lager ATAU Ale ATAU Stout <i>Bir OR Lager OR Ale OR Stout</i></p> <p><input type="checkbox"/> Brandi ATAU Rum ATAU Wiski ATAU Vodka ATAU Gin ATAU Samsu ATAU Samsu Cheng <i>Brandy OR Rum OR Whisky OR Vodka OR Gin OR Samsu OR Samsu Cheng</i></p> <p><input type="checkbox"/> Montoku ATAU Langkau <i>Montoku OR Langkau</i></p> <p><input type="checkbox"/> Lain-lain <i>Others</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
<p>N04</p>	<p>Dalam tempoh 12 bulan yang lepas, berapa kerapkah anda minum minuman beralkohol / arak / minuman keras? <i>In the last 12 months, how often have you had a drink containing alcohol?</i></p>
	<p><input type="checkbox"/> Sekali sebulan atau kurang <i>Once a month or less</i></p> <p><input type="checkbox"/> 2-3 kali seminggu <i>2-3 times a week</i></p> <p><input type="checkbox"/> 2-4 kali sebulan <i>2-4 times a month</i></p> <p><input type="checkbox"/> 4 kali atau lebih seminggu <i>4 or more times a week</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
<p>N05</p>	<p>Kebiasaannya pada hari yang anda minum, berapa banyakkah anda minum minuman beralkohol / arak / minuman keras? <i>How many alcoholic beverages do you have on a typical day when you are drinking?</i></p> <p>Jumlah pengambilan minuman beralkohol mestilah mengikut unit minuman beralkohol seperti yang ditunjukkan dalam Kad N1. <i>The total amount of alcohol consumed should be calculated in terms of standard drink consumed per day as shown in Card N1.</i></p>
	<p>Sila lihat kad N1 / <i>Please see card N1</i></p> <p><input type="checkbox"/> 1 atau 2 <i>1 or 2</i></p> <p><input type="checkbox"/> 3 atau 4 <i>3 or 4</i></p> <p><input type="checkbox"/> 5 atau 6 <i>5 or 6</i></p> <p><input type="checkbox"/> 7, 8 atau 9 <i>7, 8 or 9</i></p> <p><input type="checkbox"/> 10 atau lebih <i>10 or more</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>

<p>N06</p>	<p>Berapa kerap anda minum enam unit atau lebih minuman beralkohol pada satu masa? <i>How often do you have six or more drinks on one occasion?</i></p>	<p><input type="checkbox"/> Tidak Pernah <i>Never</i></p> <p><input type="checkbox"/> Sekali sebulan <i>Monthly</i></p> <p><input type="checkbox"/> Setiap hari atau hampir setiap hari <i>Daily or almost daily</i></p>	<p><input type="checkbox"/> Kurang dari sekali sebulan <i>Less than once a month</i></p> <p><input type="checkbox"/> Sekali seminggu <i>Weekly</i></p>	<p>(-7) TT (-9) EJ</p>
<p>JIKA SOALAN N05 DIJAWAB SEBAGAI “1 ATAU 2” DAN SOALAN N06 DIJAWAB SEBAGAI “TIDAK PERNAH” TERUS KE SOALAN N12. <i>IF ANSWERED “1 OR 2” FOR QUESTION N05 AND “NEVER” TO QUESTIONS N06, PROCEED TO QUESTION N12.</i></p>				
<p>N07</p>	<p>Dalam tempoh 12 bulan yang lepas, berapa kerapkah anda tidak boleh berhenti minum apabila anda mula minum minuman beralkohol / arak / minuman keras? <i>How often during the last 12 months have you found that you were not able to stop drinking once you had started?</i></p>	<p><input type="checkbox"/> Tidak Pernah <i>Never</i></p> <p><input type="checkbox"/> Sekali sebulan <i>Monthly</i></p> <p><input type="checkbox"/> Setiap hari atau hampir setiap hari <i>Daily or almost daily</i></p>	<p><input type="checkbox"/> Kurang dari sekali sebulan <i>Less than once a month</i></p> <p><input type="checkbox"/> Sekali seminggu <i>Weekly</i></p>	<p>(-7) TT (-9) EJ</p>
<p>N08</p>	<p>Dalam tempoh 12 bulan yang lepas, akibat dari minum minuman beralkohol / arak / minuman keras berapa kerapkah anda tidak boleh melakukan apa yang biasanya anda lakukan? <i>How often during the last 12 months have you failed to do what was normally expected from you because of drinking?</i></p>	<p><input type="checkbox"/> Tidak Pernah <i>Never</i></p> <p><input type="checkbox"/> Sekali sebulan <i>Monthly</i></p> <p><input type="checkbox"/> Setiap hari atau hampir setiap hari <i>Daily or almost daily</i></p>	<p><input type="checkbox"/> Kurang dari sekali sebulan <i>Less than once a month</i></p> <p><input type="checkbox"/> Sekali seminggu <i>Weekly</i></p>	<p>(-7) TT (-9) EJ</p>
<p>N09</p>	<p>Dalam tempoh 12 bulan yang lepas, selepas sesi meminum minuman beralkohol / arak / minuman keras dalam jumlah melebihi dari biasa, berapa kerapkah pada pagi esoknya anda perlu meminum minuman beralkohol / arak / minuman keras sebelum memulakan hari anda? <i>How often during the last 12 months you needed a first drink in the morning to get yourself going after a heavy drinking session?</i></p>	<p><input type="checkbox"/> Tidak Pernah <i>Never</i></p> <p><input type="checkbox"/> Sekali sebulan <i>Monthly</i></p> <p><input type="checkbox"/> Setiap hari atau hampir setiap hari <i>Daily or almost daily</i></p>	<p><input type="checkbox"/> Kurang dari sekali sebulan <i>Less than once a month</i></p> <p><input type="checkbox"/> Sekali seminggu <i>Weekly</i></p>	<p>(-7) TT (-9) EJ</p>
<p>N10</p>	<p>Dalam tempoh 12 bulan yang lepas, berapa kerapkah anda rasa bersalah atau menyesal selepas minum minuman beralkohol / arak / minuman keras? <i>How often during the last 12 months have you had a feeling of guilt remorse after drinking?</i></p>	<p><input type="checkbox"/> Tidak Pernah <i>Never</i></p> <p><input type="checkbox"/> Sekali sebulan <i>Monthly</i></p> <p><input type="checkbox"/> Setiap hari atau hampir setiap hari <i>Daily or almost daily</i></p>	<p><input type="checkbox"/> Kurang dari sekali sebulan <i>Less than once a month</i></p> <p><input type="checkbox"/> Sekali seminggu <i>Weekly</i></p>	<p>(-7) TT (-9) EJ</p>

<p>N11</p>	<p>Dalam tempoh 12 bulan yang lepas, berapa kerapkah anda tidak dapat mengingati apakah yang telah berlaku malam sebelumnya disebabkan anda telah mengambil minuman beralkohol / arak / minuman keras? <i>How often during the last 12 months have you been unable to remember what happened the night before because you had been drinking?</i></p>	<p><input type="checkbox"/> Tidak Pernah <i>Never</i></p> <p><input type="checkbox"/> Sekali sebulan <i>Monthly</i></p> <p><input type="checkbox"/> Setiap hari atau hampir setiap hari <i>Daily or almost daily</i></p> <p><input type="checkbox"/> Kurang dari sekali sebulan <i>Less than once a month</i></p> <p><input type="checkbox"/> Sekali seminggu <i>Weekly</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
<p>N12</p>	<p>Pernahkah anda atau orang lain tercedera disebabkan anda meminum minuman beralkohol / arak / minuman keras? <i>Have you or someone else been injured as a result of your drinking?</i></p>	<p><input type="checkbox"/> Tidak <i>No</i></p> <p><input type="checkbox"/> Ya, tetapi bukan dalam tempoh setahun yang lepas <i>Yes, but not in the last year</i></p> <p><input type="checkbox"/> Ya, dalam tempoh setahun yang lepas <i>Yes, during the last year</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
<p>N13</p>	<p>Pernahkah saudara atau kawan atau doktor atau anggota kesihatan mengambil berat atau mencadangkan supaya anda mengurangkan pengambilan minuman beralkohol / arak / minuman keras? <i>Has a relative or a friend or a doctor or a health worker been concerned about your drinking or suggested you cut down?</i></p>	<p><input type="checkbox"/> Tidak <i>No</i></p> <p><input type="checkbox"/> Ya, tetapi bukan dalam tempoh setahun yang lepas <i>Yes, but not in the last year</i></p> <p><input type="checkbox"/> Ya, dalam tempoh setahun yang lepas <i>Yes, during the last year</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
<p>N14</p>	<p>Adakah anda masih mengambil minuman beralkohol / arak / minuman keras dalam masa 1 bulan yang lalu? <i>Are you still consuming alcoholic beverages in the last one month?</i></p>	<p><input type="checkbox"/> Ya <i>Yes</i></p> <p><input type="checkbox"/> Tidak ... Tamat Modul <i>No ... End of module</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>
<p>N15</p>	<p>Berapa kerap anda minum enam atau lebih minuman beralkohol pada satu masa dalam masa 1 bulan yang lalu? <i>How often do you have six or more drinks on one occasion in the past 1 month?</i></p> <p>Jumlah pengambilan minuman beralkohol mestilah mengikut minuman alkohol seperti yang ditunjukkan dalam Kad N1. <i>The total amount of alcohol consumed should be calculated in terms of standard drink consumed per day as shown in Card N1.</i></p>	<p>Sila lihat Kad N1 / <i>Please see card N1</i></p> <p><input type="checkbox"/> Tidak Pernah <i>Never</i></p> <p><input type="checkbox"/> Sekali sebulan <i>Monthly</i></p> <p><input type="checkbox"/> Setiap hari atau hampir setiap hari <i>Daily or almost daily</i></p> <p><input type="checkbox"/> Kurang dari sekali sebulan <i>Less than once a month</i></p> <p><input type="checkbox"/> Sekali seminggu <i>Weekly</i></p> <p style="text-align: right;">(-7) TT (-9) EJ</p>

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Negeri [2 Digit]	DP [2 Digit]	DB [3 Digit]	BP [3 Digit]	Strata [1 Digit]	UB [3 Digit]	TK [3 Digit]	IR [2 Digit]	IDV [2 Digit]

MODUL O: KESIHATAN AM

KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 16 TAHUN DAN KE ATAS

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

SILA BACA DENGAN CERMAT:

Pihak kami ingin mengetahui samada anda mempunyai sebarang masalah perubatan, dan bagaimana kesihatan anda secara umum, sejak 2 minggu lalu. Sila jawab SEMUA soalan dan pilih jawapan yang paling hampir dengan keadaan anda sekarang.

SILA AMBIL PERHATIAN yang kami ingin mengetahui masalah terkini dan bukannya masalah di masa lalu. Adalah sangat penting untuk anda menjawab SEMUA soalan di bawah.

Sila tandakan Terima kasih.

Sejak 2 minggu yang lalu, berapa kerap anda diganggu oleh masalah-masalah yang berikut?:

	Tiada langsung	Beberapa hari	Lebih dari 7 hari	Hampir setiap hari
1. Kurang berminat atau kurang keseronokan dalam melakukan sesuatu perkara.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rasa sedih, tidak gembira atau putus asa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Masalah untuk tidur atau tidak tidur nyenyak atau tidur berlebihan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Rasa letih atau mempunyai sedikit tenaga.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Kurang selera atau makan berlebihan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Rasa buruk / teruk mengenai diri anda – atau anda seorang yang gagal atau anda telah menyebabkan diri anda atau keluarga anda kecewa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Masalah untuk menumpukan perhatian ke atas sesuatu perkara seperti membaca surat khabar atau menonton televisyen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Bergerak atau bercakap terlalu perlahan sehinggakan orang lain perasan? Atau sebaliknya-menjadi sangat resah atau gelisah sehinggakan anda telah bergerak dengan banyak daripada biasa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Memikirkan adalah lebih baik saja jika anda mati atau mencederakan diri sendiri dalam beberapa cara.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Terima kasih atas kerjasama anda.

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Negeri [2 Digit]	DP [2 Digit]	DB [3 Digit]	BP [3 Digit]	Strata [1 Digit]	UB [3 Digit]	TK [3 Digit]	IR [2 Digit]	IDV [2 Digit]

MODULE O: GENERAL HEALTH

ELIGIBILITY CRITERIA: MEMBER OF THE HOUSEHOLD AGED 16 YEARS AND ABOVE

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

PLEASE READ THIS CAREFULLY:

We would like to know if you have had any medical complaints and how your health has been in general over the past two weeks. Please answer ALL the questions simply by choosing the answer which you think most nearly applies to you.

REMEMBER THAT we want to know about present and recent complaints, not those you had in the past. It is important that you try to answer ALL the questions.

Please tick Thank you.

Over the last 2 weeks, how often have you been bothered by any of the following problems?:

	Not at all	Several days	More than half the days	Nearly everyday
1. Little interest or pleasure in doing things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Feeling down, depressed or hopeless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Trouble falling asleep, or staying asleep, or sleeping too much.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Feeling tired or having little energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Poor appetite or overeating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Feeling bad about yourself – or that you are a failure, or have let yourself or your family down.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Trouble concentrating on things, such as reading the newspaper or watching television.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around more than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Thoughts that you would be better off dead or of hurting yourself in some way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you very much for your co-operation.

14. Biasanya disukai oleh kanak-kanak lain. <i>Generally liked by other children.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Mudah mengalih perhatian, penumpuan melayang-layang. <i>Easily distracted, concentration wanders.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Gelisah atau lekat dengan orang dalam situasi baru, mudah hilang keyakinan. <i>Nervous or clingy in new situations, easily loses confidence.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Baik kepada kanak-kanak yang lebih muda. <i>Kind to younger children.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Selalu berbohong atau menipu. <i>Often lies or cheats.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Dibuli oleh kanak-kanak lain. <i>Bullied by other children.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Menawarkan secara sukarela pertolongan kepada orang lain (ibu bapa, guru, kanak-kanak lain). <i>Often volunteers to help others (parents, teachers, other children).</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Berfikir sebelum bertindak. <i>Thinks things out before acting.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Mencuri daripada rumah, sekolah atau lain-lain tempat. <i>Steals from home, school or elsewhere.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Mudah berbaik-baik dengan orang dewasa daripada kanak-kanak. <i>Gets on better with adults than with other children.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Banyak ketakutan, mudah takut. <i>Many fears, easily scared.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Membuat tugas dari awal hingga ke akhir, jangka masa perhatian baik. <i>Able to perform a task from start till the end, good attention span.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Siapakah penjaga kanak-kanak ini?
Who is the guardian of these children?

<p>Penjaga utama: <i>Main guardian</i></p> <ol style="list-style-type: none"> Ayah <i>Father</i> Ibu <i>Mother</i> Datuk <i>Grandfather</i> Nenek <i>Grandmother</i> Abang <i>Brother</i> Kakak <i>Sister</i> Pak cik <i>Uncle</i> Mak cik <i>Aunty</i> Lain- lain <i>Others</i>, <p>Sila nyatakan: <i>Please specify:</i> (Tidak termasuk pengasuh / penjaga nurseri) <i>(Not including baby sitter / nursery caregiver)</i></p> <p>Nama <i>Name:</i></p> <p>.....</p> <p>ID ID: <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <small>Neg. DP DB BP Strata UB TK IR IDV</small></p> <p>Umur <i>Age:</i> <input type="text"/><input type="text"/></p>	<p>Penjaga kedua: <i>Second guardian</i></p> <ol style="list-style-type: none"> Ayah <i>Father</i> Ibu <i>Mother</i> Datuk <i>Grandfather</i> Nenek <i>Grandmother</i> Abang <i>Brother</i> Kakak <i>Sister</i> Pak cik <i>Uncle</i> Mak cik <i>Aunty</i> Lain- lain <i>Others</i>, <p>Sila nyatakan: <i>Please specify:</i> (Tidak termasuk pengasuh / penjaga nurseri) <i>(Not including baby sitter / nursery caregiver)</i></p> <p>Nama <i>Name:</i></p> <p>.....</p> <p>ID ID: <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/> <small>Neg. DP DB BP Strata UB TK IR IDV</small></p> <p>Umur <i>Age:</i> <input type="text"/><input type="text"/></p>
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<p>Tahap Pendidikan: <i>Education Level</i></p> <ol style="list-style-type: none"> 1. Tidak pernah bersekolah <i>Never attended school</i> 2. Tidak habis sekolah rendah <i>Did not complete primary school</i> 3. Tamat darjah 6 <i>Completed standard 6</i> 4. Tamat tingkatan 3 <i>Completed form 3</i> 5. Tamat tingkatan 5 <i>Completed form 5</i> 6. Tamat tingkatan 6 / sijil / diploma <i>Completed form 6 / certificate / diploma</i> 7. Tamat pengajian peringkat sarjana muda <i>Completed Bachelor's degree</i> 8. Tamat pengajian peringkat sarjana <i>Completed Master's degree</i> 9. Tamat pengajian peringkat kedoktoran (PhD) <i>Completed Doctoral Degree</i> 10. Lain-Lain, <i>Others</i>, Sila nyatakan: <i>Please specify:</i> 	<p>Tahap Pendidikan: <i>Education Level</i></p> <ol style="list-style-type: none"> 1. Tidak pernah bersekolah <i>Never attended school</i> 2. Tidak habis sekolah rendah <i>Did not complete primary school</i> 3. Tamat darjah 6 <i>Completed standard 6</i> 4. Tamat tingkatan 3 <i>Completed form 3</i> 5. Tamat tingkatan 5 <i>Completed form 5</i> 6. Tamat tingkatan 6 / sijil / diploma <i>Completed form 6 / certificate / diploma</i> 7. Tamat pengajian peringkat sarjana muda <i>Completed Bachelor's degree</i> 8. Tamat pengajian peringkat sarjana <i>Completed Master's degree</i> 9. Tamat pengajian peringkat kedoktoran (PhD) <i>Completed Doctoral Degree</i> 10. Lain-Lain, <i>Others</i>, Sila nyatakan: <i>Please specify:</i>
<p>Pekerjaan: <i>Occupation</i></p> <ol style="list-style-type: none"> 1. Majikan <i>Employer</i> 2. Pekerja kerajaan <i>Government employee</i> 3. Pekerja separa kerajaan <i>Semi-government employee</i> 4. Pekerja swasta <i>Private employee</i> 5. Bekerja sendiri (contohnya pembeli-belah peribadi, pekerja bebas) <i>Self-employed (such as personal shopper, freelancer)</i> 6. Pekerja tanpa gaji <i>Unpaid worker</i> 7. Pekerja keluarga tanpa gaji <i>Unpaid family worker</i> 8. Lain-lain, <i>Others</i>, Sila nyatakan: <i>Please specify:</i> 	<p>Pekerjaan: <i>Occupation</i></p> <ol style="list-style-type: none"> 1. Majikan <i>Employer</i> 2. Pekerja kerajaan <i>Government employee</i> 3. Pekerja separa kerajaan <i>Semi-government employee</i> 4. Pekerja swasta <i>Private employee</i> 5. Bekerja sendiri (contohnya pembeli-belah peribadi, pekerja bebas) <i>Self-employed (such as personal shopper, freelancer)</i> 6. Pekerja tanpa gaji <i>Unpaid worker</i> 7. Pekerja keluarga tanpa gaji <i>Unpaid family worker</i> 8. Lain-lain, <i>Others</i>, Sila nyatakan: <i>Please specify:</i>
<p>Taraf Perkahwinan: <i>Marital Status</i></p> <ol style="list-style-type: none"> 1. Tidak pernah berkahwin <i>Never married</i> 2. Berkahwin <i>Married</i> 3. Berpisah <i>Separated</i> 4. Janda / Duda <i>Divorcee</i> 5. Balu (Kematian pasangan) <i>Widowed</i> 6. Tinggal bersama pasangan <i>Living with partner</i> 	<p>Taraf Perkahwinan: <i>Marital Status</i></p> <ol style="list-style-type: none"> 1. Tidak pernah berkahwin <i>Never married</i> 2. Berkahwin <i>Married</i> 3. Berpisah <i>Separated</i> 4. Janda / Duda <i>Divorcee</i> 5. Balu (Kematian pasangan) <i>Widowed</i> 6. Tinggal bersama pasangan <i>Living with partner</i>

TEMURAMAH MENERUSI TELEFON / COMPUTER-ASSISTED TELEPHONE INTERVIEWING (CATI)

MODUL Q: PERMINTAAN JAGAAN KESIHATAN / HEALTHCARE DEMAND

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Negeri [2 Digit]	DP [2 Digit]	DB [3 Digit]	BP [3 Digit]	Strata [1 Digit]	UB [3 Digit]	TK [3 Digit]	IR [2 Digit]	IDV [2 Digit]

ARAHAN

- Kertas soal selidik ini adalah untuk dijawab oleh responden mengikut umur yang sesuai. **SEMUA JAWAPAN ADALAH SULIT.**
- Sila **BULATKAN** jawapan yang dipilih.
- Sila ikut arahan soalan.** Bagi sesetengah soalan, anda mungkin perlu melompat ke soalan yang tertentu berdasarkan jawapan yang dipilih.
- Jika tiada arahan khusus bagi sesuatu jawapan yang dipilih, anda dikehendaki menjawab soalan yang seterusnya (mengikut turutan nombor).

INSTRUCTIONS

- The following questionnaire are to be answered by respondents according to their appropriate ages. **ALL ANSWERS ARE CONFIDENTIAL.**
- Please **CIRCLE** your answers.
- Please follow the instructions of the questions.** For some questions, you may have to skip to another question according to the answers chosen.
- If there is no instruction for the answer chosen, simply answer the following question (in line with the number sequence).

QA: PENILAIAN KESIHATAN KENDIRI / SELF-RATED HEALTH

Kriteria kelayakan: Ahli isi rumah berumur 13 tahun dan ke atas. Selain itu, terus ke QB01.
Eligibility criteria: Household members aged 13 years and above. Otherwise, go to QB01

Bulatkan jawapan yang bersesuaian / *Please circle the appropriate answer.*

QA01	Bagaimanakah anda menilai tahap kesihatan anda? <i>How would you rate your health status?</i>	<ol style="list-style-type: none"> Sangat bagus <i>Excellent</i> Bagus <i>Good</i> Sederhana <i>Fair</i> Tidak bagus <i>Poor</i> Sangat tidak bagus <i>Very poor</i> (-7) TT (-9) EJ
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QB: KESIHATAN UMUM & PENYAKIT / GENERAL HEALTH & ILLNESS

Kriteria kelayakan: Semua ahli isi rumah / Eligibility criteria: All household members

QB01	Dalam tempoh 2 minggu lepas, dari ... 2023 hingga hari ini, pernahkah anda mengalami masalah kesihatan seperti demam, selesema, batuk, cirit birit dan lain-lain? (tidak termasuk masalah mulut atau gigi) <i>In the last 2 weeks, from ... 2023 till today, have you experienced health problems such as fever, runny nose, cough, diarrhoea and others? (excluding dental problems)</i> [PENEMURAMAH: Rujuk Kod A untuk contoh lain (Masalah kesihatan)]	<ol style="list-style-type: none"> Ya <i>Yes</i> Tidak <i>No... sila ke QC01</i> (-7) TT (-9) EJ ... sila ke QC01
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QB02	<p>Dalam tempoh 2 minggu lepas, dari ... 2023 hingga hari ini, adakah anda lakukan perkara berikut bagi masalah kesihatan tersebut? <i>In the last 2 weeks, from ... 2023 till today, did you do any of the following for the stated health problem?</i></p>	
QB02a	<p>Mendapatkan rawatan / ubat / nasihat daripada pengamal kesihatan seperti doktor, ahli farmasi, ahli fisioterapi, pengamal homeopati dan lain-lain Sought treatment / medication / advice from healthcare practitioner(s) such as a doctor, pharmacist, physiotherapist, homeopathic practitioner and others</p> <p>[PENEMURAMAH: Rujuk Kod B untuk contoh lain (Pengamal kesihatan)]</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
QB02b	<p>Menggunakan ubat / vitamin / suplemen tanpa nasihat pengamal kesihatan <i>Took medicine / vitamin / supplement without advice from healthcare practitioner(s)</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
QB02c	<p>Mendapatkan nasihat daripada orang lain selain pengamal kesihatan <i>Got advice from someone other than healthcare practitioner(s)</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
QB02d	<p>Mencari maklumat kesihatan daripada sumber lain termasuk atas talian, seperti internet, aplikasi kesihatan, TV, radio, dan lain-lain Sought health-related information from other sources including online, such as the internet, health applications, TV, radio and others</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
QB02e	<p>Adakah masalah kesihatan tersebut mengganggu aktiviti harian, belajar, atau kerja anda? <i>Did the health problem disturb your daily activities, study, or work?</i></p> <p>Pilih satu jawapan UTAMA sahaja. <i>Choose only one MAIN answer.</i></p>	<p>1. Tidak mengganggu / <i>Did not disturb at all</i> 2. Sedikit mengganggu / <i>Mildly disturbed</i> 3. Sederhana mengganggu / <i>Moderately disturbed</i> 4. Banyak mengganggu / <i>Severely disturbed</i> 5. Sangat banyak mengganggu / <i>Extremely disturbed</i></p> <p>(-7) TT (-9) EJ</p>
QC: JAGAAN KESIHATAN PESAKIT LUAR / OUT-PATIENT CARE		
Kriteria kelayakan: Semua ahli isi rumah / Eligibility criteria: All household members		
QC01	<p>Dalam tempoh 2 minggu lepas hingga hari ini, pernahkah anda mendapatkan jagaan kesihatan pesakit luar? (Tempat rawatan termasuk klinik, tempat perubatan tradisional dan komplementari, klinik di hospital, jabatan kecemasan atau pusat rawatan harian / ambulatori. Jagaan ini tidak memerlukan anda untuk bermalam dan tidak melibatkan jagaan kesihatan mulut atau gigi) <i>In the last 2 weeks till today, have you received any out-patient care? (Healthcare facilities include clinics, premises of traditional or complementary treatment, clinics in a hospital, emergency department or day care / ambulatory care centres. This care does not involve overnight stay and does not include dental care)</i></p>	<p>1. Ya <i>Yes</i> 2. Tidak <i>No... sila ke QC10</i></p> <p>(-7) TT (-9) EJ ... sila ke QC10</p>

PENEMURAMAH: Tanyakan semua soalan berkenaan (a), diikuti dengan (b).			
		a. Fasiliti kesihatan kerajaan / Public health facility	b. Fasiliti kesihatan swasta / Private health facility
QC02	<p>Bagi (rujuk kepada a atau b), berapa kali anda pergi mendapatkan rawatan pesakit luar (dalam tempoh 2 minggu lepas)?</p> <p><i>For (refer to a or b), how many times have you received out-patient care (in the last 2 weeks)?</i></p> <p>Nota: sila letakkan '0' sekiranya tiada lawatan ke fasiliti tersebut / <i>please write '0' if no visit to the facility</i></p>	<p><input type="text"/> kali / <i>times</i></p> <p>...sila ke QC02b jika '0'</p> <p>(-7) TT (-9) EJ</p>	<p><input type="text"/> kali / <i>times</i></p> <p>...sila ke QC10 jika '0'</p> <p>(-7) TT (-9) EJ</p>
QC03	<p>Untuk kesemua lawatan di (rujuk kepada a atau b), berapa kali anda pergi ke Jabatan Kecemasan?</p> <p><i>For all visits at (refer to a or b), how many times did you go to Emergency Department?</i></p> <p>Nota: sila letakkan '0' sekiranya tiada lawatan ke fasiliti tersebut / <i>please write '0' if no visit to the facility</i></p>	<p><input type="text"/> kali / <i>times</i></p> <p>(-7) TT (-9) EJ</p>	<p><input type="text"/> kali / <i>times</i></p> <p>(-7) TT (-9) EJ</p>
QC04	<p>Untuk kesemua lawatan di (rujuk kepada a atau b), siapa yang bayar untuk rawatan?</p> <p><i>For all visits at (refer to a or b), who paid for the treatment?</i></p>		
QC05	<p>Insurans kesihatan peribadi</p> <p><i>Private health insurance</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
QC06	<p>Tajaan majikan (klinik panel/insurans pekerja)</p> <p><i>Employer-sponsored (panel clinic/employee insurance)</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
QC07	<p>Pengecualian bayaran (contohnya warga emas, jagaan kesihatan ibu mengandung/selepas bersalin, penderma darah dan lain-lain)</p> <p><i>Fee exemption (such as senior citizen, antenatal/postnatal care, blood donor and others)</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i></p> <p>(-7) TT (-9) EJ</p>
QC08	<p>Sendiri/keluarga/ahli isi rumah</p> <p><i>Self/family/household members</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> ... sila ke QC02b</p> <p>(-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i>... sila ke QC10</p> <p>(-7) TT (-9) EJ</p>
QC09	<p>Untuk kesemua lawatan di (merujuk kepada QC02), berapa jumlah anda bayar untuk jagaan kesihatan, termasuk rundingan, ubat, ujian dan lain-lain?</p> <p>(TIDAK TERMASUK bayaran balik insuran/majikan)</p> <p><i>For all visits at (referring to QC02), how much in total did you pay for healthcare, including consultation, medications, tests and others?</i></p> <p>(DOES NOT INCLUDE reimbursement paid by insurance/employer)</p> <p>Nota: Jika tiada, isi 0 / <i>If none, write 0</i></p>	<p>RM <input type="text"/></p> <p>(-7) TT (-9) EJ</p>	<p>RM <input type="text"/></p> <p>(-7) TT (-9) EJ</p>

QC: JAGAAN KESIHATAN MULUT ATAU GIGI / DENTAL CARE			
Kriteria kelayakan: Semua ahli isi rumah / Eligibility criteria: All household members			
QC10	Dalam tempoh 12 bulan lepas hingga hari ini, pernahkah anda menerima pemeriksaan / rawatan pergigian ? Ini termasuk di klinik pergigian, klinik pergigian di sekolah / tadika, klinik pergigian bergerak dan perkhidmatan pergigian bergerak. <i>In the last 12 months till today, did you receive any dental check-up / treatment? This includes a visit to the dental clinic, dental clinic at school / kindergarten, mobile dental clinic and mobile dental care.</i>	<ol style="list-style-type: none"> Ya, di fasiliti pergigian <i>Yes, at a dental facility</i> Ya, di tadika/ sekolah <i>Yes, at a kindergarten/ school</i> Ya, di fasiliti pergigian dan sekolah <i>Yes, at a dental facility and kindergarten/ school</i> Tidak <i>No ... sila ke QC18</i> (-7) TT (-9) EJ ... sila ke QC18 	
PENEMURAMAH: Tanyakan semua soalan berkenaan (a), diikuti dengan (b).			
		a. Fasiliti kesihatan kerajaan / Public health facility	b. Fasiliti kesihatan swasta / Private health facility
QC11	Bagi (rujuk kepada a atau b), berapa kali anda pergi mendapatkan pemeriksaan / rawatan pergigian ? <i>For (refer to a or b), how many times have you received dental check-up / treatment?</i> Nota: sila letakkan '0' sekiranya tiada lawatan ke fasiliti tersebut / <i>please write '0' if no visit to the facility</i>	<input type="text"/> kali / <i>times</i> ...sila ke QC11b jika '0' (-7) TT (-9) EJ	<input type="text"/> kali / <i>times</i> ...sila ke QC18 jika '0' (-7) TT (-9) EJ
QC12	Untuk kesemua lawatan di (rujuk kepada a atau b), siapa yang bayar untuk rawatan? <i>For all visits at (refer to a or b), who paid for the treatment?</i>		
QC13	Insurans kesihatan peribadi <i>Private health insurance</i>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No</i> (-7) TT (-9) EJ	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No</i> (-7) TT (-9) EJ
QC14	Tajaan majikan (klinik panel/insurans pekerja) <i>Employer-sponsored (panel clinic/ employee insurance)</i>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No</i> (-7) TT (-9) EJ	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No</i> (-7) TT (-9) EJ
QC15	Pengecualian bayaran (contohnya warga emas, jagaan kesihatan ibu mengandung/selepas bersalin, penderma darah dan lain-lain) <i>Fee exemption (such as senior citizen, antenatal/postnatal care, blood donor and others)</i>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No</i> (-7) TT (-9) EJ	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No</i> (-7) TT (-9) EJ
QC16	Sendiri/keluarga/ahli isi rumah <i>Self/family/household members</i>	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No ... sila ke QC11b</i> (-7) TT (-9) EJ	<ol style="list-style-type: none"> Ya / <i>Yes</i> Tidak / <i>No ... sila ke QC18</i> (-7) TT (-9) EJ

<p>QC17</p>	<p>Untuk kesemua lawatan di (merujuk kepada QC11), berapa jumlah anda bayar untuk jagaan kesihatan pergigian, termasuk rundingan pemeriksaan, rawatan, ubat, ujian dan lain-lain? Rawatan termasuk korona gigi/ veneer/jambatan/gigi palsu/implant/ prostheses mulut (TIDAK TERMASUK bayaran balik insuran/majikan) <i>For all visits at (referring to QC11), how much in total did you pay for oral healthcare, including consultation, examination, treatment, medications, tests and others? Treatment including crown/veneer/bridge/denture/implant/ other prosthesis</i> (DOES NOT INCLUDE reimbursement paid by insurance/employer) Nota: Jika tiada, isi 0 / <i>If none, write 0</i></p>	<p>RM <input type="text"/></p>	<p>RM <input type="text"/></p>
<p>QC: JAGAAN KESIHATAN PESAKIT DALAM / INPATIENT CARE</p>			
<p>Kriteria kelayakan: Semua ahli isi rumah / Eligibility criteria: All household members</p>			
<p>QC18</p>	<p>Dalam tempoh 12 bulan lepas hingga hari ini, pernahkah anda bermalam untuk rawatan? Tempat rawatan termasuk wad hospital, klinik, hospis, rumah bersalin, jabatan kecemasan, tempat pengamal tradisional dan komplementari, dan lain-lain. <i>In the last 12 months till today, have you had an overnight stay for treatment? Place of treatment includes hospital wards, clinics, hospices, maternity home, emergency department, premise of traditional and complementary medicine practitioner and others.</i></p> <p>Nota: Bermalam untuk rawatan sekurang-kurangnya SATU malam (melempi pukul 12 pagi). Ini TIDAK TERMASUK seseorang yang dimasukkan ke tempat rawatan dan discaj pada hari yang sama, lawatan ke klinik pesakit luar, rawatan yang tidak berkaitan dengan kesihatan, menemani pesakit bermalam sebagai ahli keluarga atau dimasukkan ke pusat rawatan harian / <i>Overnight stay for at least ONE night (after 12 am). This DOES NOT INCLUDE someone who was admitted and discharged on the same day, visit to outpatient clinic, non-health related treatment, accompanying patient as a family member or admitted to a daycare centre.</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No ... sila ke QD01</i> (-7) TT (-9) EJ ... sila ke QD01</p>	
<p>PENEMURAMAH: Tanyakan semua soalan berkenaan (a), diikuti dengan (b).</p>			
		<p>a. Fasiliti kesihatan kerajaan / Public health facility</p>	<p>b. Fasiliti kesihatan swasta / Private health facility</p>
<p>QC19</p>	<p>Bagi (rujuk kepada a atau b), berapa kali anda pergi mendapatkan rawatan bermalam tersebut? <i>For (refer to a or b) how many times have you stayed overnight for that treatment?</i></p> <p>Nota: sila letakkan '0' sekiranya tiada lawatan ke tempat tersebut / <i>please write '0' if no visit to the facility</i></p>	<p><input type="text"/> kali / <i>times</i> ...sila ke QC19b jika '0' (-7) TT (-9) EJ</p>	<p><input type="text"/> kali / <i>times</i> ...sila ke QD01 jika '0' (-7) TT (-9) EJ</p>
<p>NHMS 2023</p>	<p>Buku Soal Selidik Penyakit Tidak Berjangkit & Permintaan Jagaan Kesihatan 57</p>		

QC20	<p>Untuk kesemua lawatan di (rujuk kepada a atau b), berapa kali anda pergi ke Jabatan Kecemasan? Ini termasuk di hospital atau klinik. <i>For all visits at (refer to a or b) how many times did you go to the Emergency Department? This includes a hospital or clinic.</i></p> <p>Nota: sila letakkan '0' sekiranya tiada lawatan ke tempat tersebut / <i>please write '0' if no visit to the facility</i></p>	<input type="text"/> <input type="text"/> kali / <i>times</i> (-7) TT (-9) EJ	<input type="text"/> <input type="text"/> kali / <i>times</i> (-7) TT (-9) EJ
QC21	<p>Untuk kesemua lawatan di (rujuk kepada a atau b), siapa yang bayar untuk rawatan? <i>For all visits at (refer to a or b), who paid for the treatment?</i></p>		
QC22	<p>Insurans kesihatan peribadi <i>Private health insurance</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ</p>
QC23	<p>Tajaan majikan (klinik panel/insurans pekerja) <i>Employer-sponsored (panel clinic/ employee insurance)</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ</p>
QC24	<p>Pengecualian bayaran (contohnya warga emas, jagaan kesihatan ibu mengandung/selepas bersalin, penderma darah dan lain-lain) <i>Fee exemption (such as senior citizen, antenatal/postnatal care, blood donor and others)</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ</p>
QC25	<p>Sendiri/keluarga/ahli isi rumah <i>Self/family/household members</i></p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> ... sila ke QC19b (-7) TT (-9) EJ</p>	<p>1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> ... sila ke QD01 (-7) TT (-9) EJ</p>
QC26	<p>Untuk kesemua lawatan di (merujuk kepada QC19), berapa jumlah anda bayar untuk jagaan kesihatan, termasuk rundingan, ubat, ujian dan lain-lain? (TIDAK TERMASUK bayaran balik insuran/majikan) <i>For all visits at (referring to QC19), how much in total did you pay for healthcare, including consultation, medications, tests and others? (DOES NOT INCLUDE reimbursement paid by insurance/employer)</i> Nota: Jika tiada, isi 0 / <i>If none, write 0</i></p>	<p>RM <input type="text"/></p>	<p>RM <input type="text"/></p>

QD: PEMERIKSAAN KESIHATAN / MEDICAL CHECK-UP		
Kriteria kelayakan: Ahli isi rumah berumur 18 tahun dan ke atas. Selain itu, terus ke QE01.		
Eligibility criteria: Household member aged 18 years and above. Otherwise, go to QE01.		
Bulatkan jawapan yang bersesuaian / <i>Please circle the appropriate answer.</i>		
QD01	Dalam tempoh 12 bulan lepas hingga hari ini, adakah anda pergi mendapatkan pemeriksaan kesihatan seperti ujian darah, ujian air kencing, x-ray, dan lain-lain perkhidmatan kesihatan? <i>In the last 12 months until today, did you go for a medical check-up such as a blood test, urine test, x-ray and other services?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No ... sila ke QE01</i> (-7) TT (-9) EJ ...sila ke QE01
QD02	Lawatan ini adalah ... ? <i>This visit was... ?</i> Pilih satu jawapan UTAMA sahaja. <i>Choose only one MAIN answer.</i>	1. Dirujuk oleh pengamal perubatan / <i>Referred by a healthcare practitioner</i> 2. Inisiatif Sendiri / <i>Self-initiative</i> 3. Lain-lain (contohnya untuk kemasukan ke universiti / pekerjaan dan ketetapan insurans) / <i>Others (such as for employment/university intake and insurance requirement)</i> (-7) TT (-9) EJ
QD03	Jika anda diberitahu keputusan saringan tidak normal , adakah anda pergi mendapatkan rawatan daripada pengamal kesihatan? <i>If you were told that the screening result was abnormal, did you seek treatment from a healthcare practitioner(s)?</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> 3. Tidak berkaitan (keputusan saringan normal) / <i>Not applicable (normal screening result)</i> (-7) TT (-9) EJ
QE: PERKHIDMATAN JAGAAN KESIHATAN ATAS TALIAN / ONLINE HEALTHCARE SERVICES		
Kriteria kelayakan: Ahli isi rumah berumur 18 tahun dan ke atas. Selain itu, terus ke QF01.		
Eligibility criteria: Household member aged 18 years and above. Otherwise, go to QF01.		
QE01	Dalam tempoh 12 bulan yang lepas hingga hari ini, pernahkah anda menggunakan perkhidmatan jagaan kesihatan secara atas talian atau 'Online Healthcare Services' (OHS) seperti... <i>In the last 12 months until today, have you ever used Online Healthcare Services (OHS) such as...</i> Nota: Anda boleh tandakan lebih daripada satu jawapan / <i>You may tick more than one answer</i>	
QE02	Temujanji lawatan <i>Appointment</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
QE03	Rundingan/Konsultasi klinikal dan pelan rawatan <i>Clinical consultation and care plan</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
QE04	Penghantaran/pengambilan ubat susulan ke rumah <i>Delivery/pick-up of follow-up medicines</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
QE05	Meminta pengamal kesihatan melawat ke rumah <i>Request for visit by a healthcare practitioner</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
QE06	Pemakluman keputusan ujian makmal dan radiologi termasuk ujian sendiri <i>Notification of laboratory and radiology tests including self-test</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ
QE07	Sesi pendidikan kesihatan bersama pengamal kesihatan termasuk simulasi rehabilitasi <i>Health education session with healthcare practitioner including rehabilitation simulation</i>	1. Ya / <i>Yes</i> 2. Tidak / <i>No</i> (-7) TT (-9) EJ

QF: HALANGAN MENDAPATKAN JAGAAN KESIHATAN / BARRIERS TO GET HEALTHCARE		
Kriteria kelayakan: Semua ahli isi rumah / Eligibility criteria: All household members		
QF01	Dalam tempoh 12 bulan yang lepas, pernahkah anda jatuh sakit sehingga anda merasakan perlu untuk mendapatkan jagaan kesihatan (contohnya sakit gigi, masalah kesihatan lelaki, kemurungan atau rawatan susulan) tetapi tidak mendapatkannya? <i>In the last 12 months, have you fallen sick that you felt the need for health care (such as toothache, men's health problem, depression or follow up treatment) but did not get the care?</i> Nota: sila jawab situasi terkini / <i>please answer the most recent situation</i>	1. Ya / Yes 2. Tidak / No ... sila ke QG01 (-7) TT (-9) EJ ...sila ke QG01
QF02	Adakah anda tidak mendapatkan jagaan kesihatan kerana sebab-sebab berikut? <i>Did you not get healthcare for the following reasons?</i> Nota: Anda boleh pilih lebih daripada satu jawapan / <i>You may choose more than one answer.</i>	
QF03	Rawatan terlalu mahal / Tidak mampu / Kekangan kewangan <i>Treatment is too expensive / Cannot afford / Lack of money</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
QF04	Tiada wang untuk membayar tambang pengangkutan <i>No money for transport fee</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
QF05	Tiada pengangkutan <i>No transportation</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
QF06	Fasiliti terlalu jauh / Masa perjalanan terlalu lama <i>Distance to medical facility is too far away / Travel time is too long</i>	1. Ya / Yes 2. Tidak / No (-7) TT (-9) EJ
QG: MAKLUMAN DIAGNOSA KANAK-KANAK YANG SAKIT / INFORMED OF SICK CHILD'S DIAGNOSIS		
Kriteria kelayakan: Ahli isi rumah berumur 18 tahun dan ke atas. Selain itu, soalan TAMAT. <i>Eligibility criteria: Household member aged 18 years old and above. Otherwise, the questionnaire ENDS.</i>		
Bulatkan jawapan yang bersesuaian / <i>Please circle the appropriate answer.</i>		
QG01	Dalam tempoh 3 bulan lepas , pernahkah anda berpengalaman menemani kanak-kanak berumur 5 tahun ke bawah yang sakit ke fasiliti kesihatan? <i>In the last 3 months, have you ever experienced accompanied a sick child under 5 years old to a health facility?</i>	1. Ya / Yes 2. Tidak / No ... Tamat modul / End of module (-7) TT (-9) EJ ...Tamat modul / End of module
QG02	Adakah pengamal kesihatan menerangkan kepada anda diagnosa / penyakit atau pelan rawatan kanak-kanak tersebut (contohnya perlu rawatan susulan / mendapatkan ubat / rawatan fisioterapi / menjalani ujian darah / tanda-tanda amaran)? <i>Did the healthcare practitioner explain to you the diagnosis / illness or care plan for the child (such as the need to follow up / get medicine / physiotherapy treatment / do blood test / warning signs)?</i>	1. Ya, diterangkan diagnosa / penyakit sahaja / Yes, only diagnosis / illness was explained 2. Ya, diterangkan pelan rawatan sahaja / Yes, only care plan was explained 3. Ya, kedua-duanya / Yes, both 4. Masih dalam peringkat penyiasatan / Still under investigation 5. Tidak / No (-7) TT (-9) EJ

MODUL TAMAT / MODULE ENDS
Terima kasih kerana meluangkan masa / Thank you for your time



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APPENDIX 10 Code Book, NHMS 2023

NHMS 2023

TINJAUAN KEBANGSAAN KESIHATAN & MORBIDITI
PENYAKIT TIDAK BERJANGKIT & PERMINTAAN JAGAAN KESIHATAN



KEMENTERIAN KESIHATAN MALAYSIA
INSTITUT KESIHATAN UMUM

BUKU KOD



TINJAUAN KEBANGSAAN KESIHATAN DAN MORBIDITI 2023
NATIONAL HEALTH AND MORBIDITY SURVEY 2023

BUKU KOD
CODE BOOK

INSTITUT KESIHATAN UMUM
INSTITUTE FOR PUBLIC HEALTH
KEMENTERIAN KESIHATAN MALAYSIA
MINISTRY OF HEALTH MALAYSIA

Bumiputera Sabah / *Bumiputera of Sabah*

Kod / Code	Pilihan Jawapan / <i>Choice of Answers</i>
1	Bajau/ Sama
2	Balabak/ Molbog
3	Bisaya/Bisayah
4	Bulongan
5	Idahan/ Ida'an
6	Iranun/ Ilanun
7	Kadayan/ Kedayan
8	Kadazandusun atau Dusun atau Kadazan

Kod / Code	Pilihan Jawapan / <i>Choice of Answers</i>
9	Melayu Brunei/ Brunei
10	Murut
11	Orang Sungai/ Sungoi
12	Rungus
13	Suluk
14	Lundayeh/ Lundayuh
15	Jawa, Bugis, Banjar (Sabah)
16	Bumiputera Sabah Lain-Lain

Bumiputera Sarawak / *Bumiputera of Sarawak*

Kod / Code	Pilihan Jawapan / <i>Choice of Answers</i>
1	Bah Mali
2	Bakong
3	Berawan
4	Bidayuh
5	Bisayah (Sarawak)
6	Bukitan
7	Dali'
8	Javanese atau Jawa (Sarawak)
9	Iban
10	Kadayan (Sarawak)
11	Kajang
12	Kanowit
13	Kayan
14	Kalabit
15	Kenyah
16	Kiput/ Lakiput
17	Lisum
18	Lugat

Kod / Code	Pilihan Jawapan / <i>Choice of Answers</i>
19	Lun Bawang/ Murut (Sarawak)
20	Melanau
21	Miriek (Miri)
22	Narom
23	Penan
24	Sa'ban/ Saben
25	Sabup
26	Segan (Baie)
27	Sian
28	Sihan
29	Sipeng
30	Tabun
31	Tagal
32	Tanjong
33	Tetau atau Tatau
34	Tring
35	Ukit
36	Bumiputera Sarawak Lain-lain

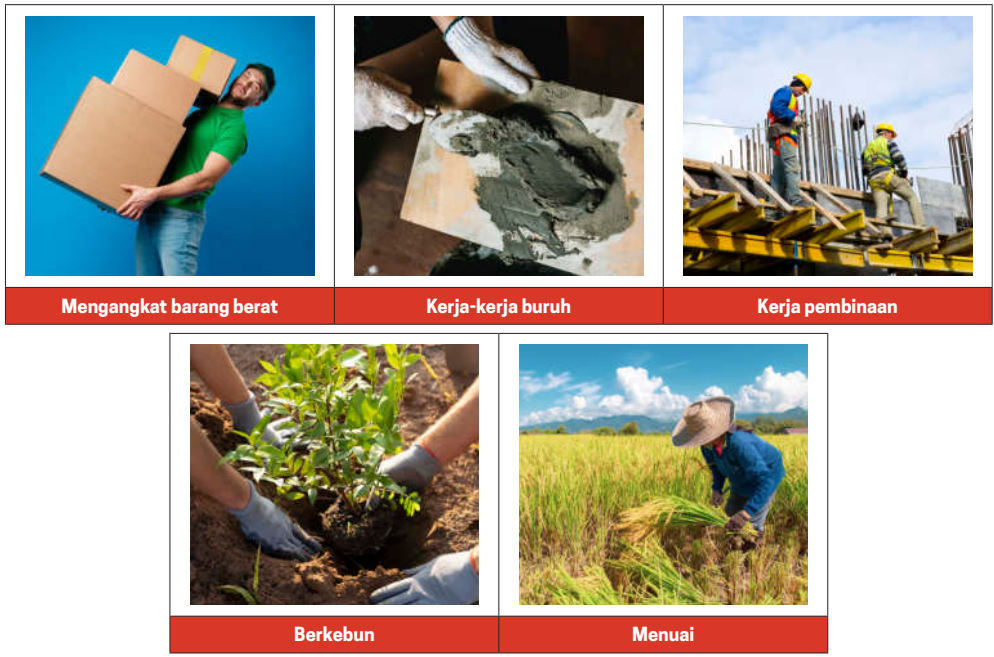
GAMBAR MODUL B - KENCING MANIS

B1 - Rawatan mata



GAMBAR MODUL E - AKTIVITI FIZIKAL

E1 - Aktiviti Kerja Berat



E2 - Aktiviti kerja sederhana



Membawa barang yang ringan



Membuat kerja rumah



Mengecat rumah



Memancing

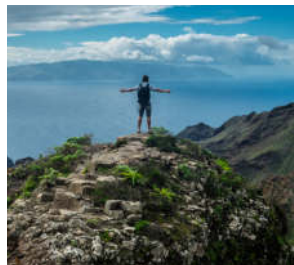


Membasuh kereta



Menjalankan jualan gerai

E3 - Aktiviti riadah Lasak



Mendaki bukit



Berlari





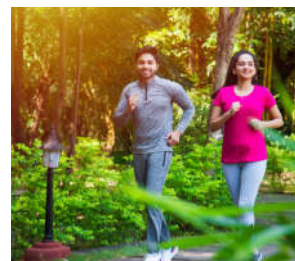
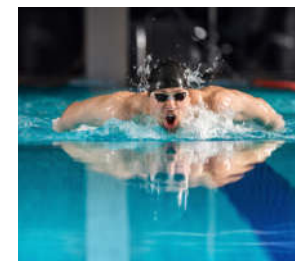


Aerobik



Bermain bola sepak

E4 - Aktiviti riadah Sederhana

		
<p>Tai chi</p>	<p>Yoga</p>	<p>Bermain bola tampar</p>
		
<p>Berbasikal</p>	<p>Berjalan pantas</p>	<p>Berenang</p>

GAMBAR MODUL F - MEROKOK DAN PENGGUNAAN TEMBAKAU

F1 Jenis-jenis produk tembakau yang dihisap

		
<p>Rokok yang dikilang</p>	<p>Rokok gulung sendiri</p>	<p>Rokok Daun</p>
		
<p>Kretek</p>	<p>Bidi</p>	<p>Cerut / cigarillos</p>



F2 Jenis-jenis produk tembakau dipanaskan

















F3 Jenis-jenis produk tembakau tanpa asap



GAMBAR MODUL H - AMALAN PEMAKANAN

**H1 Buah-buahan
Sukatan 1 Hidangan buah**

			
0.5 biji buah jambu batu = 1 hidangan	0.5 biji buah naga = 1 hidangan	1 biji epal = 1 hidangan	1 biji oren = 1 hidangan
			
2 biji pisang = 1 hidangan	2 biji ciku = 1 hidangan	2 biji belimbing = 1 hidangan	1 potong betik = 1 hidangan
			
1 potong tembikai = 1 hidangan	3 ulas durian = 1 hidangan	4 ulas cempedak = 1 hidangan	7 biji rambutan = 1 hidangan
			
	8 biji longan = 1 hidangan	8 biji anggur = 1 hidangan	

H2 Sayur-sayuran Sukatan 1 hidangan sayur dimasak			
Sukatan 1 hidangan sayur dimasak		Sukatan 1 hidangan sayur tidak dimasak	
			
0.5 cawan teh sayur dimasak= 1 hidangan	4 sudu makan sayur dimasak= 1 hidangan	1 senduk sayur dimasak=1 hidangan	1 cawan ulam / salad / sayur mentah = 1 hidangan
H3 Sukatan air kosong			
			
1 gelas = 250ml	A: 1 botol besar (1500ml) = 6 gelas	B: 1 botol kecil (500ml) = 2 gelas	C: 1 cawan plastik (325ml) = 1.3 gelas
			
A/B/C = 250ml = 1 gelas	D = 300ml = 1.2 gelas	E = 400ml = 1.6 gelas	A/E/F = 200ml = 0.8 gelas
	B/D = 300ml = 1.2 gelas	C = 350ml = 1.4 gelas	
GAMBAR MODUL J - ASMA			
J1 - Jenis-jenis ubatan asma			
			

GAMBAR MODUL N - ALKOHOL

N1

		
<p>320 ml (1 tin) bir Kandungan alkohol >2% & <10%</p>	<p>140 ml wain Kandungan alkohol 7% ke 15%</p>	<p>150 ml todi / bahar Kandungan alkohol 7% ke 15%</p>
		
<p>100 ml tuak / lihing Kandungan alkohol 7% ke 15%</p>	<p>30 ml montoku Kandungan alkohol >30%</p>	<p>30 ml langkau / samsu / brandi / wiski Kandungan alkohol >30%</p>

N2-Jenis-jenis minuman beralkohol	
Minuman	Deskripsi
Shandy	Sejenis bir campuran bersama limau-lemon berkarbonat atau minuman berperisa lemon.
Bir	Minuman beralkohol yang dihasilkan oleh pendidihan dan penapaian kanji, kebanyakannya diperolehi dari bijirin - yang mana paling umum adalah barli malt, walaupun gandum, jagung, dan beras juga digunakan secara meluas.
Lager	Sejenis bir yang dihasilkan menggunakan yis (<i>bottom-fermenting yeast</i>).
Ale	Sejenis bir yang dihasilkan menggunakan yis (<i>top-fermenting yeast</i>).
Stout	Sejenis bir gelap (<i>dark beer</i>).
Wain	Sejenis minuman beralkohol yang dibuat dari sari buah anggur.
Cider	Sejenis minuman beralkohol yang dibuat dari sari buah epal.
Champagne	Sejenis minuman beralkohol yang dibuat dari sari buah anggur yang berkarbonat.
Todi	Sejenis minuman yg diperbuat daripada nira nyiur yg dimasamkan.
Tuak / tuak kelapa	Sejenis minuman beralkohol tradisi yang popular dikalangan masyarakat asli atau bumiputera. Tuak pada asasnya merupakan sejenis minuman yang terhasil dari pemeraman bahan tertentu, jenis bahan tersebut bergantung kepada suku kaum yang menghasilkannya. Bagi masyarakat Kelantan pula, perkataan tuak merujuk kepada nira iaitu minuman yang dihasilkan dari mayang kelapa yang kandungan gulanya belum bertukar kepada alkohol.
Lihing	Sejenis wain beras berasal dari negeri Sabah dan diperbuat dari pulut. Juga dikenali sebagai hiing, kinarung, kinomol, kinopi, linahas, sagantang dan tapai.
Brandi	Sejenis minuman beralkohol diperbuat dari minuman anggur yang diberi pewarna caramel.
Rum	Sejenis minuman beralkohol yang diperbuat daripada keluaran sampingan tebu, seperti molases dan jus tebu.
Whisky	Sejenis minuman beralkohol yang dibuat daripada penapaian bijirin yang dilumat. Terdapat pelbagai jenis whisky yang dihasilkan bergantung kepada bijian (yang mungkin akan mengalami proses pemaltan) digunakan sebagai bahan mentah termasuklah barli, jagung, rai, dan gandum. Whisky biasanya akan disimpan untuk tempoh yang begitu lama dalam tong-tong kayu yang diperbuat daripada oak putih.
Vodka	Sejenis minuman beralkohol berasal dari Poland dan Rusia. Mengandungi air dan ethanol dari penyulingan bijirin / gandum / kentang / molases bit gula.
Gin	Sejenis minuman beralkohol dari hasil fermentasi sereal (jelai, gandum, haver) yang diberi aroma buah (runjung) pohon juniper.
Montoku	Minuman tradisi masyarakat Kadazan Dusun Sabah. Sejenis minuman beralkohol yang diperbuat dari nasi yang ditapaikan.

Kod A - Masalah Kesihatan / Code A - Health Problems

Kod / Code	Pilihan Jawapan / Choice of Answers	Kod / Code	Pilihan Jawapan / Choice of Answers
01	Demam / Fever	12	Muntah / Vomiting
02	Sakit tekak / Sore throat	13	Pedih ulu hati / Heartburn
03	Sukar untuk menelan / Difficulty in swallowing	14	Masalah kencing / Urination problem
04	Selesema / Hidung tersumbat / Running nose / Blocked nose	15	Bengkak / Swelling
05	Batuk (berkahak atau tanpa kahak) / Cough (with or without phlegm)	16	Masalah kulit / Ekzema / Skin problem / Eczema
06	Nafas berbunyi / Lelah / Wheezing / Asthma	17	Sakit kepala / Pening Kepala / Headache / Dizziness / Giddiness
07	Sakit telinga / Telinga bernanah / Earache / Pus from ear(s)	18	Alahan / Allergies
08	Sakit mata / Radang mata / Eye pain / Conjunctivitis	19	Luka / Skin lesion
09	Sakit perut / Stomach-ache	20	Sakit dada / Chest pain
10	Kembung perut / Bloating stomach	21	Sakit sendi / otot / Joint / Muscle pain
11	Cirit birit / Diarrhoea	22	Lain-lain masalah / Others

Kod B - Pengamal Kesihatan / Code B - Healthcare Practitioner

Moden / Modern	
Kod / Code	Pilihan Jawapan / Choice of Answers
01	Doktor (termasuk pakar) / Medical doctor (including specialists)
02	Penolong pegawai perubatan / Assistant medical officer
03	Doktor gigi / Dentist / Dental surgeon
04	Ahli farmasi / Pharmacist / Pharmaceutical chemist
05	Pembantu farmasi / Pharmaceutical assistant / technician
06	Jururawat terlatih / Jururawat pergigian / Registered professional nurse / Dental nurse
07	Jururawat masyarakat / Community nurse
08	Penolong jururawat (assistant nurse) / Nursing associate / auxiliary
09	Optometris / Juruoptik (tukang cermin mata) / Optometrist / Optician
10	Ahli fisioterapi / Ahli terapi Cara Kerja / Physiotherapist / Occupational therapist
11	Ahli pemakanan / Ahli dietetik / Nutritionist / Dietician
12	Bidan terlatih / Certified midwife

Tradisional dan Komplementari / Traditional and Complementary	
13	Bidan kampung / Wakil kesihatan kampung / Midwife associate / auxiliary / Traditional birth attendant
14	Pengamal perubatan tradisional dan komplementari (contohnya pengamal perubatan tradisional Melayu, pengamal perubatan tradisional Cina, pengamal perubatan tradisional India, pengamal homeopati, pengamal pengobatan Islam dan lain-lain) / Midwife associate / auxiliary / Traditional birth attendant / Traditional and complementary medicine practitioner (such as traditional Malay medicine practitioner, traditional Chinese medicine practitioner, traditional Indian practitioner, homoeopathic practitioner, Islamic medicine practitioner and others)



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Email: **nhms.iku@moh.gov.my**

APPENDIX 11 Publicity Materials, NHMS 2023



Figure 7: NHMS 2023: NCD & HCD Banner and Bunting



**Terima Kasih
DI ATAS
KERJASAMA ANDA !!**

MARI BERSAMA-SAMA MENINGKATKAN
TARAF KESEHATAN RAKYAT MALAYSIA

HUBUNGI KAMI
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Kompleks Institut Kesihatan Negara
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40170 Shah Alam, Selangor

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Topik-topik dalam tinjauan ini

- Kencing manis
- Hipertensi (Tekanan darah tinggi)
- Tahap Kolestrol Tinggi
- Aktiviti fizikal
- Merokok dan penggunaan tembakau
- Pengambilan alkohol
- Saringan kesihatan
- Amalan pemakanan
- Status nutrisi (Anthropometri)
- Kesihatan mental (dewasa & kanak-kanak)
- Asma
- Ketidakupayaan
- Permintaan jagaan kesihatan

Topics in this survey

- Diabetes
- Hypertension
- Hypercholesterolaemia
- Physical activity
- Smoking and Tobacco use
- Alcohol consumption
- Health screening
- Dietary practices
- Nutritional status (Anthropometry)
- Mental health (Adults & children)
- Asthma
- Disability
- Healthcare demand



KEMENTERIAN KESEHATAN MALAYSIA
INSTITUT KESEHATAN UMUM

**TINJAUAN KEBANGSAAN
KESEHATAN DAN MORBIDITI
(NHMS) 2023**

PENYAKIT TIDAK BERJANGKIT
DAN PERMINTAAN JAGAAN
KESEHATAN

**NATIONAL HEALTH
AND MORBIDITY SURVEY
(NHMS) 2023**

NON-COMMUNICABLE DISEASES
AND HEALTHCARE DEMAND

TEPOH PENGUMPULAN DATA
JULAI - SEPTEMBER 2023

www.iku.gov.my/nhms

PENGENALAN NHMS 2023

Kenapa NHMS 2023 dijalankan ?

NHMS 2023 bertemakan "Penyakit tidak Berjangkit dan Permintaan Jagaan Kesihatan" dijalankan dengan objektif untuk mengumpul data komuniti berkaitan penyakit tidak berjangkit, faktor-faktor risiko penyakit tidak berjangkit dan permintaan jagaan kesihatan.

Siapakah penduduk yang terlibat ?

Penduduk pada setiap peringkat umur.

Bagaimana tempat kediaman dipilih ?

Pemilihan tempat kediaman adalah secara rawak menggunakan rangka persampelan daripada Jabatan Perangkaan Malaysia iaitu dianggarkan melibatkan 6,000 tempat kediaman terpilih seluruh negara.

Apakah aktiviti yang dijalankan semasa tinjauan ?

- Temuramah bersemuka
- Soal selidik sendiri
- Temuramah melalui telefon
- Penilaian klinikal
- Pengambilan darah (hujung jari)

INTRODUCTION NHMS 2023

Why is NHMS 2023 conducted ?

NHMS 2023 with the theme "Non-communicable Diseases and Healthcare Demand" primary aim is to gather community-based data and evidence on non-communicable diseases, risk factors, and healthcare demand.

Who are the residents involved ?

Residents of all ages.

How was the household selected ?

The household were randomly selected using sampling frame from Department of Statistic, Malaysia, where approximately 6,000 household were selected nationwide.

What are the survey activities ?

- Face-to-face interview
- Self-administered questionnaire
- Telephone interview
- Clinical assessment
- Blood investigation (finger prick)



KEMENTERIAN KESEHATAN MALAYSIA
INSTITUT KESEHATAN UMUM

**Pengenalan
INSTITUT KESEHATAN UMUM**

Institut Kesihatan Umum (IKU) merupakan salah sebuah institut penyelidikan di bawah Institut Kesihatan Negara, Kementerian Kesihatan Malaysia. Misi kami di IKU adalah untuk menyokong penggabulan dasar berasaskan bukti melalui penyelidikan epidemiologi berkualiti tinggi dan tinjauan berasaskan populasi untuk kesihatan rakyat Malaysia. Ini diperkukuhkan lagi dengan memanfaatkan perkongsian dan kerjasama dengan organisasi di peringkat kebangsaan dan antarabangsa

**Introduction
INSTITUT KESEHATAN UMUM**

Institut Kesihatan Umum (IKU) is one of the research institutes under National Institutes of Health, Ministry of Health. IKU focuses on public health research. Our mission at IKU is to support evidence-based policy making through high quality epidemiological research and population-based survey for the health of the Malaysians. This is further advanced by leveraging on partnerships and collaboration with national and international organizations.

www.iku.gov.my

Figure 8: NHMS 2023: NCD & HCD Brochures



Figure 9: NHMS 2023: NCD & HCD Official Car Sticker and Poster

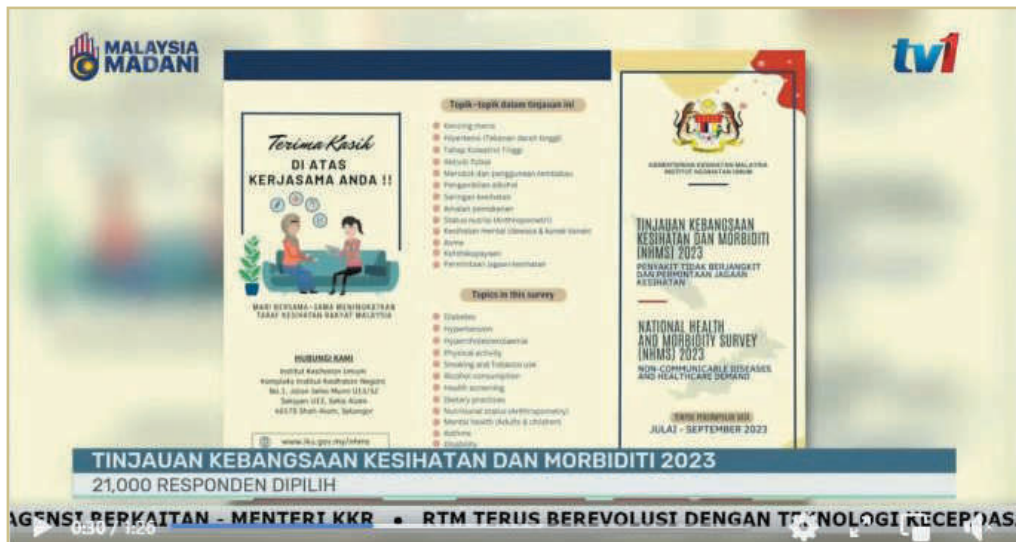
APPENDIX 12 Promotion and Media Coverage for NHMS 2023



An interview session with the Principal Investigator of NHMS 2023 was featured on Selamat Pagi Malaysia, RTM TV1, on 27th June 2023.



An interview session with the NHMS coordinator was aired on BERNAMA TV on 14th August 2023.



RTM news coverage highlighting the NHMS 2023 data collection activities in Sabah aired on 15th July 2023.



An interview session on Radio Mutiara FM, Penang, aired on 20th June 2024.



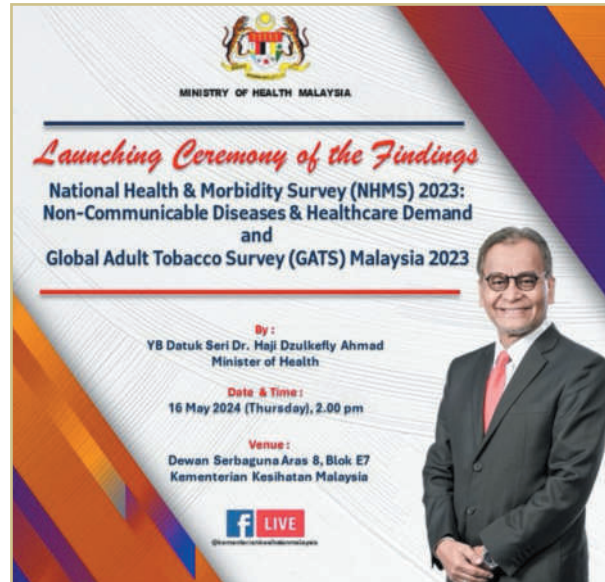
An interview session on Labuan FM aired on 19th June 2023.



Frequently Asked Questions (FAQ) poster of NHMS 2023 on the KKM Facebook page.



The launching ceremony for NHMS 2023: Non-communicable Diseases and Healthcare Demand data collection was officiated by the Minister of Health, YB Dr. Zaliha Mustafa, on 14th July 2023.



The findings of NHMS 2023: Non-communicable Diseases and Healthcare Demand were officially launched by the Minister of Health, YB Datuk Seri Dr. Haji Dzulkefly Ahmad, on 16th May 2024.



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