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NHMS 2020

NATIONAL HEALTH & MORBIDITY SURVEY

COMMUNICABLE DISEASES

Volume II : Cognitive, Affective, Behaviour

iku INSTITUTE FOR PUBLIC HEALTH @NIH

KEMENTERIAN KESIHATAN MALAYSIA

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National Health and Morbidity Survey (NHMS) 2020 : Cognitive, Attitude and Behaviour (Communicable Diseases) Volume II

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Message From

THE DIRECTOR-GENERAL OF HEALTH MALAYSIA

The National Health and Morbidity Survey (NHMS) is a national level community study that has been conducted by the Institute for Public Health since 1986. The wealth of data that the NHMS provides are essential and instrumental in monitoring and evaluating programmes conducted by the Ministry of Health. The NHMS has consistently gone beyond providing up-to-date epidemiological data on key diseases and risk factors, as they are the benchmark in reflecting our laborious progress towards achieving global commitments of the Sustainable Development Goals (SDG) indicators.

Many issues concerning infectious diseases continue to pose a threat to the country. COVID-19 virus infection is an important example of how an infectious disease can devastate a community, burdening the health care system and economy of the country. On the other hand, incidence rates of Dengue, Hepatitis B & C, and TB continues to increase. Emerging diseases such as dog-mediated human Rabies has caused us to lose our eradication status. Misuse of antibiotics has led to anti-microbial resistance that threatens the effective treatment of an ever-increasing range of infections. Nevertheless, we have successfully achieved zero locally transmitted human Malaria in advance. Hence, improving public knowledge is vital in the control and management of infectious diseases.

Interestingly, it was during the COVID-19 pandemic that the NHMS 2020 became the first NHMS that focused primarily on Infectious Diseases, which were the COVID-19 virus infections, Hepatitis B & C, HIV, Tuberculosis, Antibiotic Use & Anti-Microbial Resistance, Malaria, Dengue, and dog associated zoonotic disease. I am confident the accumulated data will assist policymakers, program managers, and stakeholders in enhancing Infectious Diseases programs and strategies for our country.

The NHMS 2020 report is an outcome of collaborations between various organisations such as the Institute for Health Behavioural Research (IHBR), Institute for Medical Research (IMR), and experts from universities and other agencies. My heartiest congratulations to all collaborators as I hope that the comprehensive implementation of this report will benefit many parties in the future.

Ultimately, this survey will not be successful without the gracious support from the state health departments for their endless contributions, including providing logistics reinforcements and human resources. I wish to express my deepest gratitude to all the State Health Directors and their team members for their immeasurable support. My commendation also goes to the survey team from the Institute for Public Health and Institute for Health Behavioural Research for the successful completion of this valuable survey. Thank you to all the agencies involved for their support and cooperation throughout the process. Last but not least, my heartfelt appreciation to all the respondents for their cooperation in this survey, and I urge everyone to join hands towards creating a healthier Malaysia. The results from this survey are imperative as evidence-based and will be used to support and formulate appropriate initiatives for the control and prevention of communicable diseases activities in Malaysia.

YBHG. TAN SRI DATO' SERI DR NOOR HISHAM BIN ABDULLAH
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CHAIRMAN OF NHMS STEERING COMMITTEE
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We also extend our gratitude to all personnel in Institute for Public Health and Institute for Health Behavioural Research for their support in carrying out this survey.

The authors also thank all parties who assisted in the implementation of the survey, from the Central Committee Team, Field Supervisors, Team Leaders, Data Collectors and Drivers, without whom the survey would not have been a success. Finally, our sincere appreciation is extended to all respondents who had participated in and contributed their valuable time and precious information to the survey. It is our hope that these findings will help program leaders and policymakers to better run the communicable diseases programs and other services available to the people of Malaysia.

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Executive Summary

The National Health and Morbidity Survey (NHMS) is conducted to collect community data for the Ministry of Health Malaysia to review the country's health policies and priorities. The NHMS 2020 focused on the scope of communicable diseases. For the Cognitive, Affective and Behaviour (CAB) components, two communicable diseases topics were included: Dengue Prevention and Dog-mediated Zoonotic Diseases. The NHMS 2020 was a cross-sectional survey that employed a complex survey design with a two-stage stratified cluster random sampling. The sampling is nationally representative and covers the entire population of Malaysia residing in non-institutionalized living quarter units. A total of 113 enumeration blocks (EBs) were chosen from all states in Malaysia, including the federal territories.

In order to reduce contact time with respondents, data for the CAB components was collected using a self-administered questionnaire (SAQ). During scouting, household members aged 13 years and older were invited to participate in this survey and were given a CAB booklet. Completed booklets were returned to the data collection team by mail or in person at the data collection centre. Data were analysed using a complex survey data analysis procedure that included weighting to obtain population estimates. This survey included 5,957 individuals aged one year and older and 1,876 living quarters, yielding an overall response rate of 77.9%. The total response rate for CAB postal survey which involved respondents aged 13 years and older was 73.6%.

Dengue fever remains a major public health concern in Malaysia. The MOH has implemented numerous initiatives to combat dengue. The CAB survey which was part of the NHMS 2020 found that 58.5% of people perceived dengue as a health threat. Approximately 60.6% of Malaysian residents believed their dengue prevention activities effectively controlled dengue, while 22.6% believed there were high barriers to conducting dengue control activities on their own. Also, 34.5% believed that the government had effectively controlled dengue. From the behavioural perspective, 36.7% of Malaysians performed a “Search & Destroy” at least ‘once a week’ in their home and surroundings, while 37.5% participated in community ‘gotong-royong’ to prevent dengue in their communities.

Dog-mediated human rabies is one of the diseases that had previously been eradicated but has re-emerged in Malaysia. Dog rabies has been reported in some Malaysian states, despite the fact that dog-mediated human rabies is endemic in Sarawak. To ensure infection prevention in the community, it is critical to have a thorough understanding of dog-mediated zoonotic disease. From the CAB assessment, 46.4% of Malaysian residents aged 13 years or older had high knowledge of dog-mediated human rabies. Approximately 7.3% of Malaysian residents reported being bitten or scratched by dogs, and 15.3% of them practiced good health seeking behaviour in accordance with the MOH guideline. The findings from the CAB component are critical for the country to improve communicable disease prevention efforts. The information provides evidence-based guidance to health policymakers in developing effective control and prevention strategies based on knowledge and behavioural intervention.

ACRONYMS AND ABBREVIATIONS

CAB	Cognitive, Affective and Behaviour
CATI	Computer-assisted Telephone Interview
CCT	Centralised Committee Team
COMBI	Communication for Behavioural Impact
DOSM	Department of Statistics Malaysia
CSV	Comma-separated values
EBs	Enumeration Blocks
HIV	Human Immunodeficiency Virus
HCV	Hepatitis C Virus
ID	Identity document
IHBR	Institute for Health Behavioural Research
LQ	Living Quarters
MOH	Ministry of Health
MREC	Medical Research and Ethics Committee
NMRR	National Medical Research Registry
NHMS	National Health and Morbidity Survey
PSU	Primary Sampling Unit
RSE	Relative Standard Error
SAQ	Self-administered Questionnaire
SPSS	Statistical Package for the Social Sciences
SSU	Secondary Sampling Unit
USCDC	US Center for Communicable Disease Control

NHMS 2020 (Communicable Diseases): Cognitive, Affective and Behaviour

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1.1 Background

The National Health and Morbidity Survey (NHMS) is a population-based survey that has been implemented since 1986. Since 2011, the NHMS has been conducted annually in four-year cycles with the aim of supplementing routinely available data to the Ministry of Health Malaysia (MOH) on the patterns of health problems, health needs, and expenditure among the Malaysian population. The NHMS 2020 was the first national survey in the country that mainly focused on communicable diseases which includes components on the Cognitive, Affective and Behavioural (CAB) aspects of communicable disease prevention. The Institute for Health Behavioural Research (IHBR) was given the responsibility and task in developing instruments for the CAB components, specifically on topics such as Dengue Prevention and Dog-mediated Zoonotic Disease, in collaboration with the Institute for Public Health.

Globally, the burden of communicable diseases has decreased significantly in the past decades. However, in recent years, the emergence and re-emergence of infectious diseases pose a serious threat to global health. Rapid and uncontrolled urbanisation has contributed to the emergence of novel infectious diseases as a result of human exposure to disease vectors and reservoirs[1]. The resurgence of infectious diseases has been documented globally, and can be attributed to urban congestion, urban poor, illegal immigration and deteriorating water and sanitation infrastructure[1]. Increased travel has accelerated the spread of infections by introducing diseases to previously eradicated areas. In addition, the increased access to antibiotics for treating infections have resulted in the excessive usage of antibiotics that have accelerated antibiotic resistance. Furthermore, stigmatization and the lack of knowledge of certain infectious diseases like HIV and Ebola have also hampered the effectiveness of communicable diseases prevention and control. Vaccine hesitancy and

the stigmatization associated with health-seeking further contribute to the emergence and re-emergence of infectious diseases.

Despite numerous efforts to control mosquito-borne diseases, dengue fever remains an important public health problem in Malaysia. Dengue fever has risen to become the number one threat in recent years, with an incidence rate of 397.71 cases per 100,000 population in 2019[2]. One of the factors contributing to the increase in dengue cases is a lack of dengue prevention practices, particularly in dengue-endemic areas[3,4]. For instance, a multi-pronged approach to dengue control has been implemented, including Communication for Behavioural Impact (COMBI), a strategy for community mobilisation for dengue prevention. Despite years of success in preventing dengue, community awareness of COMBI as a dengue prevention strategy continues to be an issue.

Zoonotic diseases have been identified as a new threat to communities where humans and animals coexist. Human rabies has recently resurfaced in Malaysia following its eradication. Disease outbreaks due to pets have become more prevalent, as more sporadic zoonotic cases have been reported in Malaysia. The US Centre for Communicable Disease Control (USCDC) declared alert level 2 (rabies infectious areas) in three divisions of Sarawak in August 2017 in response to the recent human rabies epidemic in the State[5]. Although there have been no reported cases of human rabies transmitted by dogs in Peninsular Malaysia, there have been cases reported of canine rabies, which poses a risk of human infection[6]. Knowledge and awareness of the transmission and reservoirs for pet-related disease, are critical in preventing the disease spread in the community.

Since 1986, previous NHMS have gathered extensive population data on the prevalence of a variety of non-communicable and communicable diseases. However, a comprehensive data on the CAB domains is scarce. Controlling communicable diseases such as dengue fever and zoonoses effectively requires an in-depth understanding of community awareness, attitudes, and practice[4,6]. This information is required for the purpose of planning and implementing community-based health education programmes. Monde 2012[7] suggested several roles in exploring CAB domains in a population survey:

- Define the scope of a known problem; confirm or refute a hypothesis; offer new perspectives on a situation's facts.
- Increase fundamental theme-related awareness, attitudes, and practices; determine what is known and done about various health-related topics.
- Establish a baseline (reference value) for future comparisons and aid in determining the efficacy of health education programmes in terms of health-related behaviour change. Propose an intervention strategy that takes the unique local circumstances and the cultural factors that influence them into account; design activities that are appropriate for the targeted community.

The conceptual and operational definitions of CAB that guided this study were based on Bloom's taxonomy[8] **(Table I)**.

Table I: Conceptual and operational definition

Domain	Conceptual	Operational
Cognitive	Cognitive refers to the mental processes involved in gaining knowledge and comprehension. These processes include thinking, knowing, remembering, judging, and problem-solving. These are higher-level functions of the brain and encompass language, imagination, perception, and planning.	The cognitive is measured by the level of knowledge and awareness of certain topics.
Affective	Affective domain includes the manner in which humans deal with things emotionally, such as feelings, values, appreciation, enthusiasm, motivations, and attitudes.	The affective domain is measured by attitudes and perception towards threats, treatment, effectiveness, and severity of certain topics.
Behaviour	Behaviour is defined as the way an individual acts towards people, society or objects in which it can be either bad or good and can be normal or abnormal according to social norms.	The behavioural domain is measured by health seeking, information seeking, practices, participation, and associated factors.

1.2 Survey Objectives

1.2.1 General objectives

To provide the MOH with community-based data and evidence regarding the general Malaysian population's knowledge, awareness, attitudes, perceptions and behaviour regarding dengue prevention and dog-mediated zoonotic diseases.

1.2.2 Specific objectives (Dengue Prevention Module)

- To assess the community's awareness and participation in communication for behavioural impact (COMBI).
- To assess the perceived threat of dengue.
- To assess the perceived effectiveness of dengue control activities.
- To assess the perceived barrier for non-participation in dengue control activities.
- To assess the respondent's participation in dengue control activities at the community and individual level.

1.2.3 Specific Objectives (Dog-mediated Zoonotic Diseases Module)

- To assess the general public's knowledge on dog-mediated zoonotic diseases.
- To assess general public awareness on the Animal Welfare Act 2015.
- To assess public perception of the risk factors for contracting dog-mediated zoonotic diseases.
- To identify good health-seeking behaviour in people who had been bitten or scratched by a dog in the previous year.
- To identify good health-seeking behaviour among those who have never been bitten or scratched by dogs, but given the circumstances, what would be their corrective measure if they were bitten?
- To evaluate dog owner's ownership and responsibility for their pet.

2. Methodology

2.1 Target population

The NHMS 2020 is a cross-sectional survey with a complex survey design. The sample represents the entire population aged one year and above residing in non-institutionalized living quarter (LQ) units in Malaysia, regardless of citizenship. The survey excluded individuals residing in institutional LQs such as hotels, hostels, hospitals, prisons, boarding houses, and nursing homes. All individuals aged 13 years or older from the selected households are eligible to participate in the CAB postal survey.

2.2 Sampling Frame

Prior to the sampling process, an updated sampling frame for this survey was provided by the Malaysian Department of Statistics (DOSM). Malaysia's geographical area is divided into Enumeration Blocks (EBs), with each EB classified as urban or rural by the DOSM. An urban area is defined as one with a combined population of 10,000 or more, whereas a rural area is defined as one with a combined population of less than 10,000. According to DOSM, Malaysia has over 90,000 EBs. Each EB typically contains between 80 and 120 LQs and has between 500 and 600 people.

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 was calculated for each objective and was finalized according to the criteria as follows:

a. The prevalence with the largest sample size required was for Hepatitis C (HCV): 2.5%[9],
b. Margin of error (e) between 0.00125 (HCV) to 0.05,
c. Confidence interval of 95%.

Few adjustments were made to ensure optimum sample size:

a. Adjusted for the finite population (Based on 2020 projected population)
b. Adjusted for the design effect (deff), where n(complex)= n(srs)*deff

$$n \geq \frac{n_{SRS}}{1 + \frac{n_{SRS}}{N}}$$

c. Adjusted the n(complex) taking into account expected non-response rates of 50%, considering for blood taking via venepuncture procedure, n(adj)=n(complex)* (1+non-response rate).

Further sample size adjustments were made based on the analysis's requirements, including whether the prevalence estimate was at the national, urban, or rural level, or by age group. After adjustment, 2,260 LQs were chosen from 113 of Malaysia's total EBs with an estimated 5,000 respondents. Samples were allocated proportionately based on population size to states, urban and rural **(Table II)**. Thus, more samples were allocated to states with larger population sizes, such as Selangor, Johor, Sabah, and Sarawak. A lesser number of samples were allocated to states with smaller population sizes such as Perlis, Melaka, and Wilayah Persekutuan Putrajaya.

Table II: Distribution of samples by states, NHMS 2020

Zone	State	Enumeration Block			Living Quarters		
		Urban	Rural	Total	Urban	Rural	Total
South	Johor	5	5	10	100	100	200
	Melaka	3	1	4	60	20	80
	Negeri Sembilan	3	3	6	60	60	120
Central	Selangor	12	4	16	240	80	320
	WP Kuala Lumpur	6	0	6	120	0	120
	WP Putrajaya	1	0	1	20	0	20
North	Perak	4	4	8	80	80	160
	Pulau Pinang	2	1	3	40	20	60
	Kedah	3	4	7	60	80	140
	Perlis	1	1	2	20	20	40
East Coast	Kelantan	3	4	7	60	80	140
	Terengganu	3	2	5	60	40	100
	Pahang	5	3	8	100	60	160
Borneo	Sabah & Labuan	6	7	13	120	140	260
	Sarawak	8	9	17	160	180	340
	Total	**65**	**48**	**113**	**1300**	**960**	**2260**

2.4 Sampling Design

This survey used a two-stage stratified random sampling technique to ensure national representativeness. The primary stratum is composed of Malaysia's states, including the Federal Territories, and the secondary stratum is composed of urban and rural strata within the primary stratum. The sampling procedure consisted of two stages, with the primary sampling unit (PSU) being the Enumeration Blocks (EBs) and the secondary sampling unit (SSU) being the living quarters (LQs) within each sampled EB (SSU). DOSM randomly selected the PSU and SSU based on the required sample size. A total of 113 EBs were chosen from all Malaysian EBs; 83 EBs were chosen for Peninsular Malaysia, 13 for Sabah, and 17 for Sarawak. Twenty LQs were chosen at random from each of the selected EBs, and the survey included,

- All eligible households within the selected LQs, and
- All household members aged one year and older.

3. Ethics Approval

The Medical Research and Ethics Committee (MREC) of the Ministry of Health Malaysia approved the NHMS 2020 methodology, protocol, and procedures. The survey was registered with the National Medical Research Registry (NMRR) as NMRR-19-867-47973.

3.1 Consent & Assent

Prior to each interview, respondents were informed of the study's purpose, procedure, and methods. Additionally, all respondents received a 'Study Information Sheet' **(Annex B)** outlining the benefits and potential risks of participating in this survey. All respondents were asked to complete and sign a consent form for adults and an assent form for children and adolescents upon agreeing to participate in the survey.

4. Survey Instruments

Structured questionnaires were used to collect data based on the survey scopes. The questionnaire was divided into three sections: cognitive (knowledge or awareness), affective (perceptions or attitudes), and behavioural (practice). The validated self-administered questionnaire (SAQ) was bilingual (Bahasa Melayu and English) and included an instruction manual for data collectors. All eligible respondents aged 13 and over received printed copies of the SAQs. Two modules were included in the CAB questionnaire/booklets: Dengue Prevention and Dog-mediated Zoonotic Diseases **(Annex A)**.

The Dengue Prevention questionnaire was adapted from three studies: Rafdzah et al., 2018[10], NHMS 2015 [11] and Rahman et al., 2014 [12]. The questionnaire for module of Dog-mediated Zoonotic Diseases was adapted from Yong et al., 2021[13]. Pre-testing and content validity testing by a group of experts from the fields of public health specialist, veterinary medicine, clinical psychologist and health educationist are all part of the instrument development process. The instrument was amended accordingly to make it clear and understandable based on input from cognitive de-briefing about the wordings and terminologies used. The Dengue Prevention and Dog-mediated Zoonotic Diseases questionnaires had internal consistency of 0.60 to 0.67 and 0.60 to 0.70, respectively.

Scoring grades were converted to percentages by dividing the respondent's score by the highest possible score and then multiplying by 100. The total score for each outcome was determined using the original Bloom's cut-off point[8], The dengue prevention questionnaire was graded between 80 percent and 100 percent as “high/good/positive”, 60% to 79 % as “moderate/neutral”, and less than 60 percent as “low/poor/negative” [13, 14, 15]. The cut-off scores for "low" have been modified in the module on dog-mediated zoonotic disease, where scores ranging from 60% to 79% were classified as

"moderate"[14], and less than 60% were considered as “low”. The modules contained in the questionnaire, as well as their domain, scale, and scoring grades, are presented in **Table III** and **Table IV** respectively.

Table III: Domains covered in the Cognitive, Affective and Behavioural (CAB) for dengue prevention

Domain/Operationalised Definition	Scale	Item (s)	Scoring Grades/Prevalence
Community awareness on COMBI: Respondents’ awareness of the existence of the COMBI programme in their locality.	Categorical	1	Prevalence on awareness of COMBI existence.
Perceived threat on dengue: Respondents’ level of perception of dengue threat.	Likert-type	6	The scores for perceived threat varied from 6 to 30 points and were classified into three levels as high (24-30 points), moderate (18-23 points) and low (6-17 points).
Perceived effectiveness on dengue: Respondents’ level of perceived effectiveness towards methods of dengue control activities.	Likert-type	11	The scores for perceived effectiveness varied from 11 to 55 points and were classified into three levels as high (44-55 points), moderate (33-43 points) and low (11-32 points).
Perceived barriers on dengue: Respondents’ level of perception on barriers to practice dengue control activities.	Likert-type	8	The scores for perceived barriers varied from 8 to 40 points and were classified into three levels as high (32-40 points), moderate (24-31 points) and low (8-23 points).
Respondents’ participation in dengue control: Respondent’s practices on dengue control activities at individual and community level.	Categorical	17	Prevalence by item regarding practices on dengue control activities at individual and community level.

Note:
The CAB Dengue prevention instrument was adapted from Rahman et. al., 2014, Rafdzah et. al., 2018 and NHMS 2015.

Table IV: Domains covered in the Cognitive, Affective and Behavioural (CAB) for dog-mediated zoonotic diseases

Domain/Operationalised Definition	Scale	Item (s)	Scoring Grades/Prevalence
Knowledge on diseases related to dogs (rabies) Respondent's acceptable knowledge on sign and symptoms, risk factor, modes of transmission and what are the necessary remedial preventive measures need to be observed.	Categorical	9	The scores for knowledge diseases related to dogs (rabies) varied from 0 to 9 points and were classified into three levels as high (7-9 points), moderate (5-6 points) and low (0-4 points).
Awareness on Animal Welfare Act 2015: Respondent's awareness on Animal Welfare Act and harsher punishments for animal cruelty.	Categorical	2	Prevalence on awareness regarding Animal Welfare Act and harsher punishments for animal cruelty.
Perceived risk factors of contracting pet (dogs) related diseases: Respondent's concern on severity of diseases transmitted by dog: zoonotic disease risk, disease preventive behaviour, and treatment seeking behaviour.	Likert-type	8	The scores for perceived risk factors of contracting pet (dogs) related diseases varied from 8 to 40 points and were classified into three levels as positive (32-40 points), neutral (24-31 points) and negative (8-23 points).
Health seeking behaviour: Respondent's ability to assess the likelihood to act on the correct immediate action: wash wound using running water and soap for at least 15 minutes, apply antiseptic, ointment or wound dressing and seek treatment immediately at the clinic or hospital when bitten or scratched by dogs.	Categorical	3	Prevalence on the three items regarding wash wound using running water and soap for at least 15 minutes, apply antiseptic, ointment or wound dressing and seek treatment immediately at the clinic or hospital when bitten or scratched by dogs.
Dog ownership responsibility: Dog licensing and annual health examination.	Categorical	2	Prevalence on the two items regarding dog licensing and annual health examination.

Note: The Dog-mediated Zoonotic Diseases instrument was adapted from Yong et al., 2021.

5. Training

Separate data collection training sessions were conducted for Peninsular Malaysia and Borneo teams. Training for the Borneo team was conducted from 2nd August to 6th August 2020, with a total of four teams comprised six field supervisors and twenty data collectors. While training for the Peninsular Malaysia teams took place from 8th August to 12th August 2020; eight teams comprised sixteen field supervisors and thirty-two research assistants. Each team consisted of one field supervisor, one phlebotomist (either nurse or medical assistant), three data collectors and one driver. All field supervisors and research assistants received extensive training on the survey's background, scouting process, fieldwork flow and procedures, and questionnaires used in this survey. Furthermore, data collectors received training in administering questionnaires via tablet, managing quality control, and handling biospecimens on-site. Additionally, they were trained on a technique that aided respondents in responding to the CAB and sensitive questionnaires.

6. Data Collection

The CAB postal survey was conducted between 7th August and 11th October at each of the selected EB sites during the first phase of data collection. The survey was not conducted via face-to-face interviews with households due to the COVID-19 pandemic. Data collection process was modified to avoid prolonged direct contact. The CAB tools were found to be suitable for self-administration in the community for field data collection during pilot testing. The tools were created to be self-administered by respondents aged 13 years and older.

During scouting, the CAB booklets were distributed to all eligible household members aged 13 years and older. The field supervisors explained the study's purpose, benefits, risks of participating in this survey, and instructions for completing the CAB booklet. All eligible respondents were required to complete an adult consent form upon consent. Minors were required to sign an assent form and obtain parental or guardian approval to participate in the survey.

Each respondent received a booklet questionnaire divided into two sections: Dengue Prevention and Dog-mediated Zoonotic Diseases. The respondents were asked to respond to all questions independently at their own pace at home. For respondents who were illiterate or did not understand Bahasa Melayu or English, a proxy from their household was permitted to read out or translate all questions. Completed booklets were mailed or handed in during the face-to-face interview session at the data collection centre.

7. Data Processing & Quality

Data processing activities were centralised at the Institute for Public Health. This included receiving data from the field up to handing over the cleaned dataset to the data analysis team.

The scanning station received all booklets, whether they were mailed by households or included in EB bundles. All booklets received were appropriately registered and coding were labelled. Completeness of booklets and questionnaires was verified. Acceptance of completed booklets/ questionnaires was determined using the following criteria:

- SAQ for CAB Questionnaire/Booklets was accepted if respondents had completed the sociodemographic section and responded to at least one of the modules either CAB Dengue Prevention or Dog-mediated Zoonotic Diseases.
- The Dengue Prevention module was accepted if respondents had completed at least one domain/section in the module.
- The Dog-mediated Zoonotic Diseases module was accepted if respondents had completed at least one domain/section in the module.
- If none of these criteria were met, the booklets were rejected for data processing.

All booklets accepted for data extraction were further processed. All data from the booklets was extracted onto the CAB OMR Scan Forms. The Abbyy Flexy Scanner® was used to scan the CAB OMR scan forms. Then, another team independently checked and verified all data generated during the data scanning process using the Abbyy Flexy Capture®, extracted the data in CSV format, and further imported it into SPSS. The supervisor of the scanning operation was in charge of data scanning quality control. Continuous quality control was performed on all datasets, with an emphasis on respondent ID accuracy, outliers, and incorrect data. Additionally, the scanning operation supervisor prepared a daily report summarising the scanning operation's performance and accomplishments and reported to the Central Coordinating Team (CCT) weekly.

8. Data Analysis and Management

8.1 Sample Weights

The weight results were used to make important inferences about the prevalence of communicable diseases in the Malaysian population. NHMS 2020 incorporated a variety of survey methods. As a result, sample weights were calculated independently for each survey method, such as phase one for data collection at the data collection centre, phase one for the CAB postal survey, and phase two for the CATI survey. Weighing samples was performed in collaboration with Sector of Biostatistics and Data Repository, NIH. A weighing factor was calculated and applied to each individual to account for

the varying probabilities of selection (design weight), non-response rate, and post-stratification weight, all of which were adjusted for the Malaysian population projections according to DOSM 2020. The following formula was used to estimate the weight:

$$W_{final} = W_1 \times W_2 \times F \times PS$$

W_1 = the inverse of probability of selecting the EBs
W_2 = the inverse probability of selecting the LQ within selected EB
F = the non-response adjustment factor for individual and LQ
PS = a post-stratification adjustment factor calculated by gender, strata, age and ethnicity

8.2 Data Management & Analysis

The data manager pre-cleaned and merged all datasets. Data was stored securely, and backups were performed regularly to ensure data remained current. The data was distributed to all module heads and data analysts within each module. The team members then cleaned the data according to the terms and working definitions developed by each module's research group. SPSS Version 23.0 was used to analyse the data. The data were analysed using a complex sample analysis with weights to obtain population estimates. The survey results were expressed as prevalence with 95% confidence intervals, taking the design effect, unweighted counts, and estimated population into account. The data analysts double-checked and verified each output. In this survey, a relative standard error (RSE) of less than 35% is considered acceptable, and data with large RSEs have been suppressed in all statistical tables due to small counts.

8.3 Data Confidentiality

Individual data was kept strictly confidential at all stages of the survey. The research team members were not given any information about individuals' names or identification numbers. When data was merged or analysed, the study ID was used to identify the study subjects. Datasets were saved and kept safe in a password-protected environment. The identities of the respondents were not revealed in any reports and were kept private in publications.

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General Findings

1.1 Response Rate

Overall, 5,564 respondents aged 13 years and older were eligible to participate in this survey. Of which, 4,588 participated in the CAB postal survey, yielding a total response rate of 73.56% **(Table V)**.

Table V: CAB postal survey response rate, NHMS 2020

State	Living Quarter (LQ)			Individual			Total Response Rate (%)
	Eligible	Interviewed	Response Rate (%)	Eligible	Interviewed	Response Rate (%)	
Johor	192	179	93.23	471	370	78.56	73.24
Kedah	137	130	94.89	363	322	88.71	84.17
Kelantan	131	121	92.37	387	333	86.05	79.48
Melaka	80	77	96.25	193	163	84.46	81.29
Negeri Sembilan	120	119	99.17	299	260	86.96	86.23
Pahang	140	104	74.29	287	236	82.23	61.09
P Pinang	59	53	89.83	162	139	85.80	77.08
Perak	150	140	93.33	358	251	70.11	65.44
Perlis	38	38	100.00	104	94	90.38	90.38
Selangor	291	240	82.47	750	613	81.73	67.41
Terengganu	87	73	83.91	233	205	87.98	73.82
Sabah	222	193	86.94	712	534	75.00	65.20
Sarawak	317	285	89.91	864	742	85.88	77.21
WP Kuala Lumpur	104	93	89.42	283	243	85.87	76.78
WP Labuan	20	17	85.00	56	52	92.86	78.93
WP Putrajaya	16	14	87.50	39	31	79.49	69.55
MALAYSIA	**2,104**	**1,876**	**89.16%**	**5,561**	**4,588**	**82.50**	**73.56**

Definition for Eligibility

a. Any LQ:
   - LQ that was successfully recruited during the actual survey, AND
   - LQ that refused, AND
   - LQ that was locked during scouting prior to the actual survey.

b. Any individuals:
   - Individuals who participated in the survey and completed at least one module, AND
   - Individuals that refused to participate, AND
   - Individuals who lived in the LQ during scouting, however, the individual could not be reached or not at home during scouting prior to the actual survey.

1.2 Basic Characteristics of Survey Respondents

There were 4,588 respondents who participated in the CAB postal survey **(Table VI)**. 54.6% lived in urban areas, 52.9% females, 71.1% from Peninsular Malaysia, 12.8% from Sabah and Labuan while 16.2% were from Sarawak. By age, high percentages were observed in younger adults aged 20 to 29 (19.5%) and 30 to 39 (19.1%) while those aged 70 and above were the lowest (4.5%). This survey was dominated by the Malaysian citizens (94.5%) with Malay ethnic reported the most (65.6%), followed by other Bumiputera (including Bumiputera Sabah, Sarawak, and Orang Asli) (14.7%), Chinese (8.5%), other ethnics (6.8%), and Indians were the lowest (4.4%). Married respondents accounted for 60.4%, while 32.1% were singles, and 7.5% were widowers or divorcees. For education level, 44.0% respondents had secondary education (44.0%), followed by 27.6% had tertiary education level, 15.0% had primary education and 13.4% reported had no formal education. By occupation, the analysis included respondents aged 15 years old and above who were 46.8% worked in the private sector, followed by 28.7% were self-employed (28.7%), 22.4% were government employees, and 2.2% were unpaid worker/homemaker/caregiver. In this survey, 94.1% did not own dogs as pets, while 5.9% of the respondents owned dogs.

Table VI: Characteristics of CAB respondents, NHMS 2020

Sociodemographic Characteristics	Unweighted Count	Percentage %
MALAYSIA	4,588	100.0
State		
Johor	370	8.06
Kedah	322	7.02
Kelantan	333	7.26
Melaka	163	3.55
Negeri Sembilan	260	5.67
Pahang	236	5.14
Pulau Pinang	139	3.03
Perak	251	5.47
Perlis	94	2.05
Selangor	613	13.37
Terengganu	205	4.47
Sabah	534	11.64
Sarawak	742	16.17
WP Kuala Lumpur	243	5.29
WP Labuan	52	1.13
WP Putrajaya	31	0.68
Location		
Urban	2,507	54.6
Rural	2,081	45.4
Zone Categories		
Peninsular Malaysia	3,260	71.05
Sabah & Labuan	586	12.77
Sarawak	742	16.17
Sex		
Male	2,161	47.1
Female	2,427	52.9
Age Group		
13 - 19	696	15.2
20 - 29	893	19.5
30 - 39	876	19.1
40 - 49	747	16.3

Table VI: Characteristics of CAB respondents, NHMS 2020 (Cont.)

Sociodemographic Characteristics	Unweighted Count	Percentage %
50 - 59	679	14.8
60 - 69	490	10.7
70 and above	207	4.5
Ethnicity		
Malay	2,983	65.6
Chinese	387	8.5
Indian	199	4.4
Other Bumiputera [a]	670	14.7
Others	311	6.8
Citizenship		
Malaysian	4,287	94.5
Non-Malaysian	251	5.5
Education Level (n = 3,186)		
No formal Education	599	13.4
Primary Education	667	15.0
Secondary Education	1,960	44.0
Tertiary Education	1,232	27.6
Marital Status [b]		
Single	1,433	32.1
Married	2,702	60.4
Widow(er)/Divorcee	335	7.5
Occupation [c]		
Government Employee	505	22.4
Private Employee	1,054	46.8
Self Employed	646	28.7
Unpaid worker/Homemaker/Caregiver	49	2.2
Dog ownership		
Yes	267	5.9
No	4,290	94.1

Note:

[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 13 years old and above
[c] Occupation from 15 years old and above

DENGUE

Cognitive, Affective and Behaviour of Dengue Prevention in Malaysia

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HIGHLIGHTS

- 19.5% of respondents were aware of the COMBI programme.
- 58.5% of respondents highly perceived dengue as a health threat.
- 60.6% of respondents strongly believed that individual prevention activities are effective in curbing dengue.
- 34.5% of respondents strongly believed that government-led dengue prevention efforts are effective in controlling the disease.
- 22.6% of respondents had high perceived barriers to dengue prevention activities.
- 36.7% of respondents had conducted “Search and Destroy” mosquito breeding sites at home at least once a week.

Keywords: *Dengue, Dengue prevention*

10.1 Introduction

Dengue is one of the deadliest mosquito-borne infections, which can cause major health issues to human wellbeing. Dengue fever is primarily an urban disease in Malaysia due to the abundance of the main vector, *Aedes aegypti*, found close to high densities of susceptible hosts. Selangor, Wilayah Persekutuan Kuala Lumpur, and Johor are the states most affected by the disease and have the highest number of reported cases[1].

Factors such as urban population growth, indiscriminate waste disposal, lack of efficient solid waste management, and the increased and efficient movement of dengue viruses in infected humans via modern transportation have contributed to a marked increase in the occurrence of dengue cases[1].

Dengue epidemic activity in Malaysia has increased in frequency and intensity over the past 40 years since dengue notification was made mandatory in the early 1970s[1].

In the year 2020, 90,370 dengue cases with 145 deaths have been reported in Malaysia[2]. Poor dengue prevention practices, particularly in localities where dengue is pervasive, are among the variables that add to dengue spikes[3].

A multi-pronged effort for dengue control, including an integrated social mobilization marketing strategy known as Communication for Behavioural Impact (COMBI), was introduced in 2001. It was advocated as an essential preventive measure involving the community as active partners in achieving successful dengue prevention to reduce the burden of infection in affected areas[4]. However, despite years of establishment in combating dengue, there is still a question of whether the community is aware of COMBI as a dengue preventive initiative.

It is imperative to understand the communities' awareness and perception towards dengue precautionary measures and responses, as perceptions would shape actions and govern behavioural responses and acceptance on dengue control activities and management[5].

The target population for this study is respondents who are 13 years old and above. The survey used a validated CAB-IHBR-Dengue-A-01 instrument tool consisting of four sections which include:

- Awareness of COMBI (3 items),
- Perceived threat of dengue (6 items), perceived effectiveness of dengue control activities (11 items),
- Perceived barrier for non-participation in dengue control activities (8 items), and
- Respondents' participation in dengue control activities at the community and individual level (17 items).

10.2 Objectives

10.2.1 General Objective

Dengue has become a public health concern worldwide. Despite the government's aggressive efforts in Malaysia, dengue cases are still on the rise. Adequate awareness, positive attitude, and correct dengue prevention practices for dengue control are crucial for eradicating the disease[6]. Thus, this study was commenced to assess the cognitive, affective, and behaviour of Malaysian residents regarding dengue prevention.

10.2.2 Specific Objectives

- To assess the community's awareness and participation in COMBI.
- To assess the perceived threat of dengue.
- To assess the perceived effectiveness of dengue control activities.
- To assess the perceived barrier for non-participation in dengue control activities.
- To assess the respondent's participation in dengue control activities at the community and individual level.

Definition

1. Conceptual Definition

- Community awareness of COMBI is defined as an awareness of the existence of the COMBI programme.
- Perceived threat on dengue is defined as how an individual perceived dengue threat.
- Perceived effectiveness on dengue is defined as how the individual perceived effectiveness towards methods of dengue control activities.
- Perceived barrier on dengue is defined as how an individual perceived any barriers in implementing dengue control activities.
- Respondents' participation is defined by their respective practices on dengue control activities on individual and community level.

2. Operational Definition

- Community awareness of COMBI is measured by respondents' awareness of the existence of the COMBI programme in their locality.
- Perceived threat on dengue is measured by respondents' level of perception of dengue threat.
- Perceived effectiveness on dengue is measured by respondents' level of perceived effectiveness towards methods of dengue control activities.
- Perceived barriers on dengue are measured by respondents' level of perception on barriers to performing dengue control activities.
- Respondents' participation is measured by their respective practices on dengue control activities on individual and community level.

3. Variable Definition

- Community awareness on COMBI: ever heard of the COMBI program.
- Perceived threat on dengue: severity and susceptibility of dengue.
- Perceived effectiveness on dengue: control activities by individual and authorities.
- Perceived barriers on dengue: individual and others.
- Respondents' participation: frequency of dengue control activity practices.

10.3 Findings

Part A: COMBI Program

10.3.1 Prevalence of Community Awareness on COMBI

The prevalence of community awareness on COMBI (n = 4,379) was 19.5% (95% CI: 16.70-22.60). Only 22.3% (95%: CI: 18.34-26.89) of rural respondents and 18.6% (95% CI: 15.28-22.49) of urban respondents were aware of the existence of the COMBI program **(Table 10.1)**.

The prevalence was almost equal in both sexes, with a slightly higher prevalence in males (19.6%, 95% CI: 16.52 23.13) compared to females (19.3%, 95% CI: 16.11-22.96).

There was also not much difference between age groups, with 40-49 years old scoring the highest prevalence (24.7%, 95% CI: 18.37-32.39), followed by age group of 20-29 years old (21.4%, 95% CI: 16.24-27.66), 60-69 years old (19.3%, 95% CI: 15.05-24.48), 50-59 years old (18.1%, 95% CI: 14.41-22.43), 13-19 years old (17.6%, 95% CI: 13.74-22.30), 70 years old and above (17.0%, 95% CI: 8.90-30.18), while the lowest were those aged 30-39 years old (16.2%, 95% CI: 12.83-20.15).

In respect of ethnicity, respondents belonging to others ethnic group formed the highest prevalence (29.8%, 95% CI: 18.90-43.52), followed by Indian (28.3%, 95% CI: 19.30-39.40), Malay (20.6%, 95% CI: 17.60-23.94), Other Bumiputera (15.9%, 95% CI: 12.20-20.51) and Chinese (10.1%, 95% CI: 6.10 -16.21).

In regard to educational levels, respondents with no formal education formed the highest prevalence (22.6%, 95% CI: 16.15-30.75), followed by those with primary education (21.3%, 95% CI: 15.26-28.89), secondary education (20.3%, 95% CI: 17.25-23.83) and tertiary education (17.3%, 95% CI: 13.85-21.45).

Married respondents (20.1%, 95% CI: 16.97-23.66) reported similar prevalence with those who were widow(er)/divorcee (20.1%, 95% CI: 13.48-28.84), while single respondents had the lowest prevalence (18.3%, 95% CI: 14.49-22.73).

By occupational groups, government employees had the highest prevalence (27.5%, 95% CI: 20.90-35.17), followed by self-employed (21.2%, 95%: CI: 15.10-28.85) and private employees (17.7%, 95%: CI: 13.48-22.81).

Out of the 19.5% (n = 928) who were aware of COMBI, 57.8% (n = 525) were aware of the existence of the COMBI program within their locality. Of the 57.8% mentioned above, 73.5% (n = 377) claimed that they had participated in the COMBI activities **(Figure 10.1)**.

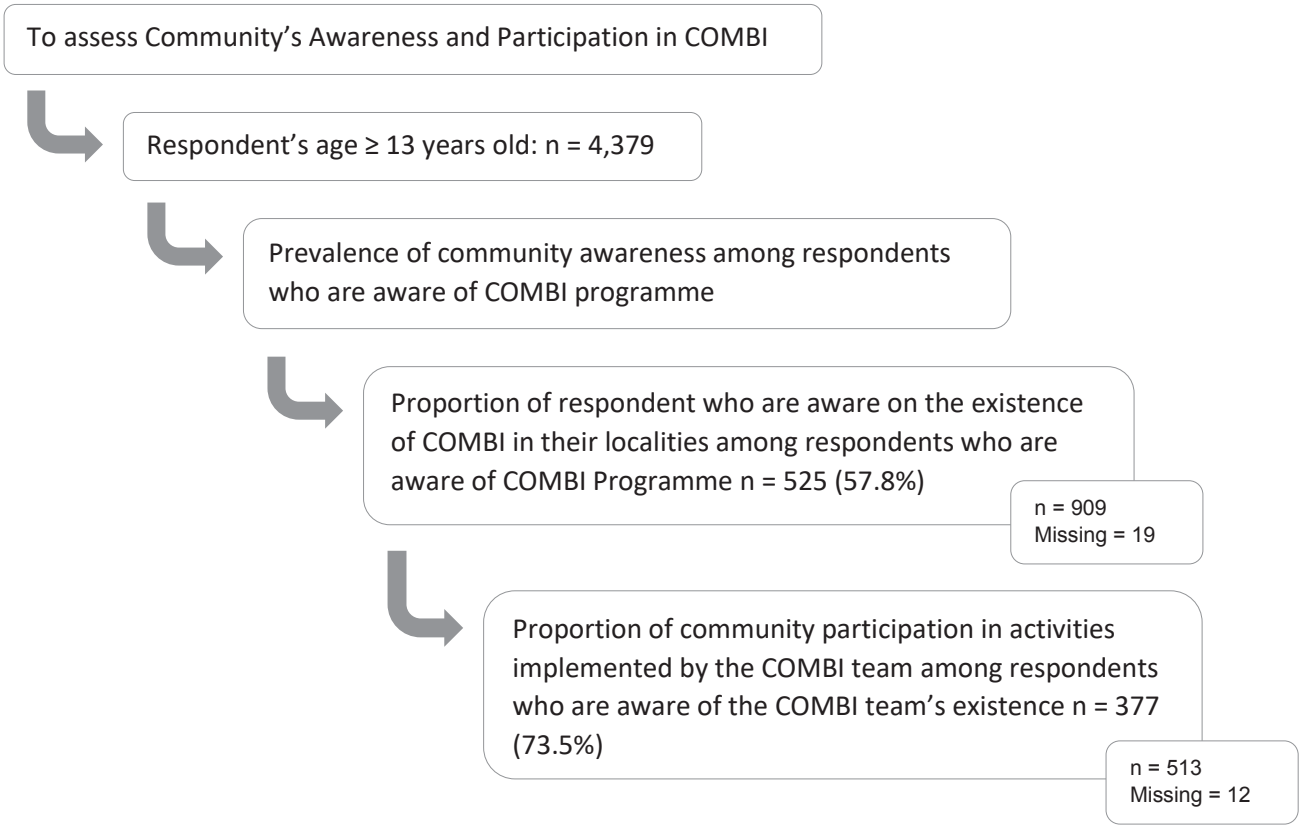

Figure 10.1: COMBI Awareness and participation

Part B: Cognitive, Affective and Behaviour (CAB) on Dengue Prevention

10.3.2 Prevalence of High Perceived Threat of Dengue

The prevalence of high perceived threat of dengue among respondents (n = 4,470) was 58.5% (95% CI: 53.90-62.97) **(Table 10.2)**.

A total of 65.4% of rural respondents and 56.5% of urban respondents reported to have a high perceived threat of dengue.

Both sexes have almost equal prevalence of high perceived threat of dengue, with a slightly higher prevalence in males (59.0%, 95% CI: 54.78-63.04) compared to females (58.0%, 95% CI: 52.36-63.47).

By age group, the highest prevalence was those aged 30-39 years old (62.8%, 95% CI: 57.36-67.87), followed by 40-49 years old (60.7%, 95% CI: 53.15-67.69), 20-29 years old (60.4%, 95% CI: 53.97-66.56), 13-19 years old (58.3%, 95% CI: 50.39-65.75), 50-59 years old (54.1%, 95% CI: 47.55-60.41), 60-69 years old (53.4%, 95% CI: 45.41-61.26) and 70 years old and above (45.5%, 95% CI: 35.28-56.03).

By ethnicity, Malay contributed to the highest prevalence of high perceived threat of dengue (69.0%, 95% CI: 65.95-71.86), followed by other Bumiputeras (64.0%, 95% CI: 59.69-68.03), other ethnicity (62.8%, 95% CI: 49.04-74.82), Indian (43.5%, 95% CI: 26.33-62.32) and Chinese (35.2%, 95% CI: 27.22-44.12).

Respondents who have no formal education contributed to the highest prevalence of high perceived threat of dengue (67.2%, 95% CI: 58.60-74.73), followed by those with secondary education (60.1%, 95% CI: 53.13-66.67), primary education (59.4%, 95% CI: 50.97-67.33), and tertiary education (45.4%, 95% CI: 26.52-65.77).

Married respondents had the highest prevalence of high perceived threat of dengue (59.3%, 95% CI: 54.96-63.41) compared to widow(er)/divorcee (57.2%, 95% CI: 47.33-66.44) and single respondents (57.0%, 95% CI: 50.27-63.45).

By occupational group, government employees had the highest prevalence of high perceived threat of dengue (63.7%, 95% CI: 55.74-70.99), followed by self-employed group (60.7%, 95% CI: 55.83-65.29), unpaid worker/ homemaker/caregiver (58.5%, 95% CI: 53.20-63.67) and private employee group (51.3%, 95% CI: 43.27-59.31).

10.3.3 Perceived Dengue as a Threat: An Item Analysis

A total of 91.8% (95% CI: 89.12-93.89) of respondents were worried that dengue fever might cause death. Up to 82.1% (95% CI: 79.11-84.74) of respondents were worried they would contract dengue fever if their body develops rash when having fever. A total of 75.0% (95% CI: 70.71-78.77) of respondents felt that they need to get immediate treatment on the first day of fever in worry that they would contract dengue.

A total of 68.2% (95%: CI: 64.40-71.76) of respondents were worried about contracting dengue every time they have a fever. Up to 78.9% (95% CI: 75.59-81.92) of respondents were worried that their family members would contract dengue if they have a fever. A total of 73.7% (95% CI: 70.51-76.65) of respondents still worried about contracting dengue even though they could get medical treatment at the hospital **(Table 10.3)**.

10.3.4 Public Perceptions on the Effectiveness of Dengue Prevention Activities Conducted by Individuals

Prevalence of high perceived effectiveness on dengue prevention activities conducted by individuals among respondents (n = 4,464) was 60.6% (95% CI: 56.80-64.35) **(Table 10.4)**.

A total of 68.9% (95% CI: 65.36-72.20) of rural respondents and 58.2% (95% CI: 53.50-62.74) of urban respondents showed high perceived effectiveness of dengue control activities conducted by individuals.

The prevalence score between both sexes showed not much difference, with 60.9 % (95% CI: 56.55-65.09) in males and 60.4% (95% CI: 56.16-64.43) in females.

Respondents aged 70 years old and above had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by individuals (64.2%, 95% CI: 52.54-74.31), followed by 40-49 years old (64.1%, 95% CI: 56.13-71.31), 20-29 years old (62.1%, 95% CI: 56.10-67.83), 30-39 years old (61.3%, 95% CI: 54.80-67.50), 60-69 years old (60.3%, 95% CI: 53.56-66.59), 50-59 years old (58.5%, 95% CI: 51.75-64.98) and 13-19 years old (54.4%, 95% CI: 46.85-61.75).

By ethnicity, respondents of Others ethnic group had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by individuals (68.8%, 95% CI: 59.23-76.91), followed by Malay (67.4%, 95% CI: 63.94-70.68), other Bumiputeras (62.1%, 95% CI: 55.40-68.28), Indian (56.3%, 95% CI: 43.00-68.73) and Chinese (41.7%, 95% CI: 34.88-48.92).

By educational level, respondents with primary education had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by individuals (62.7%, 95% CI: 56.77-68.27), followed by those with tertiary education (62.3%, 95% CI: 56.95-67.40), secondary education (59.5%, 95% CI: 54.63-64.27) and no formal education (57.8%, 95% CI: 50.68-64.55).

By marital status, widow(er)/divorcee had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by individuals (65.4%, 95% CI: 57.58-72.51) compared to married respondents (62.0%, 95% CI: 58.36-65.50) and single respondents (56.8%, 95% CI: 50.67-62.82).

By occupational group, government employees had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by individuals (64.8%, 95% CI: 56.55-72.33), followed by private employees (62.8%, 95% CI: 55.31-69.72), self-employed (56.0%, 95% CI: 49.51-62.25) and unpaid worker/homemaker/caregiver (34.6%, 95% CI: 19.99-52.86).

10.3.5 Perceived Effectiveness on Self-Dengue Prevention Activities: An Item Analysis

A total of 79.0% (95% CI: 75.66-82.01) of respondents believed that using repellents (device or material to keep mosquitoes away) can prevent *Aedes* mosquito bites. Up to 92.6% (95% CI: 90.31-94.45) of respondents opined that the “Search and Destroy” mosquito breeding sites is an effective control measure to prevent dengue. A total of 76.7% (95% CI: 73.85-79.30) of respondents believed that aerosol spray is effective to kill the *Aedes* mosquito, while 76.2% (95% CI: 73.53-78.62) opined that avoiding outdoors when the *Aedes* mosquitoes are active (early in the morning and at dusk) is effective to prevent dengue. In addition, 71.6% (95% CI: 68.25-74.81) of respondents believed that installing mosquito nets on windows and doors are effective to prevent dengue **(Table 10.5)**.

10.3.6 Public Perceptions of the Effectiveness of Authorities' Dengue Prevention Activities

Prevalence of high perceived effectiveness on dengue prevention activities conducted by authorities among respondents (n = 4,439) was 34.5% (95% CI: 31.31-37.80) **(Table 10.6)**.

By urban/rural distribution, only 32.2% (95% CI: 27.52-37.23) of rural respondents and 35.2% (95% CI: 31.32-39.20) of urban respondents showed high perceived effectiveness of dengue control activities by authorities.

The prevalence of high perceived effectiveness on dengue prevention activities conducted by authorities was higher among females (37.8%, 95% CI: 34.27-41.44) compared to males (31.4%, 95% CI: 27.99-34.95).

Among the various age groups, the prevalence of high perceived effectiveness on dengue prevention activities conducted by authorities were almost equal: i.e., respondents aged 40-49 years old (40.5%, 95% CI: 34.75-46.51), 30-39 years old (39.1%, 95% CI: 33.60-44.80), 60-69 years old (38.9%, 95% CI: 32.37-45.84), 50-59 years old (32.2%, 95% CI: 27.50-37.33), 70 years old and above (31.8%, 95% CI: 22.61-42.69), 20-29 years old (31.4%, 95% CI: 26.02-37.41) and 13-19 years old (27.4%, 95% CI: 22.31-33.12).

Malay respondents had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by authorities (39.8%, 95% CI: 35.88-43.82), followed by other Bumiputera (32.6%, 95% CI: 26.30-39.6), Indian (31.4%, 95% CI: 21.45-43.52), Chinese (29.4%, 95% CI: 21.91-38.19) and Others (27.7%, 95% CI: 18.89-38.75).

Respondents with tertiary education had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by authorities (44.7%, 95% CI: 40.52-49.01), followed by those with secondary education (31.3%, 95% CI: 27.44-35.36), no formal education (29.0%, 95% CI: 23.57-35.13), and primary education (26.0%, 95% CI: 20.32-32.69).

Married respondents had the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by authorities (37.0%, 95% CI: 33.58-40.53) compared to widow(er)/divorcee (33.7%, 95% CI: 25.66-42.84) and single respondents (30.8%, 95% CI: 26.57-35.31).

Government employees scored the highest prevalence of high perceived effectiveness on dengue prevention activities conducted by authorities (45.6%, 95% CI: 39.05-52.23). Meanwhile, there were not many differences in terms of prevalence between unpaid worker/homemaker/caregiver group (34.6%, 95% CI: 17.20-57.46), private employees (34.3%, 95% CI: 29.30-39.66) and self-employed group (34.1%, 95% CI: 27.18-41.73).

10.3.7 Perceived Effectiveness on Authorities' Dengue Prevention Activities: An Item Analysis

A total of 72.4% (95% CI: 69.54-75.17) of respondents believed that issuing a fine or summons for *Aedes* mosquito breeding sites effectively curbs dengue. A total of 80.7% (95% CI: 78.65-82.51) respondents believed that enforcement by the local authorities (PBT) (e.g., a notice of removal of abandoned cars, demolition of illegal structures such as coops or stores that can potentially be an *Aedes* mosquito breeding site) is effective in curbing dengue. A total of 87.2% (95% CI: 84.60-89.36) respondents opined that health education activities by health authorities are effective in curbing dengue.

Only 42.9% (95% CI: 39.91-46.01) of respondents agreed that fogging is effective in curbing dengue, and only 48.1% (95% CI: 43.92-52.39) of respondents believed that larviciding spray (mosquito larvae insecticide) is effective in curbing dengue. A total of 58.3% (95% CI: 55.02-61.49) of respondents believed that "Search and Destroy" (Cari dan Musnah) communal work (gotong-royong) is effective in curbing dengue **(Table 10.7)**.

10.3.8 Prevalence of High Perceived Barriers on Dengue Prevention Activities

The prevalence of high perceived barriers on dengue prevention activities among respondents (n = 4,432) was 22.6% (95% CI: 19.64-25.81) **(Table 10.8)**.

Only 26.1% (95% CI: 21.86-30.79) of rural respondents and 21.5% (95% CI: 18.06-25.50) of urban respondents perceived high barriers on dengue control activities.

Prevalence between both sexes showed little differences with a slightly higher prevalence in males (22.2%, 95% CI: 19.23-25.59) compared to females (22.9%, 95% CI: 19.49-26.76).

Respondents aged 40-49 years old had the highest prevalence of high perceived barriers on dengue prevention activities (26.6%, 95% CI: 20.64-33.45), followed by respondents aged 30-39 years old (26.1%, 95% CI: 21.55-31.17), 20-29 years old (22.7%, 95% CI: 18.07-28.19), 60-69 years old (21.9%, 95% CI: 15.17-30.61), 50-59 years old (21.3%, 95% CI: 17.58-25.67), 13-19 years old (17.0%, 95% CI: 13.10-21.72), and respondents aged 70 years old and above (16.0%, 95% CI: 10.27-24.14).

Among all ethnicities, Indian respondents had the highest prevalence of high perceived barriers on dengue prevention activities (30.8%, 95% CI: 20.02-44.26), followed by Malay respondents (28.2%, 95% CI: 25.00-31.67), Others (24.1%, 95% CI: 16.62-33.61), other Bumiputera (22.4%, 95% CI: 17.88 -27.75) and Chinese (7.6%, 95% CI: 3.56-15.30).

Respondents with tertiary education had the highest prevalence of high perceived barriers on dengue prevention activities (25.4%, 95% CI: 21.03-30.23), followed by respondents with primary education (22.5%, 95% CI: 17.27-28.84), respondents with secondary education (22.2%, 95% CI: 18.83-25.89) and respondents with no formal education (18.5%, 95% CI: 14.24-23.66).

Married respondents scored the highest prevalence of high perceived barriers on dengue prevention activities (24.7%, 95% CI: 21.55-28.07) compared to widow(er)/divorcee (21.6%, 95% CI: 15.82-28.86) and single respondents (19.4%, 95% CI: 15.41-24.23).

Government employee group formed the highest prevalence of high perceived barriers on dengue prevention activities (30.6%, 95% CI: 25.29-36.56) compared to private employee group (25.0%, 95% CI: 19.36-31.75) and self-employed group (22.9%, 95% CI: 17.20-29.82).

10.3.9 Perceived Barriers on Dengue Prevention Activities: An Item Analysis

Of all the dengue prevention activity barriers, a total of 77.0% (95% CI: 72.65-80.80) of respondents perceived that time is not a deterrent to do dengue prevention activities at home. Up to 63.3% (95% CI: 59.65-66.74) of respondents perceived that extra cost is not a deterrent to do dengue prevention activities at home whilst 75.4% (95% CI: 72.73-77.94) of respondents perceived putting mosquito larvicide in water is not good for health.

It is good to learn, though, that 23.7% (95% CI: 21.73-25.82) of respondents perceived no need to carry out dengue prevention activities due to no dengue case being reported within their housing area. A total of 17.2% (95% CI: 14.82-19.76) of respondents perceived they did not join communal work (gotong-royong) with their community because they think it is not their responsibility. Up to 60.1% (95% CI: 55.60-64.50) of respondents stated they would not open the doors and windows during fogging because they think that fogging is harmful to health. Close to half of the respondents (44.6%, 95% CI: 40.80-48.43) stated they would not open the doors and windows during fogging because they think that fogging would dirty their houses. There were 42.4% (95% CI: 38.08-46.88) of respondents stated they would not go out of the house during fogging in the evening because they think that it is the time of rest **(Table 10.9)**.

10.3.10 Prevalence of Practicing "Search and Destroy" of Mosquito Breeding Sites by Individual at Home (Once A Week)

The prevalence of practicing "Search and Destroy" mosquito breeding sites by individual at home (once a week) (n = 4,522) was 36.7% (95% CI: 33.80-39.80) **(Table 10.10)**.

By rural/urban distribution, 35.5% (95% CI: 31.34-39.95) of rural respondents and 37.1% (95% CI: 33.53-40.79) of urban respondents claimed that they practiced "Search and Destroy" mosquito breeding sites at their respective homes once a week.

The prevalence of practicing dengue control activities at the individual level (Search and Destroy Once a Week) was higher among females (39.0%, 95% CI: 35.23-42.94) compared to males (34.6%, 95% CI: 31.35-37.90).

Respondents aged 70 years old and above formed the highest prevalence of practicing "Search and Destroy" mosquito breeding sites by individual at home (once a week) (49.10%, 95% CI: 37.40-60.94), followed by respondents aged 50-59 years old (41.90%, 95% CI: 36.65-47.41), 40-49 years old (38.30%, 95%, CI:32.43-44.43), 60-69 years old (37.90, 95% CI: 31.17-45.04), 30-39 years old (35.70%, 95% CI: 30.85-40.91), 20-29 years old (33.60%, 95% CI: 27.56-40.18), and respondents aged 13-19 year-old (32.70%, 95% CI: 27.34-38.61).

Among the ethnic groups, the Chinese had the highest prevalence of practicing "Search and Destroy" mosquito breeding sites by individual at home (once a week) (40.4%, 95% CI: 31.95-49.51), followed by Other Bumiputera (38.5%, 95% CI: 30.84-46.67), Others (36.9%, 95% CI: 27.38-47.54) and Malay (35.3%, 95% CI: 32.56-38.16).

Respondents with primary education had the highest prevalence of practicing “Search and Destroy” mosquito breeding sites by individual at home (once a week) (40.7%, 95% CI: 34.53-47.26), followed by those with secondary education (37.3%, 95% CI: 33.25-41.62), tertiary education (35.0%, 95% CI: 30.91-39.31), and those with no formal education scored the lowest prevalence (31.8%, 95% CI: 25.02 -39.48).

Widow(er)/divorcee scored the highest prevalence of practicing “Search and Destroy” mosquito breeding sites at home (once a week) (48.3%, 95% CI: 39.30-57.35), followed by married respondents (38.0%, 95% CI: 34.36-41.74) and single respondents (32.6%, 95% CI: 28.82-36.58).

Private employees group scored the highest prevalence of practicing “Search and Destroy” mosquito breeding sites at home (once a week) (39.7%, 95% CI: 34.79-44.89), followed by government employees (37.1%, 95% CI: 30.76-43.90), unpaid worker/homemaker/caregiver (35.1%, 95% CI: 18.44 -56.34) and self-employed group (28.9%, 95% CI: 23.13-35.51).

10.3.11 Prevalence of “Search and Destroy” of Mosquito Breeding Sites by the Community (gotong-royong) for the Past 6 Months

Prevalence of “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) conducted for the past six months (n = 4,343) was 37.5% (95% CI: 32.90-42.30) **(Table 10.11)**. Out of that number, 46.0% (95% CI: 39.56-52.52) of rural respondents and 35.0% (95% CI: 29.51-40.88) of urban respondents claimed that there were “Search and Destroy” activities carried out by the community within their neighbourhood for the past six months.

10.3.12 Participation in “Search and Destroy” of Mosquito Breeding Sites by the Community (gotong-royong) for the Past 6 Months among Respondents Who Participated

The proportion of participation in “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) for the past six months among respondents who participated were 80.0% (n = 1,375) **(Table 10.12)**. Out of 80% of respondents who participated, 73.2% (95% CI: 66.20-79.2) were from urban while 86.2% (95% CI: 82.40-89.21) were from rural.

A higher prevalence of male respondents (79.9%, 95% CI: 74.70-84.20) participated in “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) for the past six months compared to female respondents (73.0%, 95% CI: 66.70-78.40).

Respondents aged 13-19 years old formed the highest prevalence of participating in “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) for the past six months (83.2%, 95% CI: 74.64-89.20), followed by respondents aged 40-49 years old (81.8%, 95% CI: 71.92-88.71), 50-59 years old (78.5%, 95% CI: 70.85-84.51), 20-29 years old (76.6%, 95% CI: 66.74 -74.20), 30-39 years old (74.8%, 95% CI: 64.40-83.03), 70 years old and above (68.5%, 95% CI: 50.71 -82.16) and respondents aged 60-69 years old (62.1%, 95% CI: 49.96-72.96).

Among all the ethnicities, Indian respondents had the highest prevalence of participating in “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) for the past six months (88.8%, 95% CI: 70.39-96.36), followed by other Bumiputeras (85.8%, 95% CI: 79.54-90.40), Malay (77.1%, 95% CI: 70.74-82.44), Others ethnic group (75.7%, 95% CI: 62.71-85.18) and Chinese (62.2%, 95% CI: 44.56-77.17).

Respondents with secondary education scored the highest prevalence of participating in “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) for the past six months (80.9%, 95% CI: 75.14-85.63), followed by respondents with no formal education (77.4%, 95% CI: 65.13-86.23), primary education (76.8%, 95% CI: 66.83-84.43) and tertiary education (70.3%, 95% CI: 60.40-78.56).

Married respondents formed the highest prevalence of participating in “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) for the past six months (78.4%, 95% CI: 72.81-83.10), followed by single respondents (74.7%, 95% CI: 67.52-80.75) and widow(er)/divorcee (67.3%, 95% CI: 56.45-76.48).

Respondents in government employees group scored the highest prevalence of participating in “Search and Destroy” mosquito breeding sites by community cleanliness activities (gotong-royong) for the past six months (86.9%, 95% CI: 77.46-92.70), followed by self-employed group (82.9%, 95% CI: 71.73-90.30), unpaid worker/homemaker/caregiver (79.7%, 95% CI: 43.27-95.30) and private employees (68.1%, 95% CI: 57.36-77.15).

10.3.13 Methods Used to Eliminate Mosquito Breeding Sites among Respondents aged ≥ 13 Years Old

A total of 94.3% (95% CI: 92.53-95.67) respondents claimed that they cleaned rain gutters and clogged drains at their houses, whilst 92.1% (95% CI: 90.11-93.78) said that they drained water in flower vases and scrub-cleaned the base **(Table 10.13)**.

A total of 89.3% (95% CI: 87.17-91.10) respondents claimed that they placed mosquito larvicide in water containers that cannot be drained out, whilst 89.2% (95% CI: 87.12-91.04) claimed to have always replaced water and washed the container (e.g.: flower vase).

A total of 84.2% (95% CI: 80.22-87.48) respondents claimed that they trimmed overgrown tree branches that block rain gutters to prevent stagnant water, whilst a total of 80.9% (95% CI: 78.16-83.46) said that they destroyed containers that can hold water (tin can, plastic container, glass container, etc) if it is not needed.

Meanwhile, a total of 80.0% (95% CI: 76.95-82.69) respondents claimed that they tightly close water containers at their homes, whilst 61.0% (95% CI: 56.7-65.1) claimed that they kept containers that can hold water in proper storage if they are not in use.

10.3.14 Methods Used to Prevent *Aedes* Mosquito Bites among Respondents aged ≥ 13 Years Old

A total of 89.9% (95% CI: 87.32-92.96) of respondents claimed that they avoid being outside the house at times when the *Aedes* mosquito is active to prevent mosquito bites. Up to 86.8% (95% CI: 84.46-88.85) claimed that they used mosquito coils/ electric mosquito killers or other types of mosquito repellent devices to prevent mosquito bites **(Table 10.14)**.

A total of 85.7% (95% CI: 82.74-88.18) of respondents said that they used insecticide aerosol spray whilst 79.0% (95% CI: 75.81-81.82) claimed that they use repellent (device or material to keep mosquitoes away). A total of 70.0% (95% CI: 65.87-73.82) of respondents claimed that they wore bright-coloured long pants and long-sleeved shirts to prevent mosquito bites, while 62.3% (95% CI: 58.30-66.16) claimed that they installed mosquito nets on windows and doors to prevent mosquito bites.

10.4 Conclusion

Based on the study, it has come to our attention that a significant number of the respondents involved are not aware or have no knowledge about COMBI. This finding could be attributed to the fact that the COMBI programme is not available within their residential areas. Only respondents from 38 COMBI localities were involved in the study despite many more COMBI localities being available nationwide.

It is interesting to note that among respondents who are aware of COMBI's existence in their residencies, the number of respondents who claimed to have participated in COMBI activities are quite high and encouraging.

The majority of the respondents are identified to have high perceived effectiveness for dengue prevention activities carried out by individuals such as “Search and Destroy” mosquito breeding sites once a week. They also have a low perceived barrier to carry out such activities. Unfortunately, this prevalence is not translated into action as the number of respondents who practice individual dengue prevention activities are still very low.

10.5 Recommendation

- Intensify health promotion activities to create awareness of the COMBI Dengue program throughout the country.
- Multi-sectoral initiatives with local authorities (PBT) to improve dengue prevention activities within communities.
- Continuous health promotion/education messages on dengue prevention with the emphasis to change misconception on dengue control activities (e.g.: fogging is harmful to health).
- Collaborate with Ministry of Communication and Multimedia (MCMM) in creating and disseminating health prevention information for all through social media (e.g.: Facebook, Instagram, Twitter, TikTok, Pinterest etc.), television and radio during prime time and popular slot to increase reach (e.g.: pop-up advertisement).
- To emphasize inspection activities at high-risk areas identified by District Health Office or local authorities (e.g.: premises at Dengue hotspots localities).

10.6 Study Limitations

COMBI programmes in Malaysia are only carried out in selected areas, especially at “hot spots” or localities where a high number of dengue cases have been detected. However, for this study, only 38 COMBI localities were involved despite more COMBI locations being available all over the country. In this regard, the results of the study may not adequately represent the level of awareness of Malaysians on dengue prevention activities concerning this particular aspect.

The Cognitive, Affective and Behaviour (CAB) domain is applied to measure the level of knowledge and awareness (Cognitive), perception (Affective), and participation and practice (Behaviour). For this study, these selected variables are assumed as a proxy to CAB.

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Table 10.1: Prevalence of community awareness of COMBI (n = 4,379)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
MALAYSIA	**928**	**4,809,744**	**19.5**	**16.70**	**22.60**
Location					
Urban	451	3,550,219	18.6	15.28	22.49
Rural	477	1,259,525	22.3	18.34	26.89
Sex					
Male	444	2,507,427	19.6	16.52	23.13
Female	484	2,302,318	19.3	16.11	22.96
Age Group					
13 - 19	134	641,966	17.6	13.74	22.30
20 - 29	180	1,306,942	21.4	16.24	27.66
30 - 39	161	839,555	16.2	12.83	20.15
40 - 49	192	908,482	24.7	18.37	32.39
50 - 59	143	532,266	18.1	14.41	22.43
60 - 69	95	379,424	19.3	15.05	24.48
70 and above	23	201,108	17.0	8.90	30.18
Ethnicity					
Malay	627	2,424,271	20.6	17.60	23.94
Chinese	38	514,398	10.1	6.10	16.21
Indian	53	443,921	28.3	19.30	39.40
Other Bumiputeras[a]	115	438,208	15.9	12.20	20.51
Others	90	971,606	29.8	18.90	43.52
Citizenship					
Malaysian	844	3,951,154	18.1	15.73	20.82
Non-Malaysian	78	836,292	32.3	19.16	48.90
Education Level					
No formal Education	121	713,235	22.6	16.15	30.75
Primary Education	123	702,783	21.3	15.26	28.89
Secondary Education	443	1,938,829	20.3	17.25	23.83
Tertiary Education	227	1,385,465	17.3	13.85	21.45

Table 10.1: Prevalence of community awareness of COMBI (n = 4,379) (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status [b]					
Single	269	1,567,174	18.3	14.49	22.73
Married	580	2,799,373	20.1	16.97	23.66
Widow(er)/Divorcee	56	320,942	20.1	13.48	28.84
Occupations [c]					
Government Employee	141	653,583	27.5	20.90	35.17
Private Employee	202	1,245,237	17.7	13.48	22.81
Self Employed	123	730,984	21.2	15.10	28.85

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.2: Prevalence of high perceived threat of dengue among respondents (n = 4,470)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
MALAYSIA	**2,834**	**14,783,648**	**58.5**	**53.90**	**62.97**
Location					
Urban	1,505	11,035,763	56.5	50.79	62.04
Rural	1,329	3,747,886	65.4	61.07	69.40
Sex					
Male	1,328	7,649,598	59.0	54.78	63.04
Female	1,506	7,134,050	58.0	52.36	63.47
Age Group					
13 - 19	432	2,168,949	58.3	50.39	65.75
20 - 29	555	3,697,933	60.4	53.97	66.56
30 - 39	587	3,359,222	62.8	57.36	67.87
40 - 49	461	2,212,127	60.7	53.15	67.69
50 - 59	404	1,637,271	54.1	47.55	60.41
60 - 69	285	1,095,230	53.4	45.41	61.26
70 and above	110	612,915	45.5	35.28	56.03
Ethnicity					
Malay	1,986	8,303,430	69.0	65.95	71.86
Chinese	142	1,905,074	35.2	27.22	44.12
Indian	80	669,756	43.5	26.33	62.32
Other Bumiputeras [a]	419	1,787,803	64.0	59.69	68.03
Others	184	2,029,174	62.8	49.04	74.82
Citizenship					
Malaysian citizen	2,667	13,090,360	58.6	54.06	62.93
Non-Malaysian	133	1,502,494	58.9	44.11	72.20
Education Level					
No formal Education	345	1,596,582	67.2	58.60	74.73
Primary Education	660	4,222,031	59.4	50.97	67.33
Secondary Education	388	2,109,851	60.1	53.13	66.67
Tertiary Education	28	130,742	45.4	26.52	65.77

Table 10.2: Prevalence of high perceived threat of dengue among respondents (n = 4,470) (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status [b]					
Single	871	4,976,799	57.0	50.27	63.45
Married	1,675	8,433,552	59.3	54.96	63.41
Widow(er) / Divorcee	205	947,275	57.2	47.33	66.44
Occupation [c]					
Government Employee	389	2,058,715	63.7	55.74	70.99
Private Employee	372	1,708,994	51.3	43.27	59.31
Self Employed	1,207	5,983,707	60.7	55.83	65.29
Unpaid worker / Homemaker / caregiver	802	4,716,577	58.5	53.20	63.67

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.3: Prevalence of perceived dengue as a threat among respondents by item

Prevalence of Perceive Dengue as a Threat Among Respondents (By Item)	Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
I am worried because dengue fever may cause death.	4,324	23,749,800	91.8	89.12	93.89
I am worried I would contract dengue fever if the body develops rash when having fever.	3,817	21,139,160	82.1	79.11	84.74
I need to get immediate treatment on the first day of fever because I am worried, I would contract dengue.	3,655	19,348,229	75.0	70.71	78.77
I am not worried about contracting dengue every time I have a fever.	1,306	8,176,986	31.8	28.24	35.6
I am worried that my family members would contract dengue if they have a fever.	3,732	20,355,260	78.9	75.59	81.92
I am still worried about contracting dengue even though I could get medical treatment at the hospital.	3,432	18,872,856	73.7	70.51	76.65

Table 10.4: Prevalence of high perceived effectiveness on dengue prevention activities by individual among respondents (n = 4,464)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
MALAYSIA	**2,916**	**15,293,170**	**60.6**	**56.80**	**64.35**
Location					
Urban	1,535	11,311,978	58.2	53.50	62.74
Rural	1,381	3,981,192	68.9	65.36	72.20
Sex					
Male	1,397	7,871,022	60.9	56.55	65.09
Female	1,519	7,422,148	60.4	56.16	64.43
Age Group					
13 - 19	417	2,013,617	54.4	46.85	61.75
20 - 29	580	3,852,772	62.1	56.10	67.83
30 - 39	566	3,227,073	61.3	54.80	67.50
40 - 49	504	2,393,059	64.1	56.13	71.31
50 - 59	411	1,772,406	58.5	51.75	64.98
60 - 69	296	1,207,614	60.3	53.56	66.59
70 and above	142	826,630	64.2	52.54	74.31
Ethnicity					
Malay	1,970	8,099,168	67.4	63.94	70.68
Chinese	185	2,256,325	41.7	34.88	48.92
Indian	110	835,521	56.3	43.00	68.73
Other Bumiputeras [a]	416	1,726,042	62.1	55.40	68.28
Others	213	2,265,836	68.8	59.23	76.91
Citizenship					
Malaysian	2,715	13,273,777	59.6	55.62	63.43
Non-Malaysian	170	1,834,684	70.4	58.80	79.80
Education Level					
No formal Education	376	1,866,431	57.8	50.68	64.55
Primary Education	424	2,075,841	62.7	56.77	68.27
Secondary Education	1,236	5,926,252	59.5	54.63	64.27
Tertiary Education	809	4,975,810	62.3	56.95	67.40

Table 10.4: Prevalence of high perceived effectiveness on dengue prevention activities by individual among respondents (n = 4,464) (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status [b]					
Single	882	4,960,346	56.8	50.67	62.82
Married	1,741	8,822,809	62.0	58.36	65.50
Widow(er)/Divorcee	215	1,075,690	65.4	57.58	72.51
Occupation [c]					
Government Employee	344	1,518,590	64.8	56.55	72.33
Private Employee	691	4,511,816	62.8	55.31	69.72
Self Employed	386	1,968,758	56.0	49.51	62.25
Unpaid worker/ Homemaker/caregiver	26	99,046	34.6	19.99	52.86

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.5: Prevalence of perceived effectiveness on dengue prevention activities by individual among respondents (by item)

Prevalence of Perceived Effectiveness on Dengue Prevention Activities by Individual Among Respondents (by item)	Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
I am of the opinion that using repellents (Device or material to keep mosquitoes away) can prevent *Aedes* mosquito bites.	3,657	20,260,156	79.0	75.66	82.01
I am of the opinion that the Search and Destroy mosquito breeding sites is effective to prevent dengue.	4,334	23,830,186	92.6	90.31	94.45
I am of the opinion that aerosol spray is effective to kill *Aedes* mosquito.	3,560	19,723,077	76.7	73.85	79.30
I am of the opinion that avoiding outdoors when *Aedes* mosquitoes are active (early in the morning and at dusk) are effective to prevent dengue.	3,602	19,410,207	76.2	73.53	78.62
I am of the opinion that installing mosquito nets on windows and doors are effective to prevent dengue	3,300	18,216,988	71.6	68.25	74.81

Table 10.6: Prevalence of high perceived effectiveness on dengue prevention activities by authorities among respondents (n = 4,439)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
MALAYSIA	**1,612**	**8,671,829**	**34.5**	**31.31**	**37.80**
Location					
Urban	924	6,840,419	35.2	31.32	39.20
Rural	688	1,831,410	32.2	27.52	37.23
Sex					
Male	722	4,055,923	31.4	27.99	34.95
Female	890	4,615,906	37.8	34.27	41.44
Age Group					
13 - 19	199	1,012,859	27.4	22.31	33.12
20 - 29	300	1,946,417	31.4	26.02	37.41
30 - 39	366	2,077,603	39.1	33.60	44.80
40 - 49	292	1,483,985	40.5	34.75	46.51
50 - 59	224	964,586	32.2	27.50	37.33
60 - 69	165	788,493	38.9	32.37	45.84
70 and above	66	397,887	31.8	22.61	42.69
Ethnicity					
Malay	1,128	4775835	39.8	35.88	43.82
Chinese	126	1,576,513	29.4	21.91	38.19
Indian	61	472,452	31.4	21.45	43.52
Other Bumiputeras [a]	213	909,596	32.6	26.30	39.6
Others	74	902,545	27.7	18.89	38.75
Citizenship					
Malaysian	1,543	7,896,774	35.5	32.42	38.70
Non-Malaysian	59	740,167	28.9	18.76	41.71
Education Level					
No formal Education	187	926,744	29.0	23.57	35.13
Primary Education	185	856,230	26.0	20.32	32.69
Secondary Education	625	3,070,137	31.3	27.44	35.36
Tertiary Education	581	3,613,803	44.7	40.52	49.01

Table 10.6: Prevalence of high perceived effectiveness on dengue prevention activities by authorities among respondents (n = 4,439) (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status [b]					
Single	457	2,701,814	30.8	26.57	35.31
Married	1,023	5,229,757	37.0	33.58	40.53
Widow(er)/Divorcee	101	550,557	33.7	25.66	42.84
Occupation [c]					
Government Employee	236	1,064,291	45.6	39.05	52.23
Private Employee	375	2,444,471	34.3	29.30	39.66
Self Employed	210	1,188,298	34.1	27.18	41.73
Unpaid worker/ Homemaker/caregiver	15	98,861	34.6	17.20	57.46

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.7: Prevalence of perceived effectiveness on dengue prevention activities by authorities among respondents (by item)

Prevalence of Perceived Effectiveness on Dengue Prevention Activities by Individual Among Respondents (By Item)	Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
I am of the opinion that issuing fine or summons for *Aedes* mosquito breeding sites is effective in curbing dengue.	3,320	18,543,816	72.4	69.54	75.17
I am of the opinion that enforcement by the local authorities (PBT) (e.g.: notice of removal of abandoned cars, demolition of illegal structures such as coops, stores that can potentially be an *Aedes* mosquito breeding site) is effective in curbing dengue	3,676	20,618,548	80.7	78.65	82.51
I am of the opinion that health education activities by health authorities are effective in curbing dengue.	4,019	22,276,699	87.2	84.60	89.36
I am of the opinion that fogging is not effective in curbing dengue	2,518	14,547,757	57.1	53.99	60.09
I am of the opinion that larvicide spray (mosquito larvae insecticide) is not effective in curbing dengue	2,294	13,247,924	51.9	47.61	56.08
I am of the opinion that Search and Destroy (Cari dan Musnah) communal work (gotong-royong) is not effective in curbing dengue.	1,752	10,684,509	41.7	38.51	44.98

Table 10.8: Prevalence of high perceived barriers on dengue prevention activities among respondents (n = 4,432)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
MALAYSIA	**1,140**	**5,656,215**	**22.6**	**19.64**	**25.81**
Location					
Urban	602	4,171,446	21.5	18.06	25.50
Rural	538	1,484,769	26.1	21.86	30.79
Sex					
Male	529	2,873,157	22.2	19.23	25.59
Female	611	2,783,058	22.9	19.49	26.76
Age Group					
13 - 19	123	632,711	17.0	13.10	21.72
20 - 29	223	1,408,077	22.7	18.07	28.19
30 - 39	254	1,364,915	26.1	21.55	31.17
40 - 49	213	979,480	26.6	20.64	33.45
50 - 59	173	636,988	21.3	17.58	25.67
60 - 69	112	433,685	21.9	15.17	30.61
70 and above	42	200,360	16.0	10.27	24.14
Ethnicity					
Malay	840	3,355,447	28.2	25.0	31.67
Chinese	24	404,373	7.6	3.56	15.30
Indian	50	466,732	30.8	20.02	44.26
Other Bumiputera [a]	149	627,367	22.4	17.88	27.75
Others	73	788,945	24.1	16.62	33.61
Citizenship					
Malaysian	1,072	4,952,713	22.4	19.31	25.78
Non-Malaysian	64	690,150	26.7	17.64	38.29
Education Level					
No formal Education	121	594,995	18.5	14.24	23.66
Primary Education	162	740,923	22.5	17.27	28.84
Secondary Education	456	2,168,785	22.2	18.83	25.89
Tertiary Education	378	2,032,135	25.4	21.03	30.23

Table 10.8: Prevalence of high perceived barriers on dengue prevention activities among respondents (n = 4,432) (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status [b]					
Single	306	1,704,623	19.4	15.41	24.23
Married	732	3,478,196	24.7	21.55	28.07
Widow(er)/Divorcee	86	345,198	21.6	15.82	28.86
Occupation [c]					
Government Employee	173	720,769	30.6	25.29	36.56
Private Employee	275	1,774,898	25.0	19.36	31.75
Self Employed	151	792,931	22.9	17.20	29.82

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.9: Prevalence of perceived barriers on dengue prevention activities among respondents (by item)

Prevalence of Perceived Barriers on Dengue Prevention Activities Among Respondents (By Item)	Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
I am of the opinion that time is not a deterrent to do dengue prevention activities at home.	3,740	19,611,395	77.0	72.65	80.80
I am of the opinion that extra cost is not a deterrent to do dengue prevention activities at home.	3,019	16,096,820	63.3	59.65	66.74
I am of the opinion that putting mosquito larvicide in water is not good for health.	3,298	19,232,960	75.4	72.73	77.94
I am of the opinion that there is no need to do dengue prevention activities because there is no dengue case reported in my housing area.	1,008	6,058,824	23.7	21.73	25.82
I did not join communal work (gotong-royong) with my community because I think that it is not my responsibility.	650	4,385,887	17.2	14.82	19.76
I will not open the doors and windows during fogging because I think that fogging is harmful to my health.	2,546	15,342,995	60.1	55.6	64.5
I will not open the doors and windows during fogging because I think that fogging dirties the house.	1,820	11,376,967	44.6	40.8	48.43
I will not go out of the house during fogging in the evening because I think that it is the time of rest.	1,658	10,821,928	42.4	38.08	46.88

Table 10.10: Prevalence of practicing "Search and Destroy" mosquito breeding sites by individual at home (once a week) - refer point 10.3.10

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Malaysia	**1,642**	**9,361,651**	**36.7**	**33.80**	**39.80**
Location					
Urban	891	7,285,390	37.1	33.53	40.79
Rural	751	2,076,261	35.5	31.34	39.95
Sex					
Male	720	4,496,264	34.6	31.35	37.90
Female	922	4,865,387	39.0	35.23	42.94
Age Group					
13 - 19	221	1,211,856	32.70	27.34	38.61
20 - 29	307	2,112,863	33.60	27.56	40.18
30 - 39	292	1,912,379	35.70	30.85	40.91
40 - 49	282	1,425,349	38.30	32.43	44.43
50 - 59	277	1,274,096	41.90	36.65	47.41
60 - 69	177	775,783	37.90	31.17	45.04
70 and above	86	649,326	49.10	37.4	60.94
Ethnicity					
Malay	1,033	4,301,643	35.3	32.56	38.16
Chinese	152	2,149,181	40.4	31.95	49.51
Indian	74	537,521	34.2	20.78	50.80
Other Bumiputera [a]	259	1,084,040	38.5	30.84	46.67
Others	114	1,235,298	36.9	27.38	47.54
Citizenship					
Malaysian	1,527	8,183,146	36.4	33.62	39.35
Non-Malaysian	102	1,108,700	41.5	29.88	54.17
Education Level					
No formal Education	191	1,036,008	31.8	25.02	39.48
Primary Education	263	1,352,727	40.7	34.53	47.26
Secondary Education	717	3,752,221	37.3	33.25	41.62
Tertiary Education	416	2,820,361	35.0	30.91	39.31

Table 10.10: Prevalence of practicing "Search and Destroy" mosquito breeding sites by individual at home (once a week) - refer point 10.3.10 (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status [b]					
Single	459	2,858,058	32.6	28.82	36.58
Married	1,003	5,475,238	38.0	34.36	41.74
Widow(er)/Divorcee	140	799,875	48.3	39.30	57.35
Occupations [c]					
Government Employee	180	883,875	37.1	30.76	43.90
Private Employee	382	2,872,996	39.7	34.79	44.89
Self Employed	197	1,028,191	28.9	23.13	35.51
Unpaid worker / Homemaker / caregiver	20	100,926	35.1	18.44	56.34

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.11: Prevalence of "Search and Destroy" of mosquito breeding sites by the community (gotong-royong) for the past 6 months - refer point 10.3.11

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Malaysia	**1,775**	**9,112,700**	**37.5**	**32.90**	**42.30**
Location					
Urban	857	6,587,521	35.0	29.51	40.88
Rural	918	2,525,179	46.0	39.56	52.52
Sex					
Male	879	5,003,278	39.9	34.71	45.32
Female	896	4,109,421	34.9	30.25	39.80
Age Group					
13 - 19	237	1,222,388	34.4	27.86	41.62
20 - 29	345	2,347,754	38.9	32.19	45.99
30 - 39	357	1,910,940	37.2	31.58	43.22
40 - 49	312	1,439,688	40.9	31.73	50.78
50 - 59	287	1,128,297	38.6	31.65	46.08
60 - 69	165	661,553	34.6	27.76	42.13
70 and above	72	402,079	32.3	23.27	42.91
Ethnicity					
Malay	1,166	4,696,457	40.1	35.72	44.64
Chinese	89	1,142,021	22.2	13.98	33.25
Indian	54	492,522	33.1	23.33	44.67
Other Bumiputera [a]	309	1,199,147	44.5	36.17	53.08
Others	147	1,557,189	51.1	39.62	62.45
Citizenship					
Malaysian	1,642	7,793,305	36.1	31.75	40.66
Non-Malaysian	122	1,289,072	52.5	38.28	66.27
Education Level					
No formal Education	219	1,136,273	36.9	28.93	45.60
Primary Education	272	1,328,638	42.7	35.27	50.38
Secondary Education	851	3,961,777	41.4	36.40	46.67
Tertiary Education	397	2,474,979	31.4	25.77	37.60

Table 10.11: Prevalence of "Search and Destroy" of mosquito breeding sites by the community (gotong-royong) for the past 6 months - refer point 10.3.11 (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status					
Single	479	27,792,25	32.9	27.43	38.91
Married	1,117	5,521,626	40.1	34.93	45.46
Widow(er)/Divorcee	131	606,994	37.9	29.05	47.74
Occupations [c]					
Government Employee	215	973,806	42.4	35.00	50.19
Private Employee	400	2,587,177	37.6	30.82	44.84
Self Employed	258	1,371,171	39.9	31.81	48.67
Unpaid worker / Homemaker / caregiver	21	91,996	32.2	16.64	52.98

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.12: Participation in "Search and Destroy" of mosquito breeding sites by the community (gotong-royong) for the past 6 months among respondents who participated - refer point 10.3.12

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Location					
Urban	604	2,112,889	73.2	66.20	79.2
Rural	771	2,112,889	86.2	82.40	89.21
Sex					
Male	711	3,879,984	79.9	74.70	84.20
Female	664	2,848,357	73.0	66.70	78.40
Age Group					
13 - 19	191	981,731	83.2	74.64	89.20
20 - 29	255	1,744,857	76.6	66.74	74.20
30 - 39	271	1,352,051	74.8	64.40	83.03
40 - 49	255	1,152,311	81.8	71.92	88.71
50 - 59	232	858,709	78.5	70.85	84.51
60 - 69	114	392,223	62.1	49.96	72.96
70 and above	57	246,459	68.5	50.71	82.16
Ethnicity					
Malay	905	3,613,866	77.1	70.74	82.44
Chinese	51	671,669	62.2	44.56	77.17
Indian	43	400,700	88.8	70.39	96.36
Other Bumiputera [a]	254	1,029,353	85.8	79.54	90.40
Others	113	1,012,752	75.7	62.71	85.18
Citizenship					
Malaysian	1,270	5,746,754	76.7	71.40	81.30
Non-Malaysian	95	955,791	76.9	61.10	87.60
Education Level					
No formal Education	175	850,234	77.4	65.13	86.23
Primary Education	212	977,274	76.8	66.83	84.43
Secondary Education	689	3,085,229	80.9	75.14	85.63
Tertiary Education	274	1,673,700	70.3	60.40	78.56

Table 10.12: Participation in "Search and Destroy" of mosquito breeding sites by the community (gotong-royong) for the past 6 months among respondents who participated - refer point 10.3.12 (Cont.)

Sociodemographic Characteristics	Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Marital Status [b]					
Single	352	1,990,928	74.7	67.52	80.75
Married	891	4,166,556	78.4	72.81	83.10
Widow(er) / Divorcee	92	395,377	67.3	56.45	76.48
Occupations [c]					
Government Employee	180	791,338	86.9	77.46	92.70
Private Employee	280	1,700,944	68.1	57.36	77.15
Self Employed	213	1,106,639	82.9	71.73	90.30
Unpaid worker / Homemaker / Caregiver	18	73,355	79.7	43.27	95.30

Note:
[a] Other Bumiputera includes Bumiputera Sabah, Bumiputera Sarawak and Orang Asli
[b] Marital Status from 10 years old and above
[c] Occupation from 15 years old and above

Table 10.13: Methods used to eliminate mosquito breeding sites among respondents (aged ≥ 13 years old)

Method used to eliminate mosquito breeding site	Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Replace water and wash the container (e.g.: flower vase)	3,558	19,486,258	89.2	87.12	91.04
Place mosquito larvicide in water container that cannot be drained out	3,559	19,497,897	89.3	87.17	91.10
Store containers that can hold water if it is not in use	2,648	13,309,158	61.0	56.7	65.1
Water containers must be tightly closed	3,300	13,309,158	80.0	76.95	82.69
Water in the flower vase base is drained and scrubbed clean	3,732	20,118,904	92.1	90.11	93.78
Destroying container that can hold water (tin can, plastic container, glass container, etc) if it is not needed	3,260	17,676,146	80.9	78.16	83.46
Clean rain gutters and clogged drains	3,831	20,591,161	94.3	92.53	95.67
Trim overgrown tree, branched that block rain gutters to prevent stagnant water	3,530	18,387,766	84.2	80.22	87.48

Table 10.14: Method(s) used to prevent *Aedes* mosquito bites among respondents (aged ≥ 13 years old)

Methods used to eliminate mosquito breeding site	Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Using repellent (device or material to keep mosquitoes away)	3,496	19,318,087	79.0	75.81	81.82
Using insecticide aerosol spray	3,878	21,232,104	85.7	82.74	88.18
Wearing bright-coloured long pants and long-sleeved shirts	3,148	17,140,102	70.0	65.87	73.82
Avoiding being outside the house at times when *Aedes* mosquito is active	4,047	22,186,661	89.9	87.32	92.96
Installing mosquito nets on windows and doors.	2,686	15,223,172	62.3	58.30	66.16
Using mosquito coils/ electric mosquito killers or other types of mosquito repellent devices	3,871	21,508,415	86.8	84.46	88.85

DOG-MEDIATED ZOONOTIC DISEASE

Dog-mediated Zoonotic Diseases

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HIGHLIGHTS

- Respondents aged 13-19 years old and 70 years and older have lower levels of knowledge about dog-mediated zoonotic diseases and perceptions about risk factors for contracting dog-mediated zoonotic diseases.
- Only 2 out of 5 people intend to practice good health seeking behaviour if they are bitten or scratched by a dog.
- Only 1 in 10 people practice good health seeking behaviour after being bitten or scratched by a dog.
- Less than half of dog owners registered their pet dogs with local authority.
- Approximately half of dog owners brought their pet dogs for annual pet health examination.

Keywords: *Dog-mediated zoonotic disease, good health seeking behaviour, Rabies.*

11.1 Introduction

Zoonosis has been identified as one of the new emerging threat to communicable diseases in a community that intertwine between human and animals. World Health Organization defined zoonosis as any disease or infection that is naturally transmissible from any vertebrate animal to humans[1]. Approximately 1500 pathogens are believed to infect humans[2] and 75% is believed to be zoonotic origins[3].

Dogs are known to have intimate contact with humans for thousands of years. Due to this close contact, dogs serve as a reservoir for possible zoonotic disease transmission to humans[3].

Zoonotic disease transmission routes are classified into four types which encompass physical injuries through bites and scratches, inhalation, contact with urine and faecal-oral ingestion[4]. As a result of this, humans are exposed to the risk of dog associated diseases from various pathogens such as viruses, bacteria, parasites and fungi. More than 60 dogs meditated zoonotic diseases were identified transmitted to humans[5]; including the few common reported cases such as rabies, leptospirosis, cutaneous larva migrant and ringworm tinea corporis.

Worldwide, it is estimated that zoonotic infections cause 2.5 billion human cases and 2.7 million human deaths per year[6]. Malaysia is no exception; from 2017 till 2020, there have been 31 reported rabies cases and 29 reported rabies-related death[7].

Although dogs are common household pets or companions, most dog owners are unaware of the dangers their pets can pose to them. Dog-mediated diseases to human can be reduced by practising good pet care behaviours, personal hygiene practices and preventive veterinary care. Thus, knowledge and awareness of dog-mediated zoonotic risks are required for effective preventive measures.

Rabies has recently re-emerged in Malaysia after being eradicated many years ago. Dog-related epidemic have become more rampant, with more sporadic zoonotic cases involving dogs being reported. In August 2017, CDC has declared an alert level 2 (rabies infectious areas) in three divisions of Sarawak due to the recent human rabies epidemic in the state. The last reported human Rabies in Peninsular Malaysia was in 1998, and there have been recent reports of emerging canine rabies in Perak, which have become national issues regarding pet care[8].

Dog owners are bounded by two Acts; the Animals Act 1953 and the Animal Welfare Act 2015, which protect the health and wellbeing of both the owner and the dogs. The importance of mandatory registration of pet dog legislation with the municipality is to facilitate better surveillance and traceability for zoonotic disease prevention and control (in the event of an outbreak). With the enforcement of dog licensing by law, up to date vaccination is compulsory, protecting the owner, family, community and the pet, particularly from rabies, which is endemic in Malaysia. Both Acts are interrelated - if a dog owner fulfils his responsibility by licensing and vaccinating, he is indirectly addressing the fulfilment of one of the five Welfare Needs in the Animal Welfare Act 2015, which states that the pet dog is protected from pain, suffering, injury and diseases. Though there are several studies on zoonotic diseases conducted in most parts of the world, there are limited studies on zoonotic diseases conducted in Malaysia, which are specifically focused on the Cognitive, Affective and Behaviour of zoonotic diseases transmitted from dogs to humans.

Data was collected from respondents aged 13 years and above using a validated questionnaire NHMS-CAB-ZDQ-Adult, which is available in bilingual language (Bahasa Melayu and English). The questionnaire was designed to be self-administered (SAQ) that requires minimal assistance.

The questionnaire was divided into three main domains: Cognitive (knowledge), Affective (perception) and Behaviour (practice).

The NHMS-CAB-ZDQ-Adult consisted of (a) 21 questions on the household's demographic characteristics; (b) Cognitive (knowledge) of dog mediated diseases (11 questions in total, with 9 pertaining to rabies knowledge and 2 pertaining to the Animal Welfare Act 2015), (c) Affective (perception) (8 questions), (d) Behaviour (practices) (3 questions on immediate action after being bitten by a dog, 2 questions about dog ownership and 3 questions about pet's care hygiene practices).

Knowledge was assessed using three options: true, false and not sure; a Likert scale of 5 from strongly disagree to strongly agree for perception; and Yes or No choice for practice.

Classification and level of Cognitive (knowledge) and Affective (perception) was assessed based on Bloom's cut-off point scoring[9, 10, 11]. The cognitive and affective domain scores were transformed into a percentage by dividing the scores obtained from respondent with the possible maximum score and further multiplied by 100. Each final sum score was classified as good or positive (between 80% and 100%), moderate or neutral (60% and 79%) and poor or negative (less than 60%). The Behaviour (practice) domain used a closed-ended question which required a singular dichotomous choice of Yes or No answer to tabulate the score.

11.2 Objectives

11.2.1 General Objective

To assess knowledge, perception and behaviour of the general Malaysian population on dog-mediated zoonotic diseases.

11.2.2 Specific Objectives

- To assess knowledge on dog-mediated zoonotic diseases among the general population.
- To assess awareness on Animal Welfare Act 2015 among the general population.
- To assess perception regarding risk factors of contracting dogs-mediated zoonotic diseases.
- To identify good health seeking behaviour among those who had been bitten or scratched by pets (dog) within the past 1 year.
- To identify good health seeking behaviour among those who have NEVER been bitten or scratched by dogs but given the circumstances IF they were bitten, what would be their remedial measures.
- To assess dog owner's ownership and responsibility on pets.

Definition

1. Awareness on Rabies

- **Variable Definition**
  Level of awareness on rabies is categorized as “high”, “moderate” and “low.

- **Conceptual Definition**
  Cognitive domain regarding rabies consists of knowing symptoms, risk factors, mode of transmission and preventive measure or control.

- **Operational Definition**
  Levels of acceptable knowledge on sign and symptoms, risk factor, modes of transmission and what are the necessary remedial preventive measures need to be observed.

2. Level of Awareness on the Animal Welfare Act 2015

- **Variable Definition**
  Level of awareness of Animal Welfare Act 2015 is categorized into two categories on whether they are aware or unaware.

- **Conceptual Definition**
  Cognitive domain includes awareness of Animal Welfare Act and one of the five Welfare Act needs were evaluated in the cognitive domain.

- **Operational Definition**
  Level of awareness of Animal Welfare Act and harsher punishments for animal cruelty.

3. Perception Regarding Risk Factors of Contracting Dog Mediated Diseases

- **Variable Definition**
  Level of perception regarding risk factors of contracting dog mediated diseases is categorized as “positive”, “neutral” or “negative”.

- **Conceptual Definition**
  Affective domain comprised of the severity of diseases transmitted by dogs: zoonotic disease risk, disease preventive behaviour, and treatment seeking behaviour.

- **Operational Definition**

  Level of concern on the severity of diseases transmitted by dogs: zoonotic disease risk, disease preventive behaviour, and treatment seeking behaviour.

4. Behaviour Regarding Immediate Correct Action After Bitten or Scratched by Dog

- **Variable Definition**

  Level of behavioural regarding correct immediate action among those who had been bitten or scratched by a dog is categorized as “good” or “bad”.

- **Conceptual Definition**

  To fulfil good health seeking behaviour requirements, each individual must act upon the three correct immediate actions as suggested by World Health Organization (WHO).

Operational Definition

- Able to assess the likelihood to:

  Act on the correct immediate action: Refers to three recommended remedial measures:

  a) Wash wound using running water and soap for **AT LEAST** 15 minutes AND

  b) Apply antiseptic, ointment or wound dressing.

  AND

  c) Seek treatment immediately at the clinic or hospital when bitten or scratched by cats/ dogs

  (Based on the Interim Guideline for human rabies prevention & control in Malaysia, Disease Control Division, Ministry of Health Malaysia) [12].

5. Dog Ownership Responsibility

- **Variable Definition**

  Dog ownership responsibility.

- **Operational Definition**

  Covers two aspects: dog licensing and annual health examination.

11.3 Findings

11.3.1 Cognitive (Knowledge)

Level of Knowledge on Rabies among the General Population

The overall prevalence of high knowledge on diseases related to dog was 46.4% (95% CI: 42.48-50.31), moderate knowledge 28.0% (95% CI: 24.66-31.52) and low knowledge 25.7% among respondents (95% CI:22.44-29.20).

The rural population had high knowledge prevalence of 56.1% (95% CI: 50.12-61.81) compared to urban population of 43.5% (95% CI: 38.99-48.15), moderate knowledge in urban and rural populations are 28.4% (95% CI: 24.42-32.75) and 26.5% (95% CI: 21.72-31.83) respectively, and the urban population had a higher percentage of low knowledge 28.1% (95%CI: 24.08-32.48) than the rural 17.5% (95% CI: 14.70-20.67).

The prevalence of high knowledge in males and females was 45.6% (95% CI: 41.17-50.13) and 47.2% (95% CI: 42.75-51.64) respectively. Females had a higher prevalence of moderate knowledge 29% (95% CI: 25.59-32.66) than males 27% (95% CI: 23.16-31.18). In contrast, males had a higher prevalence of low knowledge 27.4% (95% CI: 23.12-32.15) compared to females 23.8% (95% CI: 20.35-27.69).

In terms of education level, high knowledge prevalence among respondents with tertiary education 48.0% (95% CI: 41.27-54.88), followed by primary education 47.8% (95% CI: 40.12-55.59), secondary education 45.8% (95% CI: 41.39-50.37) and no formal education at 39.8% (95% CI: 32.68 -47.46). Amongst those with low knowledge, 28.5% (95% CI: 22.72-35.18) received primary education, followed by secondary education 28.3% (95% CI: 24.14-32.80), no formal education 26.9% (95% CI: 20.87-33.91) and tertiary education 21.8% (95% CI: 18.11-25.97).

In terms of age group, those aged 50 to 59 years old had the highest prevalence of high knowledge, 54.4% (95% CI: 48.69-60.03), followed by 60 to 69 years old, 53.5% (95% CI: 46.61-60.24), 40 to 49 years old, 50.2% (95% CI: 42.79-57.51), 20 to 29 years old, 45.4% (95% CI: 39.09-51.87), 30 to 39 years old, 45.4% (95% CI: 38.69-52.28), 70 years and above, 41.8% (95% CI: 31.70-52.50), and 13 to 19 years old, 37.1% (95% CI: 31.17-43.53).

The highest prevalence of high knowledge was reported amongst Malays 51.5% (95% CI: 48.37-54.71) and other Bumiputera 51.5% (95% CI: 43.71-59.15), followed by others 47.5% (95% CI: 35.35 -59.94), Chinese 37.2% (95% CI: 28.00-47.47) and Indians 27.8% (95% CI: 18.75-39.23). The highest prevalence of low knowledge was observed among others 32.8% (95% CI: 22.68-44.79), followed by Indian 32.5% (95% CI: 23.10-43.57), Chinese 30.5% (95% CI: 22.03-40.50), Malay 22.6% (95% CI: 20.19-25.25) and other Bumiputeras 18.9% (95% CI: 12.95-26.73).

The highest prevalence of high knowledge was observed among married participants 49.4% (95% CI: 45.24-53.65), followed by widower/divorced participants 45.3% (95% CI: 37.90-52.86) and single participants 41.2% (95% CI: 36.00-46.68).

Of those who are non-dog owners, 46.5% (95% CI: 42.61-50.41) reported having more awareness than those who rear dogs 45.2% (95% CI: 29.74-61.56) **(Table 11.1)**.

Awareness of the Animal Welfare Act 2015

Animal Welfare Act 2015

Only 28% (95% CI: 25.50-30.61) of respondents were aware of the Animal Welfare Act 2015.

Rural population reported having a higher level of awareness at 29.3% (95% CI: 25.11-33.84) compared to urban population 27.6% (95% CI: 24.66-30.75). Females 29.7% (95% CI: 26.85-32.66) are more aware of the Act than males 26.4% (95% CI: 23.09-30.00).

Respondents aged 60 to 69 years old had the highest level of awareness at 32.2% (95% CI: 27.24-37.55) followed by 40 to 49 years old 29.3% (95% CI: 23.60-35.74), 30 to 39 years old 28.4% (95% CI: 22.96-34.53), 50 to 59 years old 27.6% (95% CI: 23.36-32.38), 20 to 29 years old 27.1% (95% CI: 22.55-32.25), and 13 to 19 years old, 26.8% (95% CI: 21.97-32.19). Respondents aged 70 years and above had the lowest level of awareness at 24.6% (95% CI: 17.09-34.09).

In terms of education level, adults with tertiary education 32.3% (95% CI: 27.48-37.60) reported having the highest awareness compared to other groups.

The highest prevalence of awareness was found among Indians 33.6% (95% CI: 21.14-48.86), followed by other Bumiputera 32.1% (95% CI: 27.30-37.35), Malay 29.4% (95% CI :26.49-32.45), Chinese 24.8% (95% CI: 20.16-30.15) and others 23.0%, (95% CI: 15.02-33.51).

Those who do not rear dogs reported higher levels of awareness at 28.2% (95% CI: 25.67-30.98) than those who do rear dogs 25.7% (95% CI: 17.49-36.02) **(Table 11.2)**.

Awareness of the Imprisonment And / Or Fine for Mistreating and Abusing Animals

About 75.3% of the population (95% CI: 71.35-78.94) was aware of the Animal Welfare Act 2015's provisions for imprisonment and/or fine.

Rural respondents 76.1% (95% CI: 69.32-81.79) and female respondents 78.1% (95% CI: 73.46-82.14) reported more aware of the possibility of imprisonment and/or fine as a result of mistreating and abusing animals than their urban counterparts.

The age group of 60 to 69 years old had the highest number of respondents with high awareness at 85.4% (95% CI: 79.58-89.80), followed by 50 to 59 years old 78.9% (95% CI: 72.81-83.99), 70 years and above 78.8% (95% CI: 69.04-86.15), 40 to 49 years old 76.9% (95% CI: 70.33-82.42), 30 to 39 years old 75.4% (95% CI: 68.29-81.39), 20 to 29 years old 72.1% (95% CI: 64.19-78.92), and 13 to 19 years old group 69.4% (95% CI: 61.12-76.67).

The findings revealed that dog owners, 79.7% (95% CI: 66.57-88.61) scored higher awareness than non-dog owners 74.9% (95% CI: 70.74-78.59) **(Table 11.3)**.

11.3.2 Affective (Perception)

Community's Perception Regarding the Risk Factors of Contracting Dog-related Diseases

According to the findings of this study, only 53.1% (95% CI: 49.29-56.88) of the community has a positive perception of risk factors for contracting dog-related diseases. This is considered relatively low with 3.7% (95% CI: 2.44-5.65) showed negative perception and 43.2% (95% CI: 39.45-46.97) portrayed neutral perception.

The highest prevalence of positive perception regarding risk factors to contracting dog-related diseases were among rural respondents 56.1% (95% CI: 50.32-61.77), female 56.4% (95% CI: 52.50 -60.21), Malays 63.1% (95% CI: 59.50-66.49), those with tertiary education 62.5% (95% CI: 57.17-67.45) and those who don't own dogs 55.9% (95% CI: 52.18-59.52). Males had a slightly higher negative perception 4.1% (95% CI: 2.55-6.59) than females 3.3% (95% CI: 2.12-5.14).

In terms of age group, positive perception prevalence was highest among those aged 60 to 69 years old, 60.7% (95% CI: 52.49-68.27) and lowest among two age groups: 13 to 19 years old 44.5% (95% CI: 37.68-51.57) and 70 years and above 38.3% (95% CI: 29.09-48.50).

Those who do not own a dog showed a higher positive perception prevalence of 55.9% (95% CI: 52.18-59.52) compared to dog owners 24.6% (95% CI: 13.44-40.80) **(Table 11.4)**.

11.3.3 Behaviour (Practice)

Percentage of Good Health Seeking Behaviour After Been Bitten or Scratched by Dogs within the Past 1 Year

According to the study findings, only 40 respondents (15.3%) (a subset of the Malaysian population) out of 261 respondents had good health seeking behaviour after being bitten or scratched by dogs. This section is the result of actual past experiences.

Respondents seen with good health seeking behaviour after being bitten or scratched by dogs within the previous year were mostly urban population (65%), female (65%), 20-29 years old (30.0%), Malay (77.5%), those with secondary education (52.5%) and those who do not own dog as pets (95%) **(Table 11.5)**.

Prevalence of Good Health Seeking Behaviour among Those Who Have NEVER Been Bitten or Scratched by Dogs

In this section, 1,679 respondents (39.9%, 95% CI: 36.95-42.87) perceived to have good health seeking behaviour despite never being bitten or scratched by a dog but given the circumstances if they were bitten or scratched by a dog.

Good health seeking behaviour among those who have never been bitten or scratched by a dog was significantly higher in the rural population, 44.4% (95% CI: 39.41-49.43), female, 40.3% (95% CI :36.51-44.18), within the age group of 13-19 years old, 48.8% (95% CI :43.84-53.71), other Bumiputeras 50.2% (95% CI: 44.12-56.23), those with no formal education 49.7% (95% CI: 42.48-56.91), and those who do not rear dogs as pets 40.2% (95% CI: 37.12-43.29) **(Table 11.6)**.

Dog Owner's Ownership and Responsibility on Pet

Out of the 238 respondents who owned dogs as pets (a subset of the Malaysian population), only 106 (44.5%) registered their dogs with local authorities.

A higher percentage of urban respondents (75.5%), female (53.8%), those aged 20 to 29 years old and 50 to 59 years old (20.8%), Chinese (34.0%), and those with secondary education (36.8%) registered their dogs with local authorities **(Table 11.7)**.

Dog Owner's Responsibility on Pet

Out of the 238 respondents who owned dogs as pets (a subset of the Malaysian population), 125 respondents (52.5%) brought their dogs for annual health examinations.

Among those who brought their dogs for annual health examinations, higher percentages were reported among urban respondents at 77.6%, female 61.6%, age group of 50 to 59 years old at 23.2%, Chinese at 37.6% and those with secondary education 39.2% **(Table 11.8)**.

11.4 Conclusion

Satisfactory knowledge levels are higher in rural areas than in urban areas, and lower among the younger and older generations. Positive perception of risk factors is generally low but it was found to be higher in Malays. The practice of intended and actual good health seeking is very low, as in registration for dog ownership. The same is reported for annual pet health examinations. Further actions must be taken to address current issues in order to reduce future outbreaks.

11.5 Recommendation

- Education on zoonotic related diseases should focus on children and the elderly as they are the most vulnerable groups.
- Emphasis on immediate health seeking behaviour after being scratched or bitten by a dog.
- Change perceptions about the importance of seeking immediate health treatment through health promotion, particularly among pet owners.
- Emphasis on pet (dog) registration and annual health checks for owners, as well as awareness of the Animal Welfare Act 2015.
- Multidisciplinary collaboration between veterinarians, public health professionals and physicians under the One Health initiative on zoonotic awareness and education should be strengthened.

11.6 Study Limitations

This study is part of the larger National Health and Morbidity Survey, which collects data on a national level. To ensure national representativeness, two stage stratified random sampling was used and sampling involved two stages: Enumeration Blocks (EB) and Living Quarters (LQ). The possibility of selecting a homogeneous ethnicity within EB or LQ could not be avoided. Hence, the results may not reflect more dog owners who are primarily non-Malays (Chinese, Indians or other non-Muslim ethnicities). In addition, the majority of these participants are from Sabah and Sarawak where the non-Muslims predominate. Besides, the survey was conducted in both English and Malay. Those who are less proficient in either language is less likely to participate in the survey.

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Table 11.1: Prevalence of knowledge on rabies associated with dog in Malaysia by sociodemographic characteristics (n = 4,248)

Sociodemographic Characteristics	High Knowledge					Moderate Knowledge					Low Knowledge				
	Unweighted Count	Estimated population	Prevalence (%)	95% CI		Unweighted Count	Estimated population	Prevalence (%)	95% CI		Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper				Lower	Upper
MALAYSIA	2,234	11,169,292	46.4	42.48	50.31	1,119	6,734,662	28.0	24.66	31.52	895	6,183,495	25.7	22.44	29.20
Strata															
Urban	1,150	8,092,259	43.5	38.99	48.15	651	5,281,774	28.4	24.42	32.75	537	5,223,808	28.1	24.08	32.48
Rural	1,084	3,077,033	56.1	50.12	61.81	468	1,452,888	26.5	21.72	31.83	358	959,687	17.5	14.70	20.67
Gender															
Male	1,056	5,673,713	45.6	41.17	50.13	514	3,356,231	27.0	23.16	31.18	432	3,408,133	27.4	23.12	32.15
Female	1,178	5,495,579	47.2	42.75	51.64	605	3,378,432	29.0	25.59	32.66	463	2,775,362	23.8	20.35	27.69
Age (years)															
13 – 19	282	1,333,064	37.1	31.17	43.53	189	1,018,215	28.4	23.07	34.34	173	1,238,392	34.5	29.11	40.32
20 – 29	418	2,660,589	45.4	39.09	51.87	214	1,499,437	25.6	21.20	30.53	199	1,699,764	29.0	22.86	36.03
30 – 39	439	2,321,743	45.4	38.69	52.28	215	1,483,766	29.0	23.26	35.53	171	1,308,714	25.6	20.58	31.34
40 – 49	385	1,755,329	50.2	42.79	57.51	180	1,013,108	28.9	23.70	34.82	122	731,572	20.9	16.15	26.61
50 – 59	353	1,551,279	54.4	48.69	60.03	162	770,696	27.0	21.85	32.94	111	528,766	18.5	14.00	24.15
60 – 69	256	1,013,395	53.5	46.61	60.24	113	518,199	27.4	22.09	33.34	73	362,983	19.2	13.39	26.66
70 and above	101	533,892	41.8	31.70	52.50	46	431,241	33.7	24.20	44.80	46	313,303	24.5	16.80	34.30
Ethnicity															
Malay	1,473	5,863,134	51.5	48.37	54.71	692	2,938,034	25.8	23.19	28.66	584	2,572,863	22.6	20.19	25.25
Chinese	174	1,952,333	37.2	28.00	47.47	112	1,694,344	32.3	23.65	42.35	83	1,599,424	30.5	22.03	40.50
Indian	61	410,749	27.8	18.75	39.23	55	584,746	39.6	28.60	51.86	62	479,463	32.5	23.10	43.57
Others Bumiputera	362	1,402,807	51.5	43.71	59.15	193	807,879	29.6	25.04	34.69	91	514,908	18.9	12.95	26.73
Others	146	1,436,887	47.5	35.35	59.94	60	596,565	19.7	12.80	29.12	69	992,015	32.8	22.68	44.79

Table 11.1: Prevalence of knowledge on rabies associated with dog in Malaysia by sociodemographic characteristics (n = 4,248) (Cont.)

Sociodemographic Characteristics	High Knowledge					Moderate Knowledge					Low Knowledge				
	Unweighted Count	Estimated Population	Prevalence %	95% CI		Unweighted Count	Estimated Population	Prevalence %	95% CI		Unweighted Count	Estimated Population	Prevalence %	95% CI	
				Lower	Upper				Lower	Upper				Lower	Upper
Citizen Status															
Malaysian	2,101	9,938,794	46.5	42.56	50.50	1,056	6,040,138	28.3	25.27	31.47	829	5,390,469	25.2	21.92	28.84
Non-Malaysian	108	1,059,815	44.5	31.55	58.29	56	581,430	24.4	16.31	34.90	57	739,043	31.0	21.71	42.24
Marital Status															
Single	631	3,454,523	41.2	36.00	46.68	372	2,406,206	28.7	23.83	34.16	330	2,516,556	30.0	24.91	35.73
Married	1,390	6,690,362	49.4	45.24	53.65	632	3,681,716	27.2	24.03	30.63	481	3,159,696	23.4	20.03	27.03
Widow(er) / Divorce	156	702,988	45.3	37.90	52.86	91	547,403	35.3	26.59	45.02	57	302,223	19.5	13.54	27.16
Education Level															
No formal education	256	1,197,511	39.8	32.68	47.46	177	1,000,129	33.3	26.11	41.29	119	808,510	26.9	20.87	33.91
Primary education	328	1,503,566	47.8	40.12	55.59	142	743,889	23.7	18.75	29.37	135	897,753	28.5	22.72	35.18
Secondary education	959	4,298,192	45.8	41.39	50.37	450	2,427,035	25.9	22.79	29.24	397	2,650,414	28.3	24.14	32.80
Tertiary education	626	3,741,931	48.0	41.27	54.88	322	2,350,574	30.2	24.53	36.50	223	1,696,852	21.8	18.11	25.97
Occupation															
Government employee	272	1,146,108	49.5	41.87	57.16	124	683,117	29.5	22.53	37.59	79	486,093	21.0	15.20	28.26
Private employee	495	3,101,541	45.9	40.10	51.90	264	1,815,363	26.9	22.80	31.40	215	1,837,335	27.2	22.10	33.00
Self employed	309	1,506,933	44.7	36.13	53.67	153	1,025,878	30.5	21.34	41.42	147	835,609	24.8	17.49	33.93
Unpaid worker / home maker / care giver	28	171,945	62.1	41.36	79.25	11	36,074	13.0	6.24	25.24	7	68,702	24.8	10.27	48.79
Have dogs as pets															
Yes	146	958,542	45.2	29.74	61.56	55	415,648	19.6	12.15	30.01	60	748,560	35.3	20.21	53.95
No	2,083	10,178,881	46.5	42.61	50.41	1,062	6,299,785	28.8	25.58	32.20	831	5,415,624	24.7	21.85	27.87

Table 11.2: Prevalence of awareness on the Animal Welfare Act 2015 by sociodemographic characteristics (n = 4,248)

Sociodemographic Characteristics	Unaware					Aware				
	Unweighted Count	Estimated population	Prevalence (%)	95% CI		Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper
MALAYSIA	2,976	17,346,749	72.0	69.39	74.50	1,272	6,740,700	28.0	25.50	30.61
Strata										
Urban	1,655	13,464,762	72.4	69.25	75.34	683	5,133,079	27.6	24.66	30.75
Rural	1,321	3,881,987	70.7	66.16	74.89	589	1,607,621	29.3	25.11	33.84
Gender										
Male	1,445	9,154,307	73.6	70.00	76.91	557	3,283,770	26.4	23.09	30.00
Female	1,531	8,192,442	70.3	67.34	73.15	715	3,456,930	29.7	26.85	32.66
Age (years)										
13 – 19	445	2,628,582	73.2	67.81	78.03	199	961,089	26.8	21.97	32.19
20 – 29	590	4,270,038	72.9	67.75	77.45	241	1,589,752	27.1	22.55	32.25
30 – 39	564	3,662,479	71.6	65.47	77.04	261	1,451,744	28.4	22.96	34.53
40 – 49	487	2,474,328	70.7	64.26	76.40	200	1,025,682	29.3	23.60	35.74
50 – 59	445	2,062,645	72.4	67.62	76.64	181	788,095	27.6	23.36	32.38
60 – 69	300	1,284,948	67.8	62.45	72.76	142	609,630	32.2	27.24	37.55
70 and above	145	963,728	75.4	65.91	82.91	48	314,707	24.6	17.09	34.09
Ethnicity										
Malay	1,918	8,032,286	70.6	67.55	73.51	831	3,341,745	29.4	26.49	32.45
Chinese	271	3,944,049	75.2	69.85	79.84	98	1,302,052	24.8	20.16	30.15
Indian	116	979,350	66.4	51.14	78.86	62	495,609	33.6	21.14	48.86
Others Bumiputera	439	1,850,268	67.9	62.65	72.70	207	875,326	32.1	27.30	37.35
Others	209	2,330,155	77.0	66.49	84.98	66	695,312	23.0	15.02	33.51

Table 11.2: Prevalence of awareness on the Animal Welfare Act 2015 by sociodemographic characteristics (n = 4,248) (Cont.)

Sociodemographic Characteristics	Unaware					Aware				
	Unweighted Count	Estimated Population	Prevalence (%)	95% CI		Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper
Citizen status										
Malaysian	2,780	15,280,403	71.5	69.01	73.88	1,206	6,088,998	28.5	26.12	30.99
Non-Malaysian	163	1,759,243	73.9	60.29	84.09	58	621,045	26.1	15.91	39.71
Marital Status										
Single	933	6,056,677	72.3	68.04	76.19	400	2,320,608	27.7	23.81	31.96
Married	1,747	9,644,221	71.3	67.81	74.50	756	3,887,553	28.7	25.50	32.19
Widow(er) / Divorce	218	1,165,154	75.0	67.21	81.52	86	387,459	25.0	18.48	32.79
Education Level										
No formal education	381	2,180,505	72.5	67.25	77.26	171	825,645	27.5	22.74	32.75
Primary education	448	2,410,818	76.7	70.55	81.81	157	734,390	23.3	18.19	29.45
Secondary education	1,284	6,878,643	73.4	69.96	76.52	522	2,496,998	26.6	23.48	30.04
Tertiary education	778	5,270,855	67.7	62.40	72.52	393	2,518,503	32.3	27.48	37.60
Occupation										
Government employee	323	1,640,932	70.9	66.13	75.20	152	674,386	29.1	24.80	33.87
Private employee	685	4,935,284	73.1	68.37	77.30	289	1,818,956	26.9	22.70	31.63
Self employed	430	2,289,460	68.0	59.33	75.53	179	1,078,960	32.0	24.47	40.67
Unpaid worker / home maker / care giver	33	240,402	86.9	70.74	94.77	13	36,319	13.1	5.20	29.30
Have dogs as pets										
Yes	176	1,577,679	74.3	63.98	82.51	85	545,071	25.7	17.49	36.02
No	2,790	15,709,359	71.8	69.02	74.33	1,186	6,184,930	28.2	25.67	30.98

Table 11.3: Prevalence of awareness on animal violation in Animal Welfare Act 2015 by sociodemographic characteristics (n = 4,248)

Sociodemographic Characteristics	Unaware					Aware				
	Unweighted Count	Estimated population	Prevalence (%)	95% CI		Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper
MALAYSIA	864	5,940,599	24.7	21.06	28.65	3,384	18,146,850	75.3	71.35	78.94
Strata										
Urban	460	4,628,918	24.9	20.62	29.72	1,878	13,968,923	75.1	70.28	79.38
Rural	404	1,311,681	23.9	18.21	30.68	1,506	4,177,927	76.1	69.32	81.79
Gender										
Male	441	3,390,471	27.3	22.64	32.43	1,561	9,047,606	72.7	67.57	77.36
Female	423	2,550,127	21.9	17.86	26.54	1,823	9,099,245	78.1	73.46	82.14
Age (years)										
13 - 19	160	1,096,739	30.6	23.33	38.88	484	2,492,932	69.4	61.12	76.67
20 - 29	175	1,632,126	27.9	21.08	35.81	656	4,227,665	72.1	64.19	78.92
30 - 39	168	1,256,907	24.6	18.61	31.71	657	3,857,316	75.4	68.29	81.39
40 - 49	133	807,635	23.1	17.58	29.67	554	2,692,374	76.9	70.33	82.42
50 - 59	125	600,389	21.1	16.01	27.19	501	2,250,352	78.9	72.81	83.99
60 - 69	65	276,232	14.6	10.20	20.42	377	1,618,346	85.4	79.58	89.80
70 and above	38	270,571	21.2	13.85	30.96	155	1,007,864	78.8	69.04	86.15
Ethnicity										
Malay	478	1,907,810	16.8	14.11	19.82	2,271	9,466,222	83.2	80.18	85.89
Chinese	98	1,680,696	32.0	24.62	40.49	271	3,565,405	68.0	59.51	75.38
Indian	45	325,270	22.1	12.43	36.06	133	1,149,688	77.9	63.94	87.57
Others Bumiputera	132	485,789	17.8	13.94	22.51	514	2,239,805	82.2	77.49	86.06
Others	103	1,438,321	47.5	34.78	60.63	172	1,587,146	52.5	39.37	65.22

Table 11.3: Prevalence of awareness on animal violation in Animal Welfare Act 2015 by sociodemographic characteristics (n = 4,248) (Cont.)

Sociodemographic Characteristics	Unaware					Aware				
	Unweighted Count	Estimated population	Prevalence (%)	95% CI		Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper
Citizen status										
Malaysian	759	4,562,090	21.3	18.34	24.70	3,227	16,807,311	78.7	75.30	81.66
Non-Malaysian	88	1,184,292	49.8	36.18	63.37	133	1,195,996	50.2	36.63	63.82
Marital Status										
Single	286	2,320,490	27.7	21.91	34.35	1,047	6,056,796	72.3	65.65	78.09
Married	482	3,123,509	23.1	19.57	27.01	2,021	10,408,265	76.9	72.99	80.43
Widow(er) / Divorce	62	268,031	17.3	11.97	24.26	242	1,284,582	82.7	75.74	88.03
Education Level										
No formal education	132	818,835	27.2	20.65	35.00	420	2,187,315	72.8	65.00	79.35
Primary education	166	1,088,227	34.6	28.25	41.55	439	2,056,981	65.4	58.45	71.75
Secondary education	339	2,159,998	23.0	18.69	28.04	1,467	7,215,643	77.0	71.96	81.31
Tertiary education	193	1,634,191	21.0	15.88	27.19	978	6,155,166	79.0	72.81	84.12
Occupation										
Government employee	78	462,930	20.0	14.25	27.32	397	1,852,388	80.0	72.68	85.75
Private employee	219	1,975,354	29.2	22.94	36.47	755	4,778,886	70.8	63.53	77.06
Self employed	138	829,409	24.6	18.36	32.18	471	2,539,011	75.4	67.82	81.64
Unpaid worker/home maker / care giver	8	52,309	18.9	7.34	40.68	38	224,411	81.1	59.32	92.66
Have dogs as pets										
Yes	57	430,059	20.3	11.39	33.43	204	1,692,691	79.7	66.57	88.61
No	806	5,502,198	25.1	21.41	29.26	3,170	16,392,092	74.9	70.74	78.59

Table 11.4: Prevalence of community's perception on the risk of contracting dog mediated zoonotic diseases (n = 3,928)

Sociodemographic Characteristics	Negative					Neutral					Positive				
	Unweighted Count	Estimated population	Prevalence (%)	95% CI		Unweighted Count	Estimated population	Prevalence (%)	95% CI		Unweighted Count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper				Lower	Upper
Malaysia	94	831,869	3.7	2.44	5.65	1,581	9,634,139	43.2	39.45	46.97	2,253	11,850,563	53.1	49.29	56.88
Strata															
Urban	61	745,131	4.3	2.73	6.79	899	7,481,394	43.5	38.94	48.10	1,219	8,985,641	52.2	47.58	56.79
Rural	33	86,738	1.7	1.09	2.63	682	2,152,745	42.2	36.63	47.92	1,034	2,864,922	56.1	50.32	61.77
Gender															
Male	49	474,629	4.1	2.55	6.59	769	5,287,209	45.9	41.09	50.72	1,031	5,766,557	50.0	45.31	54.73
Female	45	357,239	3.3	2.12	5.14	812	4,346,930	40.3	36.70	44.00	1,222	6,084,006	56.4	52.50	60.21
Age (years)															
13 - 19	18	202,835	6.0	2.82	12.49	280	1,658,865	49.4	42.71	56.19	309	1,493,542	44.5	37.68	51.57
20 - 29	16	203,320	3.7	1.91	6.96	307	2,362,564	42.7	36.94	48.58	456	2,972,363	53.7	47.42	59.81
30 - 39	17	134,958	2.8	1.64	4.86	284	1,919,000	40.3	33.37	47.53	471	2,713,661	56.9	49.33	64.20
40 - 49	14	94,888	2.9	1.43	5.96	245	1,249,995	38.7	32.93	44.86	373	1,882,953	58.3	52.02	64.39
50 - 59	12	111,500	4.4	2.11	8.88	227	1,136,192	44.6	38.12	51.33	313	1,298,075	51.0	43.65	58.28
60 - 69	12	50,887	2.9	1.74	4.97	147	628,181	36.4	28.66	44.91	246	1,046,894	60.7	52.49	68.27
70 and above	5	33,481	2.9	1.06	7.69	91	679,341	58.8	48.00	68.77	85	443,074	38.3	29.09	48.50
Ethnicity															
Malay	50	256,249	2.4	1.60	3.66	901	3,646,195	34.5	31.20	37.98	1,569	6,662,483	63.1	59.50	66.49
Chinese	8	169,398	3.5	1.15	10.17	182	2,624,884	54.4	44.48	63.95	154	2,032,441	42.1	34.09	50.57
Indian	10	128,275	9.3	4.08	19.88	112	875,986	63.6	51.11	74.48	46	373,274	27.1	15.61	42.76
Others Bumiputera	16	63,770	2.4	1.31	4.54	251	1,089,178	41.8	35.55	48.39	349	1,450,943	55.7	48.85	62.38
Others	9	148,798	5.5	1.80	15.36	125	1,310,476	48.0	36.85	59.40	120	1,269,554	46.5	34.22	59.27

Table 11.4: Prevalence of community's perception on the risk of contracting dog mediated zoonotic diseases (n = 3,928) (Cont.)

Sociodemographic Characteristics	Negative					Neutral					Positive				
	Unweighted Count	Estimated Population	Prevalence %	95% CI		Unweighted Count	Estimated Population	Prevalence %	95% CI		Unweighted Count	Estimated Population	Prevalence %	95% CI	
				Lower	Upper				Lower	Upper				Lower	Upper
Citizen Status															
Malaysian	84	617,692	3.1	2.17	4.44	1,455	8,361,384	42.1	38.59	45.63	2,152	10,897,483	54.8	51.26	58.34
Non-Malaysian	9	148,798	7.0	2.38	18.92	107	1,093,832	51.5	38.86	63.99	84	880,331	41.5	27.95	56.41
Marital Status															
Single	31	315,863	4.0	2.11	7.55	514	3,520,406	44.9	40.02	49.79	706	4,012,274	51.1	45.83	56.39
Married	54	449,388	3.6	2.27	5.62	890	5,092,414	40.6	36.46	44.91	1,361	6,995,782	55.8	51.66	59.86
Widow(er) / Divorce	4	21,780	1.5	0.52	4.47	127	747,980	52.6	41.63	63.40	145	651,259	45.8	35.08	56.99
Education Level															
No formal education	15	157,289	5.6	2.22	13.26	231	1,331,685	47.1	39.32	55.01	278	1,338,722	47.3	39.41	55.41
Primary education	15	104,123	3.6	1.54	8.31	267	1,532,094	53.5	45.62	61.15	282	1,229,186	42.9	35.51	50.62
Secondary education	40	318,597	3.7	2.22	6.18	692	3,820,691	44.6	39.58	49.80	903	4,420,857	51.6	46.41	56.84
Tertiary education	20	227,166	3.1	1.93	4.90	335	2,533,336	34.5	29.59	39.68	745	4,591,302	62.5	57.17	67.45
Occupation															
Government employee	7	23,923	1.1	0.49	2.34	134	806,288	36.1	29.00	43.81	308	1,404,842	62.9	55.16	69.95
Private employee	26	298,942	4.8	2.69	8.33	373	2,657,481	42.4	36.69	48.41	507	3,304,708	52.8	46.43	59.04
Self employed	12	96,163	3.2	1.51	6.47	231	1,338,560	44.0	34.01	54.42	309	1,610,099	52.9	43.68	61.89
Unpaid worker / home maker / care giver	1	2,277	0.9	0.12	5.98	14	124,124	47.9	26.45	70.13	29	132,813	51.2	28.96	73.04
Have dogs as pets															
Yes	10	98,946	5.1	2.24	11.21	159	1,362,473	70.3	56.42	81.16	79	478,031	24.6	13.44	40.80
No	84	732,923	3.6	2.22	5.80	1,416	8,236,966	40.5	36.91	44.23	2,173	11,361,833	55.9	52.18	59.52

Table 11.5: Percentage of good health seeking behaviour after been bitten / scratched by dog (n = 261)

Sociodemographic Characteristics	Poor		Good	
	Unweighted Count	Percentage (%)	Unweighted Count	Percentage (%)
MALAYSIA	221	84.7	40	15.3
Strata				
Urban	123	55.7	26	65.0
Rural	98	44.3	14	35.0
Gender				
Male	132	59.7	14	35.0
Female	89	40.3	26	65.0
Age (years)				
13 - 19	41	18.6	4	10.0
20 - 29	46	20.8	12	30.0
30 - 39	43	19.5	8	20.0
40 - 49	31	14.0	5	12.5
50 - 59	36	16.3	5	12.5
60 - 69	18	8.1	5	12.5
70 and above	6	2.7	1	2.5
Ethnicity				
Malay	110	49.8	31	77.5
Chinese	38	17.2	3	7.5
Indian	22	10.0	1	2.5
Others Bumiputera	37	16.7	4	10.0
Others	10	4.5	0	0.0
Citizen status				
Malaysia	208	94.1	39	97.5
Non-Malaysian	9	4.1	0	0.0
Marital Status				
Single	75	33.9	13	32.5
Married	124	56.1	19	47.5
Widow(er) / Divorce	12	5.4	6	15.0

Table 11.5: Percentage of good health seeking behaviour after been bitten / scratched by dog (n = 261) (Cont.)

Sociodemographic Characteristics	Poor		Good	
	Unweighted Count	Percentage (%)	Unweighted Count	Percentage (%)
Education Level				
No formal education	28	12.7	2	5.0
Primary education	36	16.3	1	2.5
Secondary education	98	44.3	21	52.5
Tertiary education	53	24.0	15	37.5
Occupation				
Government employee	16	7.2	3	7.5
Private employee	66	29.9	8	20.0
Self employed	40	18.1	2	5.0
Unpaid worker/home maker/ care giver	0	0.0	0	0.0
Have dogs as pets				
Yes	35	15.8	2	5.0
No	185	83.7	38	95.0

Table 11.6: Prevalence of good health seeking behaviour for those who had never been bitten or scratched by dogs (n = 4,006)

Sociodemographic Characteristics	Poor					Good				
	Unweighted Count	Estimated Population	Prevalence (%)	95% CI		Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper
MALAYSIA	2,154	12,865,269	60.1	57.13	63.05	1,679	8,531,647	39.9	36.95	42.87
Strata										
Urban	1,214	10,105,338	61.5	57.93	64.91	886	6,330,927	38.5	35.09	42.07
Rural	940	2,759,931	55.6	50.57	60.59	793	2,200,720	44.4	39.41	49.43
Gender										
Male	1,013	6,596,729	60.5	57.08	63.86	780	4,302,576	39.5	36.14	42.92
Female	1,141	6,268,540	59.7	55.82	63.49	899	4,229,071	40.3	36.51	44.18
Age (years)										
13 - 19	275	1,599,542	51.2	46.29	56.16	302	1,522,281	48.8	43.84	53.71
20 - 29	412	3,055,336	57.9	52.67	63.05	338	2,217,091	42.1	36.95	47.33
30 - 39	420	2,904,167	62.8	56.54	68.57	328	1,723,911	37.2	31.43	43.46
40 - 49	339	1,739,981	56.5	51.57	61.39	288	1,337,133	43.5	38.61	48.43
50 - 59	333	1,612,426	64.5	58.46	70.03	217	889,261	35.5	29.97	41.54
60 - 69	260	1,218,928	71.0	65.78	75.70	144	498,057	29.0	24.30	34.22
70 and above	115	734,888	68.1	56.17	78.09	62	343,914	31.9	21.91	43.83
Ethnicity										
Malay	1,372	5,898,641	57.0	53.48	60.50	1,126	4,445,566	43.0	39.50	46.52
Chinese	213	3,063,544	69.1	60.96	76.18	98	1,371,005	30.9	23.82	39.04
Indian	96	853,984	70.5	57.67	80.71	51	357,637	29.5	19.29	42.33
Others Bumiputera	300	1,253,608	49.8	43.77	55.88	291	1,262,549	50.2	44.12	56.23
Others	160	1,718,500	63.6	52.90	73.15	101	982,324	36.4	26.85	47.10

Table 11.6: Prevalence of good health seeking behaviour for those who had never been bitten or scratched by dogs (n = 4,006) (Cont.)

Sociodemographic Characteristics	Poor					Good				
	Unweighted Count	Estimated Population	Prevalence (%)	95% CI		Unweighted Count	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper				Lower	Upper
Citizen Status										
Malaysian	2,006	11,372,884	60.0	56.64	63.22	1,581	7,589,900	40.0	36.78	43.36
Non-Malaysian	130	1,375,352	64.4	54.56	73.07	79	761,879	35.6	26.93	45.44
Marital Status										
Single	642	4,363,413	58.0	54.07	61.89	570	3,155,553	42.0	38.11	45.93
Married	1,304	7,456,238	61.6	57.97	65.15	960	4,644,009	38.4	34.85	42.03
Widow(er) / Divorce	168	856,110	63.9	55.28	71.74	103	483,313	36.1	28.26	44.72
Education Level										
No formal education	249	1,350,457	50.3	43.09	57.52	255	1,333,720	49.7	42.48	56.91
Primary education	322	1,871,452	65.7	59.10	71.77	235	976,262	34.3	28.23	40.90
Secondary education	938	4,953,808	60.6	56.33	64.72	663	3,219,965	39.4	35.28	43.67
Tertiary education	592	4,294,766	61.3	56.10	66.19	478	2,715,433	38.7	33.81	43.90
Occupation										
Government employee	250	1,315,772	61.5	54.89	67.69	191	824,029	38.5	32.31	45.11
Private employee	505	3,685,312	62.4	56.94	67.54	357	2,221,579	37.6	32.46	43.06
Self employed	315	1,884,929	64.4	57.16	71.02	234	1,042,401	35.6	28.98	42.84
Unpaid worker / home maker / care giver	23	139,582	52.1	31.78	71.66	22	128,586	47.9	28.34	68.22
Have dogs as pets										
Yes	120	1,098,288	62.3	51.94	71.60	100	665,277	37.7	28.40	48.06
No	2,030	11,715,761	59.8	56.71	62.88	1,578	7,864,139	40.2	37.12	43.29

Table 11.7: Percentage of dog owners register with local authority (n = 238)

Sociodemographic Characteristics	Unweighted Count	Percentage (%)
MALAYSIA	106	44.5
Strata		
Urban	80	75.5
Rural	26	24.5
Gender		
Male	49	46.2
Female	57	53.8
Age (years)		
13 - 19	15	14.2
20 - 29	22	20.8
30 - 39	15	14.2
40 - 49	13	12.3
50 - 59	22	20.8
60 - 69	13	12.3
70 and above	6	5.7
Ethnicity		
Malay	9	8.5
Chinese	36	34.0
Indian	28	26.4
Others Bumiputera	30	28.3
Others	3	2.8
Citizen status		
Malaysian	103	97.2
Non-Malaysian	3	2.8
Marital Status		
Single	37	34.9
Married	60	56.6
Widow(er) / Divorce	8	7.5

Table 11.7: Percentage of dog owners register with local authority (n = 238) (Cont.)

Sociodemographic Characteristics	Unweighted Count	Percentage (%)
Education Level		
No formal education	17	16.0
Primary education	20	18.9
Secondary education	39	36.8
Tertiary education	30	28.3
Occupation		
Government employee	7	6.6
Private employee	23	21.7
Self employed	19	17.9
Unpaid worker / home maker / care giver	3	2.8
Have dogs as pets		
Yes	104	98.1
No	2	1.9

Table 11.8: Percentage of dog owners send their dog for annual check-up (n = 238)

Sociodemographic Characteristics	Unweighted Count	Percentage (%)
MALAYSIA	125	52.5
Strata		
Urban	97	77.6
Rural	28	22.4
Gender		
Male	48	38.4
Female	77	61.6
Age (years)		
13 - 19	19	15.2
20 - 29	26	20.8
30 - 39	16	12.8
40 - 49	16	12.8
50 - 59	29	23.2
60 - 69	11	8.8
70 and above	8	6.4
Ethnicity		
Malay	9	7.2
Chinese	47	37.6
Indian	32	25.6
Others Bumiputera	33	26.4
Others	4	3.2
Citizen status		
Malaysian	122	97.6
Non-Malaysian	3	2.4
Marital Status		
Single	40	32.0
Married	72	57.6
Widow(er) / Divorce	11	8.8

Table 11.8: Percentage of dog owners send their dog for annual check-up (n = 238) (Cont.)

Sociodemographic Characteristics	Unweighted Count	Percentage (%)
Education Level		
No formal education	17	13.6
Primary education	25	20.0
Secondary education	49	39.2
Tertiary education	32	25.6
Occupation		
Government employee	13	10.4
Private employee	22	17.6
Self employed	19	15.2
Unpaid worker/home maker/care giver	4	3.2
Have dogs as pets		
Yes	124	99.2
No	1	0.8

DATA ANALYTICS GUIDELINE

VOLUME II

OPERATIONAL DEFINITION OF VARIABLES: DENGUE MODULE

SECTION A1: DENGUE PREVENTION

Objective: 1. To access Perceived Threat of Dengue

Consists of six questions from A1a to A1f. Each question uses a Likert scale of 1 to 5 and the minimum score for this construct is 6 and a maximum of 30. Total scores will be converted to low, medium and high categories based on Bloom cut of point guide (High: 80%-100%, Moderate: 60%-79%, Low: <60%).

Level of Perceived Threat (based on Bloom cut of point)	Score
Low	6-17
Moderate	18-23
High	24-30

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition and Syntax
			Likert Scale 1= Sangat tidak setuju/Strongly disagree 2=Tidak Setuju/ disagree 3=Tidak pasti/Not sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly agree
A1b	D_A1bNew	Perceived Threat: Demam denggi boleh berlaku tanpa ruam/ bitnik-bintik merah	RECODE D_A1b (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A1bNew. EXECUTE.
A1c	D_A1cNew	Perceived Threat: Perlu dapatkan rawatan segera	RECODE D_A1c (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A1cNew. EXECUTE.
A1d	D_A1dNew	Perceived Threat: Tidak bimbang di jangkiti demam denggi	RECODE D_A1d (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A1dNew. EXECUTE.
A1e	D_A1eNew	Perceived Threat: Bimbang keluarga dijangkiti denggi.	RECODE D_A1e (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A1eNew. EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition and Syntax
A1f	D_A1fNew	Perceived Threat: Bimbang kena denggi walaupun ada rawatan	RECODE D_A1f (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A1fNew. EXECUTE.
A1dNew	D_A1dR	Perceived Threat: Tidak bimbang di jangkiti demam denggi (Soalan Negatif)	RECODE D_A1dNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A1dR. EXECUTE.
Perceived Threat score	SKOR_A1	Total score for: Section A1	COMPUTE SKOR_A1=D_A1aNew+D_A1bNew+ D_A1cNew+D_A1eNew+D_A1fNew+D_A1dR. EXECUTE.
Perceive Threat categorical	CATEGORY _A1	Level of Perceived Threat	RECODE SKOR_A1 (24 thru 30=1) (18 thru 23=2) (Lowest thru 17=3) INTO CATEGORY_A1. EXECUTE. VALUE LABELS CATEGORI_A1 1 'HIGH 24-30' 2 'MODERATE 18-23' 3 'lOW 0-17'. EXECUTE.
Perceived Threat (Agree / Not Agree)	D_A1aPT D_A1bPT D_A1cPT D_A1dPT D_A1ePT D_A1fPT	Positive Statement 0: Not Agree 1: Agree Negative Statement 1: Not Agree 0: Agree	RECODE D_A1aNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A1aPT. VARIABLE LABELS D_A1aPT 'D_A1aPT: perceived threat'. EXECUTE. VALUE LABELS D_A1aPT 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A1bNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A1bPT. VARIABLE LABELS D_A1bPT 'D_A1bPT: perceived threat'. EXECUTE. VALUE LABELS D_A1bPT 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition and Syntax
			RECODE D_A1cNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A1cPT. VARIABLE LABELS D_A1cPT 'D_A1cPT: perceived threat'. EXECUTE. VALUE LABELS D_A1cPT 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A1dNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A1dPT. VARIABLE LABELS D_A1dPT ' D_A1dPT: tidak bimbang dijangkiti demam denggi'. EXECUTE. VALUE LABELS D_A1dPT 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE. RECODE D_A1eNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A1ePT. VARIABLE LABELS D_A1ePT 'D_A1ePT: perceived threat'. EXECUTE. VALUE LABELS D_A1ePT 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A1fNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A1fPT. VARIABLE LABELS D_A1fPT 'D_A1fPT: perceived threat'. EXECUTE. VALUE LABELS D_A1fPT 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE.

SECTION A2: DENGUE PREVENTION

Objective: 2. To access Perceived Effectiveness of Dengue Control Activities (Individu)

Consists of five questions from A2a to A1e. Each question uses a Likert scale of 1 to 5 and the minimum score for this construct is 5 and a maximum of 25. Total scores will be converted to low, medium and high categories based on Bloom cut of point guide (High: 80%-100%, Moderate: 60%-79%, Low: <60%).

Level of Perceived Threat (based on Bloom cut of point)	Score
Low	6-17
Moderate	18-23
High	24-30

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				Likert Scale 1= Sangat tidak setuju/Strongly disagree 2=Tidak Setuju/ disagree 3=Tidak pasti/Not sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly agree
A2a	D_A2a		Memakai repelen	RECODE D_A2a (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A2aNew. EXECUTE.
A2b	D_A2b		Cari dan Musnah tempat pembiakan Aedes	RECODE D_A2b (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A2bNew. EXECUTE.
A2c	D_A2c		Semburan aerosol	RECODE D_A2c (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A2cNew. EXECUTE.
A2d	D_A2d		Elak berada di luar rumah pada waktu nyamuk Aedes aktif menggigit (awal pagi dan waktu senja)	RECODE D_A2d (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A2dNew. EXECUTE.
A2e	D_A2e		Pasang jaring penghalang nyamuk di tingkap dan pintu	RECODE D_A2e (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A2eNew. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
Perceive effectiveness : score	SKOR_A2		Total score for: Perceive effectiveness	COMPUTE SKOR_A2=D_A2aNew+D_A2bNew+D_A2dNew+D_A2cNew+D_A2eNew. EXECUTE.
Perceive effectivenes: categorical	CATEGORY_A2		Categorical score for: perceive effectiveness: Low, Medium, High	RECODE SKOR_A2 (20 thru 25=1) (15 thru 19=2) (Lowest thru 14=3) INTO CATEGORY_A2. EXECUTE. VALUE LABELS CATEGORI_A2 1 'HIGH 20-25' 2 'MODERATE 15-19' 3 'LOW 0-14'. EXECUTE.
Perceived Effectiveness (Agree / Not Agree)	D_A2aPE D_A2bPE D_A2cPE D_A2dPE D_A2ePE		Positive Statement 0: Not Agree 1: Agree	RECODE D_A2aNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A2aPE. VARIABLE LABELS D_A2aPE 'D_A2aPE: perceived effectiveness community'. EXECUTE. VALUE LABELS D_A2aPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE.
Perceived Effectiveness (Agree / Not Agree)	D_A2aPE D_A2bPE D_A2cPE D_A2dPE D_A2ePE		Positive Statement 0: Not Agree 1: Agree	RECODE D_A2aNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A2aPE. VARIABLE LABELS D_A2aPE 'D_A2aPE: perceived effectiveness community'. EXECUTE. VALUE LABELS D_A2aPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A2bNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A2bPE. VARIABLE LABELS D_A2bPE 'D_A2bPE: perceived effectiveness community'. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				VALUE LABELS D_A2bPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A2cNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A2cPE. VARIABLE LABELS D_A2cPE 'D_A2cPE: perceived effectiveness community'. EXECUTE. VALUE LABELS D_A2cPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A2dNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A2dPE. VARIABLE LABELS D_A2dPE 'D_A2dPE: perceived effectiveness community'. EXECUTE. VALUE LABELS D_A2dPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A2eNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A2ePE. VARIABLE LABELS D_A2ePE 'D_A2ePE: perceived effectiveness community'. EXECUTE. VALUE LABELS D_A2ePE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE.

SECTION A3: DENGUE PREVENTION

Objective: 3. To access Perceived Effectiveness of Dengue Control Activities (Authority)

Consists of six questions from A3a to A3f. Each question uses a Likert scale of 1 to 5 and the minimum score for this construct is 6 and a maximum of 30. Total scores will be converted to low, medium and high categories based on Bloom cut of point guide (High: 80%-100%, Moderate: 60%-79%, Low: <60%).

Level of Perceived Effectiveness (based on Bloom cut of point)	Score
Low	6-17
Moderate	18-23
High	24-30

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				Likert Scale 1= Sangat tidak setuju/Strongly disagree 2=Tidak Setuju/ disagree 3=Tidak pasti/Not sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly agree
A3a	D_A3a		Tindakan kompaun/saman	RECODE D_A3a (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A3aNew. EXECUTE.
A3b	D_A3b		Penguatkuasaan daripada Pihak Berkuasa Tempatan (PBT)	RECODE D_A3b (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A3bNew. EXECUTE.
A3c	D_A3c		Semburan kabus	RECODE D_A3c (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A3cNew. EXECUTE.
A3d	D_A3d		Semburan larviciding	RECODE D_A3d (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A3dNew. EXECUTE.
A3e	D_A3e		Aktiviti Gotong-royong	RECODE D_A3e (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A3eNew. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
A3f	D_A3f		Tindakan kompaun/saman	RECODE D_A3f (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A3fNew. EXECUTE
A3dNew	D_A3dR		Semburan larviciding (Soalan Negatif)	RECODE D_A3dNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A3dR. EXECUTE.
A3eNew	D_A3eR		Aktiviti Gotong-royong (Soalan Negatif)	RECODE D_A3eNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A3eR. EXECUTE.
A3fNew	D_A3fR		Tindakan kompaun/saman (Soalan Negatif)	RECODE D_A3fNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A3fR. EXECUTE.
Authority effective: score	SKOR_A3		Total score for: Effective method by authority	COMPUTE SKOR_A3=D_A3aNew+D_A3bNew+D_A3cNew+D_A3dR+D_A3eR+D_A3fR. EXECUTE
Perceive effective method by authority	CATEGORY_A3		Categorical score for: perceive effective method by authority: Low, Medium, High	RECODE SKOR_A3 (24 thru 30=1) (18 thru 23=2) (Lowest thru 17=3) INTO CATEGORY_A3. EXECUTE. VALUE LABELS CATEGORI_A3 1 'HIGH 24-30' 2 'MODERATE 18-23' 3 'LOW 0-17'. EXECUTE. VALUE LABELS CATEGORI_A3 1 'HIGH 24-30' 2 'MODERATE 18-23' 3 'LOW 0-17'. EXECUTE.
Perceived Effectiveness (Agree / Not Agree)	D_A3aPE D_A3bPE D_A3cPE D_A3dPE D_A3ePE D_A3fPE		Positive Statement 0: Not Agree 1: Agree Negative Statement 1: Not Agree 0: Agree	RECODE D_A3aNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A3aPE. VARIABLE LABELS D_A3aPE 'D_A3aPE: perceived effectiveness authorities'. EXECUTE. VALUE LABELS D_A3aPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				RECODE D_A3bNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A3bPE. VARIABLE LABELS D_A3bPE ' D_A3bPE: perceived effectiveness authorities. EXECUTE. VALUE LABELS D_A3bPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A3cNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A3cPE. VARIABLE LABELS D_A3cPE 'D_A3cPE: perceived effectiveness authorities'. EXECUTE. VALUE LABELS D_A3cPE 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A3dNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A3dPE. VARIABLE LABELS D_A3dPE 'D_A3dPE: Semburan kabus TIDAK berkesan'. EXECUTE. VALUE LABELS D_A3dPE 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE. RECODE D_A3eNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A3ePE. VARIABLE LABELS D_A3ePE 'D_A3ePE: semburan larviciding TIDAK berkesan'. EXECUTE. VALUE LABELS D_A3ePE 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				RECODE D_A3fNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A3fPE. VARIABLE LABELS D_A3fPE 'D_A3fPE: GORO Cari & Musnah TIDAK BERKESAN'. EXECUTE. VALUE LABELS D_A3fPE 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE.

SECTION A4: DENGUE PREVENTION

Objective: 4. To access Perceived Barrier for Non-Participation on Dengue Control Activities

Consists of eight questions from A4a to A4h. Each question uses a Likert scale of 1 to 5 and the minimum score for this construct is 8 and a maximum of 40. Total scores will be converted to low, medium and high categories based on Bloom cut of point guide (High: 80%-100%, Moderate: 60%-79%, Low: <60%).

Level of Perceived Barrier (based on Bloom cut of point)	Score
Low	8-23
Moderate	24-31
High	32-40

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				Likert Scale 1= Sangat tidak setuju/Strongly disagree 2=Tidak Setuju/ disagree 3=Tidak pasti/Not sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly agree
A4a	D_A4a		Tiada masa hadir aktiviti	RECODE D_A4a (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4aNew. EXECUTE.
A4b	D_A4b		Aktiviti cegah denggi perlu kos tambahan	RECODE D_A4b (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4bNew. EXECUTE.
A4c	D_A4c		Tak guna bahan pembunuh jentik-jentik sebab tak baik untuk kesihatan	RECODE D_A4c (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4cNew. EXECUTE.
A4d	D_A4d		Tidak perlu lakukan pencegahan	RECODE D_A4d (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4dNew. EXECUTE.
A4e	D_A4e		Bukan tanggungjawab sertai GORO	RECODE D_A4e (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4eNew. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
A4f	D_A4f		Tidak buka pintu fogging bahaya	RECODE D_A4f (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4fNew. EXECUTE.
A4g	D_A4g		Tidak buka pintu fogging kotor rumah	RECODE D_A4g (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4gNew. EXECUTE.
A4h	D_A4h		Tidak keluar rumah fogging	RECODE D_A4h (1=1) (2=2) (3=3) (4=4) (5=5) INTO D_A4hNew. EXECUTE
A4cNew	D_A4cR		Tak guna bahan pembunuh jentik-jentik sebab tak baik untuk kesihatan (Soalan Negatif)	RECODE D_A4cNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A4CR. EXECUTE.
A4dNew	D_A4dR		Tidak perlu lakukan pencegahan(Soalan Negatif)	RECODE D_A4dNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A4dR. EXECUTE.
A4eNew	D_A4eR		Bukan tanggungjawab sertai GORO(Soalan Negatif)	RECODE D_A4eNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A4eR. EXECUTE.
A4fNew	D_A4fR		Tidak buka pintu fogging bahaya(Soalan Negatif)	RECODE D_A4f (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A4fR. EXECUTE.
A4gNew	D_A4gR		Tidak buka pintu fogging kotor rumah(Soalan Negatif)	RECODE D_A4gNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A4gR. EXECUTE.
A4hNew	D_A4hR		Tidak keluar rumah fogging(Soalan Negatif)	RECODE D_A4hNew (1=5) (2=4) (3=3) (4=2) (5=1) INTO D_A4hR. EXECUTE.
Section A: score	SKOR_A4		Total score for: perceive constrain in preventing dengue	COMPUTE SKOR_A4=D_A4aNew+D_A4bNew+D_A4CR+D_A4dR+D_A4eR+D_A4fR+D_A4gR+D_A4hR. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
Perceive Barrier on dengue control activities	CATEGORY_A4		Categorical score for: perceive barrier on dengue control activities	RECODE SKOR_A4 (32 thru 40=1) (24 thru 31=2) (Lowest thru 23=3) INTO CATEGORY_A4. EXECUTE. VALUE LABELS CATEGORI_A4 1 'HIGH 32-40' 2 'MODERATE 24-31' 3 'LOW 0-23'. EXECUTE.
Perceive Barrier on dengue control activities	CATEGORY_A4		Categorical score for: perceive barrier on dengue control activities	RECODE SKOR_A4 (32 thru 40=1) (24 thru 31=2) (Lowest thru 23=3) INTO CATEGORY_A4. EXECUTE. VALUE LABELS CATEGORI_A4 1 'HIGH 32-40' 2 'MODERATE 24-31' 3 'lOW 0-23'. EXECUTE.
Perceived Barrier (Agree / Not Agree)	D_A4aPB D_A4bPB D_A4cPB D_A4dPB D_A4ePB D_A4fPB D_A4gPB D_A4hPB		Positive Statement 0: Not Agree 1: Agree Negative Statement 1: Not Agree 0: Agree	RECODE D_A4aNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A4aPB. VARIABLE LABELS D_A4aPB 'D_A4aPB: PERCEIVED BARIER'. EXECUTE. VALUE LABELS D_A4aPB 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A4bNew (1=0) (2=0) (3=0) (4=1) (5=1) INTO D_A4bPB. VARIABLE LABELS D_A4bPB 'D_A4bPB: PERCEIVED BARIER'. EXECUTE. VALUE LABELS D_A4bPB 1 'SETUJU' 0 'TIDAK SETUJU'. EXECUTE. RECODE D_A4cNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A4cPB. VARIABLE LABELS D_A4cPB 'D_A4cPB: Bahan Pembunuh Jentik2 TIDAK baik'. EXECUTE. VALUE LABELS D_A4cPB 1 'TIDAK SETUJU' 0 'SETUJU'.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				EXECUTE. RECODE D_A4dNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A4dPB. VARIABLE LABELS D_A4dPB 'D_A4dPB: TIDAK perlu buat aktiviti cegah denggi'. EXECUTE. VALUE LABELS D_A4dPB 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE. RECODE D_A4eNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A4ePB. VARIABLE LABELS D_A4ePB 'D_A4ePB: TIDAK sertai GORO sbb bukan t/jawab'. EXECUTE VALUE LABELS D_A4ePB 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE. RECODE D_A4fNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A4fPB. VARIABLE LABELS D_A4fPB 'D_A4fPB: TIDAK buka pintu masa Fogging kerana BAHAYA kesihatan'. EXECUTE. VALUE LABELS D_A4fPB 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE. RECODE D_A4gNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A4gPB. VARIABLE LABELS D_A4gPB 'D_A4gPB: TIDAK buka pintu masa Fogging kerana KOTORKAN rumah'. EXECUTE. VALUE LABELS D_A4gPB 1 'TIDAK SETUJU' 0 'SETUJU'.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
				EXECUTE. RECODE D_A4hNew (1=1) (2=1) (3=0) (4=0) (5=0) INTO D_A4hPB. VARIABLE LABELS D_A4hPB 'D_A4hPB: TIDAK Keluar rumah ketika FOGGING'. EXECUTE. VALUE LABELS D_A4hPB 1 'TIDAK SETUJU' 0 'SETUJU'. EXECUTE.

Section B1: Destroy Mosquito Breeding sites at home

Objective 5: To access Respondent's Participation on Dengue Control Activities at Community and Individual Level

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
B1	D_B1		1= Sekali seminggu (Patuh) 2= 2 hingga 3 kali sebulan (Kurang Patuh) 3= Sekali sebulan (Kurang patuh) 4= 2 hingga 3 bulan sekali (Kurang Patuh) 5= Tidak pernah buat (Tidak Patuh)	RECODE D_B1 (1=1) (2=2) (3=2) (4=2) (5=3) INTO D_B1R. VARIABLE LABELS D_B1R 'D_B1R: Kepatuhan hapus tempat biak aedes'. EXECUTE. VALUE LABELS D_B1R 1 'PATUH' 2 'KURANG PATUH' 3 'TIDAK PATUH'. EXECUTE.
B1a				
1	D_B1_1		Tukar air dan cuci bekas	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan
2	D_B1_2		Bubuh bahan pembunuh jentik-jentik dalam bekas air yang tidak boleh dibuang.	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan
3	D_B1_3		simpan bekas yang boleh menakung air jika tidak digunakan	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition
4	D_B1_4		Tutup dengan kemas bekas simpanan air	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan
5	D_B1_5		Buang air alas pasu dan berus	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan
6	D_B1_6		Lupuskan bekas yang boleh menakung air	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan
7	D_B1_7		Bersihkan saluran air hujan	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan
8	D_B1_8		Cantas dahan pokok yang menutup saluran air hujan untuk elak air bertakung	VALUE LABEL 1. Ya 2. Tidak 3.Tidak berkenaan

Section B2: Search and Destroy by Community

Objective 5: To access Respondent's Participation on Dengue Control Activities at Community and Individual Level

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
B2	D_B2	Kejiranan melaksanakan aktiviti mencari dan memusnah tempat pembiakkan nyamuk Aedes secara bergotong royong Jika jawapan 'YA' terus ke soalan B2a dan B3. Jika jawapan 'TIDAK' terus ke soalan B3	VALUE LABEL 1. Ya 2. Tidak
B2a	D_B2a	Jika ya, adakah anda sertai?	VALUE LABEL 1. Ya 2. Tidak

Section B3: Avoid Mosquitos Bite

Objective 5: To access Respondent's Participation on Dengue Control Activities at Community and Individual Level

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
B3			
1	D_B3_1	Guna repelan/krim penghalau nyamuk	VALUE LABEL 1. Ya 2. Tidak
2	D_B3_2	Guna semburan aerosol racun serangga	VALUE LABEL 1. Ya 2. Tidak
3	D_B3_3	Pakai seluar panjang, baju lengan panjang dan berwarna cerah	VALUE LABEL 1. Ya 2. Tidak
4	D_B3_4	Elak berada di luar rumah pada waktu aedes aktif gigit	VALUE LABEL 1. Ya 2. Tidak
5	D_B3_5	Pasang jaring penghalang nyamuk di tingkap dan pintu	VALUE LABEL 1. Ya 2. Tidak
6	D_B3_6	Guna lingkaran nyamuk	VALUE LABEL 1. Ya 2. Tidak

Section C1: Awareness of COMBI

Objective 5: To access Community's Awareness and Participation in COMBI

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
C1	D_C1	Kewujudan program COMBI Jika jawapan 'YA' terus ke soalan C2 Jika jawapan 'TIDAK' soalan tamat	VALUE LABEL 1. Ya 2. Tidak
C2	D_C2	Pasukan COMBI wujud Jika jawapan 'YA' terus ke soalan C2a Jika jawapan 'TIDAK' soalan tamat	VALUE LABEL 1. Ya 2. Tidak
C2a	D_C2a	Adakah sertai	VALUE LABEL 1. Ya 2. Tidak

OPERATIONAL DEFINITION OF VARIABLES: DOG MEDIATED ZOONOTIC DISEASE

SECTION A: Diseases Related to Dog

Section A1: Knowledge on Rabies

Objective 1: To assess awareness on rabies related to dog among the general population

Consist of nine questions from A1a to A1i. One point is given to a correct answer and zero point to incorrect and “not sure”. Total scores will be converted to low, medium and high categories based on Bloom cut of point guide (High: 80%-100%, Moderate: 60%-79%, Low: <60%).

Level of knowledge (based on Bloom cut of point)	Score
High (80%-100%)	7-9
Moderate (60%-79%)	5-6
Low (Less than 60%)	0-4

Normal Score: A1a, A1b, A1, A1d, A1f, A1g, A1h, A1i

Reverse Score: A1e

Definitions of Variables:

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Knowledge on Rabies Z_A1a	Z_A1a	First_Weight	Rabies from dogs can infect humans.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1a rescoring	Z_A1aPoint	Final_Weight	Rabies from dogs can infect humans.	RECODE Z_A1a (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1aPoint. VARIABLE LABELS Z_A1aPoint 'Markah Z_A1a'. EXECUTE. -6=Missing value
Knowledge on Rabies Z_A1b	Z_A1b	First_Weight	Dogs that are infected with rabies show signs of profuse salivation and aggressive behaviour.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Knowledge on Rabies Z_A1b rescoring	Z_A1bPoint	Final_Weight	Dogs that are infected with rabies show signs of profuse salivation and aggressive behaviour.	RECODE Z_A1b (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1bPoint. VARIABLE LABELS Z_A1bPoint 'Markah Z_A1b'. EXECUTE. -6=Missing value
Knowledge on Rabies Z_A1c	Z_A1c	First_Weight	You can get infected with rabies if you are bitten by a rabid dog (dog infected with rabies).	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1c rescoring	Z_A1cPoint	Final_Weight	You can get infected with rabies if you are bitten by a rabid dog (dog infected with rabies).	RECODE Z_A1c (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1cPoint. VARIABLE LABELS Z_A1cPoint 'Markah Z_A1c'. EXECUTE. -6=Missing value
Knowledge on Rabies Z_A1d	Z_A1d	First_Weight	Humans can be infected with rabies if their wounds are exposed to rabid dog's saliva.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1d rescoring	Z_A1dPoint	Final_Weight	Humans can be infected with rabies if their wounds are exposed to rabid dog's saliva.	RECODE Z_A1d (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1dPoint. VARIABLE LABELS Z_A1dPoint 'Markah Z_A1d'. EXECUTE. -6=Missing value
Knowledge on Rabies Z_A1e	Z_A1e	First_Weight	Dog scratch cannot transmit diseases to human.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1e rescoring	Z_A1ePoint	Final_Weight	Dog scratch cannot transmit diseases to human.	RECODE Z_A1e (3=1) (2=0) (1=0) (SYSMIS=-6) INTO Z_A1ePoint. VARIABLE LABELS Z_A1ePoint 'Markah Z_A1e'. EXECUTE. -6=Missing value
Knowledge on Rabies Z_A1f	Z_A1f	First_Weight	If bitten by a dog, the wound should be washed with soap and running water for at least 15 minutes.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1f rescoring	Z_A1fPoint	Final_Weight	If bitten by a dog, the wound should be washed with soap and running water for at least 15 minutes.	RECODE Z_A1f (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1fPoint. VARIABLE LABELS Z_A1fPoint 'Markah Z_A1f'. EXECUTE. -6=Missing value

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Knowledge on Rabies Z_A1g	Z_A1g	First_Weight	Tetanus booster shot is one of the treatments given for dog bites.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1g rescoring	Z_A1gPoint	Final_Weight	Tetanus booster shot is one of the treatments given for dog bites.	RECODE Z_A1g (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1gPoint. VARIABLE LABELS Z_A1gPoint 'Markah Z_A1g'. EXECUTE. -6=Missing value
Knowledge on Rabies Z_A1h	Z_A1h	First_Weight	Vaccination for dogs serves as a protection from disease.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1h rescoring	Z_A1hPoint	Final_Weight	Vaccination for dogs serves as a protection from disease.	RECODE Z_A1h (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1hPoint. VARIABLE LABELS Z_A1hPoint 'Markah Z_A1h'. EXECUTE. -6=Missing value
Knowledge on Rabies Z_A1i	Z_A1i	First_Weight	Prompt treatment at a clinic or hospital is necessary if bitten by a dog.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Knowledge on Rabies Z_A1i rescoring	Z_A1iPoint	Final_Weight	Prompt treatment at a clinic or hospital is necessary if bitten by a dog.	RECODE Z_A1i (1=1) (2=0) (3=0) (SYSMIS=-6) INTO Z_A1iPoint. VARIABLE LABELS Z_A1iPoint 'Markah Z_A1i'. EXECUTE. -6=Missing value
Total Knowledge score	Accumulated_KnowledgePoint	Final_Weight	Total Knowledge Score for each respondent	COMPUTE Accumulated_KnowledgePoint= Z_A1aPoint + Z_A1bPoint + Z_A1cPoint + Z_A1dPoint + Z_A1ePoint + Z_A1fPoint + Z_A1gPoint + Z_A1hPoint + Z_A1iPoint. VARIABLE LABELS Accumulated_KnowledgePoint 'Total Knowledge Point'. EXECUTE.
Level of Knowledge	Knowledge_Bloom	Final_Weight	Level of Knowledge based on Bloom	RECODE Accumulated_Point (7 thru 9=1) (5 thru 6=2) (0 thru 4=3) (SYSMIS=-6) INTO Knowledge_Bloom. VARIABLE LABELS Knowledge_Bloom ' Level of Knowledge based on Bloom. VALUE LABELS Knowledge_Bloom 1 ‘High Knowledge’ 2 ‘Moderate Knowledge’ 3 ‘Low Knowledge’. EXECUTE. -6=Missing value

Section A1

Objective 2: To assess awareness on Animal Welfare Act in general population

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Awareness on Animal Welfare Z_A1j	Z_A1j	First_Weight	Malaysia does not have a specific law that protects animal welfare.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Awareness on Animal Welfare Z_A1j recode	Z_A1jCode	Final_Weight	Malaysia does not have a specific law that protects animal welfare.	STRING Z_A1jCode (A2). RECODE Z_A1j (3='1') (2='0') (1='0') (SYSMIS='-6') INTO Z_A1jCode. VARIABLE LABELS Z_A1jCode 'Animal Law'. EXECUTE. VALUE LABELS Z_A1jCode 0 ‘Not Aware’ 1 ‘Aware’ -6 ‘Missing value’. EXECUTE.
Awareness on Animal Welfare Z_A1k	Z_A1k	First_Weight	Individuals who mistreat and abuse animals may be subjected to imprisonment and/or fine.	1=Betul/ Right 2=Tidak Pasti/ Not Sure 3= Salah/ Wrong
Awareness on Animal Welfare Z_A1k recode	Z_A1kCode	Final_Weight	Individuals who mistreat and abuse animals may be subjected to imprisonment and/or fine.	STRING Z_A1kCode (A2). RECODE Z_A1k (1='1') (2='0') (3='0') (SYSMIS='-6') INTO Z_A1kCode. VARIABLE LABELS Z_A1kCode 'Animal Law Punishment'. EXECUTE. VALUE LABELS Z_A1jCode 0 ‘Not Aware’ 1 ‘Aware’ -6 ‘Missing value’. EXECUTE.

Section A2

Objective 3: To identify good health seeking behaviour after being bitten or scratched by dog

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
History of Scratch by dog	Z_A2_cakar	Final_Weight	History of been Scratch	RECODE Z_A2_cakar (0=0) (1=1) (SYSMIS=-6) INTO Z_A2_cakar. VARIABLE LABELS Z_A2_cakar 'History of been scratch'. EXECUTE. VALUE LABELS Z_A2_cakar 0 'No' 1 'Yes' -6 'Missing value'. EXECUTE
History of Bitten by dog	Z_A2_Gigit	Final_Weight	History of been Bitten	RECODE Z_A2_Gigit (0=0) (1=1) (SYSMIS=-6) INTO Z_A2_Gigit. VARIABLE LABELS Z_A2_Gigit 'History of been bitten'. EXECUTE. VALUE LABELS Z_A2_Gigit 0 'No' 1 'Yes' -6 'Missing value'. EXECUTE
History of not been Bitten/ Scratch by dog	Z_A2_takpernah	Final_Weight	History of non-bitten/ scratch	RECODE Z_A2_takpernah (0=0) (1=1) (SYSMIS=-6) INTO Z_A2_takpernah. VARIABLE LABELS Z_A2_takpernah 'History of not been bitten/ scratch'. EXECUTE. VALUE LABELS Z_A2_takpernah 0 'No' 1 'Yes' -6 'Missing value'. EXECUTE
Seeking treatment	Z_A2b	First_Weight	Seeking treatment after been bitten or scratch	RECODE Z_A2b (1=1) (2=2) (888=-8) (SYSMIS=-6) INTO Z_A2b. VARIABLE LABELS Z_A2_takpernah 'History of not been bitten/ scratch'. EXECUTE. VALUE LABELS Z_A2_takpernah 1 'Yes' 2 'No' -6 'Missing value' -8 'Skipped'. EXECUTE

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Immediate action choices	Z_A2a_1	First_Weight	Do nothing	VALUE LABELS Z_A2a_1 1 'Yes' 2 'No'. EXECUTE
	Z_A2a_2	First_Weight	Apply antiseptic, ointment or wound dressing	VALUE LABELS Z_A2a_2 1 'Yes' 2 'No'. EXECUTE
	Z_A2a_3	First_Weight	Wash the wound using water only	VALUE LABELS Z_A2a_3 1 'Yes' 2 'No'. EXECUTE
	Z_A2a_4	First_Weight	Wash the wound using water and soap for AT LEAST 15 minutes	VALUE LABELS Z_A2a_4 1 'Yes' 2 'No'. EXECUTE
	Z_A2a_5	First_Weight	Wash the wound using water and soap for LESS THAN 15 minutes	VALUE LABELS Z_A2a_5 1 'Yes' 2 'No'. EXECUTE
Immediate action score	Z_A2aPoint	First_Weight	Attitude score for immediate action	IF (Z_A2a_2 = 1 & Z_A2a_4 = 1) Z_A2aPoint=1. EXECUTE.
Seeking treatment score	Z_A2bPoint	First_Weight	Attitude score for seeking treatment	IF (Z_A2b= 1) Z_A2bPoint=1. EXECUTE.
Time seek score	Z_A2biPoint	First_Weight	Attitude score for time seek	IF (Z_A2bi= 1) Z_A2biPoint=1. EXECUTE.
Total Health Seeking Attitude score	Accumulated_AttitudePointHSa	Final_Weight	Total Attitude Score for each respondent	COMPUTE Accumulated_AttitudePointHSa= Z_A2aPoint + Z_A2bPoint + Z_A2biPoint. VARIABLE LABELS Accumulated_AttitudePointHSa 'Total Attitude Point for Health Seeking Behaviour'. EXECUTE.
Level of Health Seeking Attitude	Attitude_HealthHSa	Final_Weight	Level of Health Seeking Attitude	RECODE Accumulated_AttitudePointHS (3=1) (0 thru 2=0) (SYSMIS=-6) INTO Attitude_HealthHSa. VARIABLE LABELS Attitude_HealthHSa ' Level of attitude. VALUE LABELS Attitude_HealthHSa 0 'Poor Attitude' 1 'Good Attitude'. EXECUTE. -6=Missing value

Section A3

Objective 4: To identify good health seeking behaviour if being bitten or scratched by dog

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Action if been bitten/ Scratch choices	Z_A3_1	First_Weight	Apply antiseptic, ointment or wound dressing.	VALUE LABELS Z_A3_1 1 'Yes' 2 'No'. EXECUTE
	Z_A3_2	First_Weight	Let the dog lick the wound.	VALUE LABELS Z_A3_2 1 'Yes' 2 'No'. EXECUTE
	Z_A3_3	First_Weight	Wash the wound using water only.	VALUE LABELS Z_A3_3 1 'Yes' 2 'No'. EXECUTE
	Z_A3_4	First_Weight	Wash the wound using running water and soap for AT LEAST 15 minutes.	VALUE LABELS Z_A3_4 1 'Yes' 2 'No'. EXECUTE
	Z_A3_5	First_Weight	Wash the wound using running water and soap for LESS THAN 15 minutes.	VALUE LABELS Z_A3_5 1 'Yes' 2 'No'. EXECUTE
	Z_A3_6	First_Weight	Seek traditional treatment.	VALUE LABELS Z_A3_6 1 'Yes' 2 'No'. EXECUTE
	Z_A3_7	First_Weight	Seek treatment at the clinic or hospital.	VALUE LABELS Z_A3_7 1 'Yes' 2 'No'. EXECUTE
	Z_A3_8	First_Weight	Do not perform any of the above actions.	VALUE LABELS Z_A3_8 1 'Yes' 2 'No'. EXECUTE
Action Score 1	Z_A3_1Point	First_Weight	Action score if we're been bitten or scratch 1	IF (Z_A3_1= 1) Z_A3_1Point=1. EXECUTE.
Action Score 2	Z_A3_4Point	First_Weight	Action score if we're been bitten or scratch 2	IF (Z_A3_4= 1) Z_A3_4Point=1. EXECUTE.
Action Score 3	Z_A3_7Point	First_Weight	Action score if we're been bitten or scratch 3	IF (Z_A3_7= 1) Z_A3_7Point=1. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Total Health Seeking Attitude score	Accumulated_AttitudePointHSb	Final_Weight	Total Attitude Score for each respondent	COMPUTE Accumulated_AttitudePointHSb= Z_A3_1Point + Z_A3_4Point + Z_A3_7Point. VARIABLE LABELS Accumulated_AttitudePointHSb 'Total Attitude Point'. EXECUTE.
Level of Health Seeking Attitude	Attitude_HealthHSb	Final_Weight	Level of Health Seeking Attitude	RECODE Accumulated_AttitudePointHSb (3=1) (0 thru 2=0) (SYSMIS=-6) INTO Attitude_HealthHSb. VARIABLE LABELS Attitude_HealthHSb ' Level of attitude. VALUE LABELS Attitude_HealthHSb 0 ‘Poor Attitude’ 1 ‘Good Attitude’. EXECUTE. -6=Missing value

Section A4

Objective 5: To assess the perception regarding the risk factors of contracting dog related diseases

Consist of eight questions from A4a to A4h. Each question uses a Likert scale of 1 to 5 and the minimum score for this construct is 8 and a maximum of 40. Total scores will be converted to negative, neutral and positive categories based on Bloom cut of point guide (Positive: 80%-100%, Neutral: 60%-79%, Negative: <60%).

Level of Attitude	Score
Positive (80%-100%)	32-40
Neutral (60%-79%)	24-31
Negative (Less than 60%)	8-23

Normal Score: A4b, A4c, A4d, A4e, A4f, A4g, A4h

Reverse Score: A4a & A4e

Definitions of Variables:

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Perception on Treatment Z_A4a	Z_A4a	First_Weight	I don't think I need any first aid treatment (Examples: using antiseptic, ointment, wound dressing) after being bitten by a dog	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree
Perception on Treatment Z_A4a rescoring	Z_A4aPoint	Final_Weight	I don't think I need any first aid treatment (Examples: using antiseptic, ointment, wound dressing) after being bitten by a dog	RECODE Z_A4a (1=1) (2=2) (3=3) (4=4) (5=5) (SYSMIS=-6) INTO Z_A4aPoint. VARIABLE LABELS Z_A1aPoint 'Markah Z_A4a'. EXECUTE. -6=Missing value
Perception on Treatment Z_A4b	Z_A4b	First_Weight	I believe dogs can spread diseases to me.	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Perception on Treatment Z_A4b rescoring	Z_A4bPoint	Final_Weight	I believe dogs can spread diseases to me.	RECODE Z_A4b (1=5) (2=4) (3=3) (4=2) (5=1) (SYSMIS=-6) INTO Z_A4bPoint. VARIABLE LABELS Z_A4bPoint 'Markah Z_A4b'. EXECUTE. -6=Missing value
Perception on Treatment Z_A4c	Z_A4c	First_Weight	I am worried that family members with health problems will be prone to contract diseases from dogs.	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree
Perception on Treatment Z_A4c rescoring	Z_A4cPoint	Final_Weight	I am worried that family members with health problems will be prone to contract diseases from dogs.	RECODE Z_A4c (1=5) (2=4) (3=3) (4=2) (5=1) (SYSMIS=-6) INTO Z_A4cPoint. VARIABLE LABELS Z_A4cPoint 'Markah Z_A4c'. EXECUTE. -6=Missing value
Perception on Treatment Z_A4d	Z_A4d	First_Weight	I am worried when children play with stray dogs.	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree
Perception on Treatment Z_A4d rescoring	Z_A4dPoint	Final_Weight	I am worried when children play with stray dogs.	RECODE Z_A4d (1=5) (2=4) (3=3) (4=2) (5=1) (SYSMIS=-6) INTO Z_A4dPoint. VARIABLE LABELS Z_A4dPoint 'Markah Z_A4d'. EXECUTE. -6=Missing value
Perception on Treatment Z_A4e	Z_A4e	First_Weight	The use of personal protective equipment (Example: gloves, scoop, shoes/slippers) while cleaning the pet dog's waste is not important.	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree
Perception on Treatment Z_A4e rescoring	Z_A4ePoint	Final_Weight	The use of personal protective equipment (Example: gloves, scoop, shoes/slippers) while cleaning the pet dog's waste is not important.	RECODE Z_A4e (1=1) (2=2) (3=3) (4=4) (5=5) (SYSMIS=-6) INTO Z_A4ePoint. VARIABLE LABELS Z_A4ePoint 'Markah Z_A4e'. EXECUTE. -6=Missing value
Perception on Treatment Z_A4f	Z_A4f	First_Weight	Dog owners need to bring their pets to the veterinary clinic for annual vaccination.	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Perception on Treatment Z_A4f rescoring	Z_A4fPoint	Final_Weight	Dog owners need to bring their pets to the veterinary clinic for annual vaccination.	RECODE Z_A4f (1=5) (2=4) (3=3) (4=2) (5=1) (SYSMIS=-6) INTO Z_A4fPoint. VARIABLE LABELS Z_A4fPoint 'Markah Z_A4f'. EXECUTE. -6=Missing value
Perception on Treatment Z_A4g	Z_A4g	First_Weight	I need to get vaccinated against rabies if I was bitten by a stray dog within an area that has rabies cases.	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree
Perception on Treatment Z_A4g rescoring	Z_A4gPoint	Final_Weight	I need to get vaccinated against rabies if I was bitten by a stray dog within an area that has rabies cases.	RECODE Z_A4g (1=5) (2=4) (3=3) (4=2) (5=1) (SYSMIS=-6) INTO Z_A4gPoint. VARIABLE LABELS Z_A4gPoint 'Markah Z_A4g'. EXECUTE. -6=Missing value
Perception on Treatment Z_A4h	Z_A4h	First_Weight	Dogs within the area with rabies cases need to be vaccinated against rabies.	1=Sangat Tidak Setuju/ Strongly Disagree 2=Tidak Setuju/ Disagree 3=Tidak Pasti/ Not Sure 4=Setuju/ Agree 5=Sangat Setuju/ Strongly Agree
Perception on Treatment Z_A4h rescoring	Z_A4hPoint	Final_Weight	Dogs within the area with rabies cases need to be vaccinated against rabies.	RECODE Z_A4h (1=5) (2=4) (3=3) (4=2) (5=1) (SYSMIS=-6) INTO Z_A4hPoint. VARIABLE LABELS Z_A4hPoint 'Markah Z_A4h'. EXECUTE. -6=Missing value
Total Perception score	Accumulated_PerceptionPoint	Final_Weight	Total Perception Score for each respondent	COMPUTE Accumulated_PerceptionPoint= Z_A4aPoint + Z_A4bPoint + Z_A4cPoint + Z_A4dPoint + Z_A4ePoint + Z_A4fPoint + Z_A4gPoint + Z_A4hPoint. VARIABLE LABELS Accumulated_PerceptionPoint 'Total Perception Point'. EXECUTE.

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Level of Perception	Perception_ Bloom	Final_Weight	Level of Perception based on Bloom	RECODE Accumulated_PerceptionPoint (8 thru 23=1) (24 thru 31=2) (32 thru 40=3) (SYSMIS=-6) INTO Perception_Bloom. VARIABLE LABELS Perception_Bloom ' Level of Perception based on Bloom. VALUE LABELS Perception_Bloom 1 'Negative Perception' 2 'Neutral Perception' 3 'Positive Perception'. EXECUTE. -6=Missing value

Section B

Objective 6: To assess the owner's dog ownership and responsibility on pet

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Dog Ownership	Z_B1	Final_Weight	Register dog with local authority	VALUE LABELS Z_B1 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Responsibility on pet	Z_B2	Final_Weight	Take dog to the veterinary clinic for annual/routine health check-up	VALUE LABELS Z_B1 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE

Section B

Objective 7: To identify dog owner practices on pets`s care and personal hygiene when handling dog

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Clean Pet's Waste	Z_B4	Final_Weight	Ever cleaned your pet dog's waste	VALUE LABELS Z_B4 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Protective use	Z_B4a	Final_Weight	Use any protective equipment (Example : gloves, scoop, shoes, slippers) every time you clean the pet dog's waste	VALUE LABELS Z_B4a 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Wash with water and soap after clean	Z_B4b	Final_Weight	Wash hands with water and soap every time after cleaning the pet dog's waste	VALUE LABELS Z_B4b 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Physical contact with dog	Z_B5	Final_Weight	Have any physical contact with your pet dog(s)? (Example : while feeding, playing or petting them)	VALUE LABELS Z_B5 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Wash contact area	Z_B5a	Final_Weight	Wash hands or other body parts involved	VALUE LABELS Z_B5a 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Method of wash	Z_B5b	Final_Weight	Method of cleaning used	VALUE LABELS Z_B5b 1 'Tisu Basah/ Wet Wipes' 2 'Pencuci Tangan Beralkohol/ Hand Sanitizer' 3 'Air Sahaja/ Water only' 4 'Air dan Sabun/ Water and Soap' 5 'Kain atau tisu/ Cloth or Tissue' 888 'Skipped' 999 'Missing'. EXECUTE

Section C

Objective 8: To identify non-dog owner practices on personal hygiene when handling dog

Variable Name	Variable in SPSS	Weight	Definition	SPSS Variable Definition and Syntax
Non_Pet Physical contact	Z_C1	Final_Weight	Have any physical contact with non-pet dog(s)? (Example : while feeding, playing or petting them)	VALUE LABELS Z_C1 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Non_Pet Wash contact area non	Z_C2	Final_Weight	Wash hands or other body parts involved after touch with non-pet	VALUE LABELS Z_C2 1 'Yes' 2 'No' 888 'Skipped' 999 'Missing'. EXECUTE
Non_Pet Method of wash	Z_C3	Final_Weight	Method of cleaning used after touch with non-pet	VALUE LABELS Z_C3 1 'Tisu Basah/ Wet Wipes' 2 'Pencuci Tangan Beralkohol/ Hand Sanitizer' 3 'Air Sahaja/ Water only' 4 'Air dan Sabun/ Water and Soap' 5 'Kain atau tisu/ Cloth or Tissue' 888 'Skipped' 999 'Missing'. EXECUTE

SUPPLEMENT

ANNEX A: SURVEY QUESTIONNAIRE

MODUL L: SOSIODEMOGRAFI, TEMPAT KEDIAMAN DAN PERSEKITARAN *SOCIODEMOGRAPHY, HOME AND ENVIRONMENT*		
Sila jawab **SEMUA** soalan dan tandakan (√) pada yang berkenaan *Answer **ALL** question and tick (√) your relevant answers*		
L0001	Nama responden: *Respondent name:*	
L0002	Apakah nombor kad pengenalan anda? *What is your identification number?* Isi **SATU** jawapan **UTAMA** sahaja. *Fill only **ONE MAIN** answer.*	No. Kad Pengenalan Baru/MyKid *New Identification Card/ MyKid* No. Passport *Passport No.* No. Kad Pengenalan lain (Tentera/ Polis/ Sijil lahir/ Lain-lain) *Other identification card no. (Army/Police/Birth cert/Others)*
L0003	Alamat rumah: *Home address:*	
L0004	Jantina *Gender*	☐ Lelaki *Male* ☐ Female *Female*
L0005	Apakah hubungan anda dengan... (ketua isi rumah)? *What is your relationship to… (head of household)?* Pilih **SATU** jawapan sahaja. *Choose **ONE** answer only.*	☐ Ketua isi rumah *Head of Household* ☐ Suami atau isteri *Spouse* ☐ Ibu bapa *Parent* ☐ Anak *Child* ☐ Datuk/nenek atau moyang *Grand- or great-grandparent* ☐ Cucu atau cicit *Grand- or great-grandchild* ☐ Adik-beradik *Siblings* ☐ Mertua *Parent-in-law* ☐ Menantu *Son- or Daughter in-law* ☐ Ipar-Duai *Brother- or Sister-in-law* ☐ Saudara-mara lain *Other relatives* ☐ Kawan *Friend* ☐ Pekerja (pembantu rumah, tukang kebun, pemandu, lain-lain) *Workers (live- in housemaid, gardener, driver, others)* ☐ Lain-lain *Others*
L0006	Bila tarikh lahir anda? *When is your birth date?*	☐☐ DD ☐☐ MM ☐☐☐☐ YYYY

L0007	Umur *Age*	☐☐ Tahun Genap
L0008	Bangsa *Ethnicity*	☐ Melayu *Malay* ☐ Cina *Chinese* ☐ India *Indian* ☐ Orang Asli Semenanjung *Aborigines* ☐ Bumiputera Sabah *Sabah Native* ☐ Bumiputera Sarawak *Sarawak Native* ☐ Lain-lain *Others*
L0009	Taraf kewarganegaraan *Citizenship status*	☐ Warganegara Malaysia *Malaysian Citizen* ☐ Permastautin tetap *Permanent Resident of Malaysia* ☐ Bukan warganegara Malaysia *Non-Malaysian Citizen*
L0010	Taraf perkahwinan *Marital status*	☐ Tidak pernah berkahwin *Never married* ☐ Berkahwin *Married* ☐ Berpisah *Separated* ☐ Janda Duda *Divorced* ☐ Balu *Widow/ Widower* ☐ Tinggal bersama pasangan *Living with partner*
L0011	Tahap pendidikan *Education level*	☐ Kanak-kanak tidak bersekolah *Child not at school* ☐ Kanak-kanak atau remaja yang masih bersekolah *Still schooling* ☐ Tidak pernah bersekolah *Never attended school* ☐ Tidak habis sekolah rendah *Did not complete primary school* ☐ Kanak-kanak atau remaja yang masih bersekolah *Still schooling* ☐ Tamat Darjah 6 *Completed Standard 6* ☐ Tamat Tingkatan 3 *Completed Form 3* ☐ Tamat Tingkatan 5 *Completed Form 5* ☐ Tamat Tingkatan 6/ sijil/ diploma *Completed Form 6/ certificate / diploma* ☐ Tamat pengajian peringkat sarjana muda *Completed Bachelor's degree* ☐ Tamat pengajian peringkat sarjana *Completed Master degree* ☐ Tamat pengajian peringkat kedoktoran (PhD) *Completed Doctorate Qualification (PhD)*

L0012	Adakah anda bekerja? *Are you working?*	☐ Ya *Yes* ☐ Tidak *No*
L0013	Jika tidak, kenapa? *If not, why?* Pilih jawapan **UTAMA** sahaja. *Choose only* **ONE MAIN** *answer.*	☐ Masalah kesihatan/ kurang upaya *Health problems/ disabled* ☐ Menjaga pesakit/ orang kurang upaya/ orang tua *Care for the sick/ disabled/elderly* ☐ Menjaga rumah/ anak-anak, cucu, ahli keluarga lain *Homemaker/ care for children, grandchildren, other family members* ☐ Mempunyai pekerjaan tapi tidak bekerja *Have a job but not working* ☐ Menganggur *Unemployed* ☐ Pelajar *Student* ☐ Pesara *Pensioner* ☐ Tua *Old age* ☐ Kanak-kanak tidak bersekolah *Child not at school* ☐ Lain-lain *Others*
L0014	Jenis pekerjaan *Type of occupation* Pilih jawapan **UTAMA** sahaja. *Choose only* **ONE MAIN** *answer.*	☐ Pekerja kerajaan *Government employee* ☐ Pekerja separa kerajaan *Semi-government employee* ☐ Pekerja swasta *Private employee* ☐ Bekerja sendiri *Self-employed* ☐ Pekerja tanpa gaji *Unpaid worker* ☐ Pekerja keluarga tanpa gaji *Unpaid family worker*
Berapakah **purata pendapatan kasar bulanan** anda, dari segi… *What is your* ***average personal gross monthly income****, in terms of…*		
L0015	Pendapatan daripada bekerja (upah/ gaji) atau pencen *Income from work (wage/salary) or pension*	RM ☐☐☐☐☐☐☐☐☐ . ☐☐ Sebulan *Monthly*
L0016	Wang yang diterima daripada ahli isirumah *Money received from household members*	RM ☐☐☐☐☐☐☐☐☐ . ☐☐ Sebulan *Monthly*

L0017	Wang daripada sumber lain, contohnya daripada kutipan sewa aset, wang daripada ahli keluarga bukan isirumah, biasiswa, kebajikan masyarakat/ sosial, Baitulmal, dividen dan lain-lain *Money from other sources, such as from asset rental collection, non-household family members, scholarship, community/social welfare, Baitulmal, dividend and others*	RM ☐☐☐☐☐☐☐☐☐ . ☐☐ Sebulan *Monthly*
L0018	Jenis tempat tinggal *Type of house*	☐ Rumah pangsa, pangsapuri, kondominium *Flat, apartment, condominium* ☐ Rumah sesebuah, banglo, rumah kampung *Detached house, bungalow, traditional house* ☐ Rumah bandar, teres, deret atau berangkai, rumah berkelompok *Town house, Terrace, link house, cluster* ☐ Rumah berkembar *Semi-D* ☐ Rumah Kedai *Shop house* ☐ Rumah atas air *Water house* ☐ Rumah setinggan *Squatters* ☐ Rumah panjang *Longhouse*
L0019	Apakah status pemilikan rumah ini? *What is the ownership status of this house?*	☐ Pemilikan sendiri *Owned* ☐ Disewa *Rented* ☐ Kuarters kakitangan kerajaan/majikan *Government/employer-provided staff quarters* ☐ Tinggal secara percuma di rumah yang dimiliki oleh orang yang bukan ahli isi rumah ini *Living for free in a house owned by non-household members*
L0020	Jumlah isi rumah yang tinggal di rumah ini? *Total number of people living in your household?*	☐ Orang *People*

L0021	Adakah anda mempunyai anjing sebagai haiwan peliharaan? *Do you have any dog(s) as pets?*	☐ Ya *Yes* ☐ 1 ekor *One* ☐ 2 ekor *Two* ☐ 3 ekor *Three* ☐ Lebih daripada 3 ekor *More than three* ☐ Tidak *No*
Tamat, Ke Modul Seterusnya ***End, Go to the Next Module***		

MODUL M: PENCEGAHAN DENGGI ***DENGUE PREVENTION***		
KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 13 TAHUN DAN KE ATAS ***ELIGIBILITY CRITERIA: HOUSEHOLD MEMBERS AGED 13 AND ABOVE***		
Sila nyatakan pandangan anda bagi penyataan seperti di bawah. Sila jawab **SEMUA** soalan. *Please states your views on the statements below. Please answer **ALL** questions.*		
BAHAGIAN A *SECTION A*		
M1001	Saya risau kerana demam denggi boleh membawa maut *I am worried because dengue fever may cause death*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M1002	Saya bimbang dijangkiti denggi jika badan naik ruam apabila demam *I am worried I would contract dengue fever if the body develops rash when having fever*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M1003	Saya perlu dapatkan rawatan segera apabila mula demam pada hari pertama kerana bimbang dijangkiti denggi *I need to get immediate treatment on the first day of fever because I am worried, I would contract dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M1004	Saya tidak bimbang dijangkiti denggi setiap kali demam *I am not worried about contracting dengue every time I have a fever*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M1005	Saya bimbang ahli keluarga dijangkiti denggi jika mereka demam *I am worried that my family members would contract dengue if they have a fever*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M1006	Saya masih bimbang dijangkiti denggi walaupun boleh mendapatkan rawatan perubatan di hospital *I am still worried about contracting dengue even though I could get medical treatment at the hospital*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M2000	Sila nyatakan tahap persetujuan anda bagi kaedah yang difikirkan berkesan untuk mengawal denggi di kawasan anda. Sila jawab semua soalan. *Please state your level of agreement towards the methods that you think would be effective to curb dengue in your area. Please answer all questions.*	
M2001	Saya berpendapat memakai alat atau bahan penghalau nyamuk (repelen) boleh mengelak gigitan nyamuk Aedes *I am of the opinion that using repellents (device or material to keep mosquitoes away) can prevent Aedes mosquito bites*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*

M2002	Saya berpendapat **Cari dan Musnah** tempat pembiakan nyamuk berkesan untuk mencegah denggi *I am of the opinion that the **Search and Destroy** mosquito breeding sites is effective to prevent dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M2003	Saya berpendapat **semburan aerosol** berkesan bagi membunuh nyamuk Aedes *I am of the opinion that **aerosol spray** is effective to kill Aedes mosquito*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M2004	Saya berpendapat, dengan mengelak berada di luar rumah pada waktu nyamuk Aedes aktif menggigit (awal pagi dan waktu senja) berkesan mencegah denggi *I am of the opinion that avoiding outdoors when Aedes mosquitoes are active (early in the morning and at dusk) is effective to prevent dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M2005	Saya berpendapat memasang jaring penghalang nyamuk di tingkap dan pintu berkesan untuk mencegah denggi *I am of the opinion that installing mosquito nets on windows and doors are effective to prevent dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M3000	Sila nyatakan tahap persetujuan anda bagi kaedah yang difikirkan berkesan untuk pihak bertanggungjawab mengawal denggi di kawasan anda. Sila jawab semua soalan. *Please state your level of agreement towards effective methods by the authorities to curb dengue in your area. Please answer all questions.*	
M3001	Saya berpendapat tindakan kompaun atau saman pembiakan nyamuk Aedes berkesan mengawal denggi *I am of the opinion that issuing fine or summons for Aedes mosquito breeding sites is effective in curbing dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M3002	Saya berpendapat penguatkuasaan daripada Pihak Berkuasa Tempatan (PBT) (contoh; notis menarik kenderaan tersadai, meroboh binaan haram seperti reban, stor yang berpotensi menjadi tempat pembiakan nyamuk Aedes) berkesan mengawal denggi *I am of the opinion that enforcement by the local authorities (PBT) (e.g. notice of removal of abandoned cars, demolition of illegal structures such as coops, stores that can potentially be an Aedes mosquito breeding site) is effective in curbing dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M3003	Saya berpendapat aktiviti pendidikan kesihatan oleh pihak kesihatan berkesan mencegah denggi *I am of the opinion that health education activities by health authorities are effective in curbing dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M3004	Saya berpendapat **semburan kabus** tidak berkesan mengawal denggi *I am of the opinion that **fogging activities** are ineffective in curbing dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M3005	Saya berpendapat semburan **pembunuh jentik-jentik** *(larviciding)* tidak berkesan mengawal denggi *I am of the opinion that **larvaciding spray** (mosquito larvae insecticide) is not effective in curbing dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*

M3006	Saya berpendapat **semburan pembunuh jentik-jentik** *(larviciding)* tidak berkesan mengawal denggi *I am of the opinion that **larvaciding spray** (mosquito larvae insecticide) is not effective in curbing dengue*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4000	Berikut adalah sebab yang difikirkan menjadi kekangan untuk pencegahan denggi. Nyatakan tahap persetujuan anda bagi penyataan di bawah. Sila jawab semua soalan *Below are the reasons thought to be the constraints in curbing dengue. State your level of agreement towards the statements below. Please answer all questions.*	
M4001	Saya berpendapat masa bukan halangan untuk lakukan aktiviti pencegahan denggi di rumah *I am of the opinion that time is not a deterrent to do dengue prevention activities at home*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4002	Saya berpendapat **kos tambahan** bukan halangan untuk lakukan aktiviti pencegahan denggi di rumah *I am of the opinion that **extra cost** is not a deterrent to do dengue prevention activities at home*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4003	Saya berpendapat meletakkan bahan pembunuh jentik-jentik di dalam air tidak baik untuk kesihatan *I am of the opinion that putting mosquito larvicide in water is not good for health*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4004	Saya berpendapat tidak perlu melakukan aktiviti pencegahan denggi kerana tiada kes denggi dilaporkan di kawasan kediaman saya *I am of the opinion that there is no need to do dengue prevention activities because there is no dengue case reported in my housing area*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4005	Saya tidak menyertai gotong-royong bersama komuniti kerana menganggap bukan tanggungjawab saya *I did not join communal work (gotong-royong) with my community because I think that it is not my responsibility*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4006	Saya tidak akan membuka pintu dan tingkap semasa **semburan kabus** *(fogging)* dijalankan kerana berpendapat semburan kabus membahayakan kesihatan *I will not open the doors and windows during fogging because I think that **fogging** is harmful to my health*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4007	Saya tidak akan membuka pintu dan tingkap semasa **semburan kabus** *(fogging)* dijalankan kerana berpendapat semburan kabus mengotorkan rumah *I will not open the doors and windows during fogging because I think that fogging dirties the house*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
M4008	Saya tidak keluar dari rumah semasa aktiviti **semburan kabus** dijalankan pada waktu petang kerana berpendapat waktu tersebut adalah waktu rehat *I will not go out of the house during **fogging** in the evening because I think that it is the time of rest*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*

BAHAGIAN B *SECTION B*			
M5001	Dalam tempoh **enam (6) bulan** yang lepas, berapa kerapkah anda hapuskan tempat pembiakan nyamuk di kediaman anda? Sila pilih satu jawapan sahaja. *In the past **six (6) months**, how often did you destroy the mosquito breeding sites at your home?* *Pick only one answer.*		1. Sekali seminggu *Once a week* 2. Dua (2) hingga tiga (3) kali sebulan *2 to 3 times a month* 3. Sekali sebulan *Once a month* 4. Dua (2) hingga tiga (3) bulan sekali *Once in 2 to 3 months* 5. Tidak pernah buat *Never*…**sila ke M6001**
M5002	Apakah yang anda lakukan untuk hapuskan tempat pembiakan atau tempat berpotensi pembiakan nyamuk Aedes di rumah anda? Sila jawab semua soalan. *What did you do to destroy the breeding sites or potential Aedes mosquitoes breeding sites inside and at your house? Please answer all questions.*		
	M5002a	Tukar air dan cuci bekas (contohnya bekas jambangan bunga) *Replace water and wash the container (for example flower vase)*	1. Ya *Yes* 2. Tidak *No* (-8) TB
	M5002b	Bubuh bahan pembunuh jentik-jentik dalam bekas air yang tidak boleh dibuang *Place mosquito larvicide in water containers that cannot be drained out*	1. Ya *Yes* 2. Tidak *No* (-8) TB
	M5002c	Simpan bekas yang boleh menakung air jika tidak digunakan *Store containers that can hold water if it is not in use*	1. Ya *Yes* 2. Tidak *No* (-8) TB
	M5002d	Tutup dengan rapat bekas simpanan air *Water containers must be tightly closed*	1. Ya *Yes* 2. Tidak *No* (-8) TB
	M5002e	Air dalam alas pasu bunga dibuang dan diberus hingga bersih *Water in the flower vase base is drained and scrubbed clean*	1. Ya *Yes* 2. Tidak *No* (-8) TB
	M5002f	Lupuskan bekas yang boleh menakung air (tin, bekas plastik, bekas kaca dan lain-lain) jika tidak diperlukan *Destroying container that can hold water (tin, plastic container, glass container, etc.) if it is not needed*	1. Ya *Yes* 2. Tidak *No* (-8) TB
	M5002g	Bersihkan saluran air hujan dan longkang tersumbat *Clean rain gutters and clogged drains*	1. Ya *Yes* 2. Tidak *No* (-8) TB
	M5002h	Cantas dahan pokok yang menutup saluran air hujan untuk elak air bertakung *Trim overgrown tree branches that block rain gutters to prevent stagnant water*	1. Ya *Yes* 2. Tidak *No* (-8) TB
M6001	Dalam tempoh **enam (6) bulan** yang lepas, adakah kejiranan anda melaksanakan aktiviti **Cari dan Musnah** tempat pembiakan nyamuk Aedes secara bergotong-royong? *For the past **six (6) months**, was there any activity on **search and destroy** of Aedes mosquito breeding sites carried out in your neighbourhood by the community?*		1. Ya *Yes*…**sila ke M6001a dan M6002** 2. Tidak *No*…**sila ke M6002**
	M6001a	Jika ya, adakah anda sertai? *If yes, did you take part?*	

M6002	Apakah cara yang anda gunakan bagi mengelakkan digigit oleh nyamuk Aedes? Sila jawab semua soalan. *What is/are the method(s) you used to prevent from mosquito bites? Please answers all questions.*		
	M6002a	Memakai repelen (alat atau bahan penghalau nyamuk) *Using repellent (device or material to keep mosquitoes away)a*	1. Ya *Yes* 2. Tidak *No*
	M6002b	Guna semburan aerosol racun serangga *Using insecticide aerosol spray*	1. Ya *Yes* 2. Tidak *No*
	M6002c	Pakai seluar panjang, baju lengan panjang dan berwarna cerah *Wearing bright-coloured long pants and long-sleeved shirts*	1. Ya *Yes* 2. Tidak *No*
	M6002d	Elak berada di luar rumah pada waktu Aedes aktif menggigit *Avoiding being outside the house at times when Aedes is active*	1. Ya *Yes* 2. Tidak *No*
	M6002e	Pasang jaring penghalang nyamuk di tingkap dan pintu *Installing moasquito nets on windows and doors*	1. Ya *Yes* 2. Tidak *No*
	M6002f	Guna lingkaran ubat nyamuk/ ubat nyamuk elektrik atau lain-lain alat penghalau nyamuk *Using mosquito coils/ electric mosquito killers or other types of mosquito repellent devices*	1. Ya *Yes* 2. Tidak *No*

BAHAGIAN C SECTION C			
COMBI ialah singkatan bagi "Communication for Behavioural Impact" atau "Komunikasi untuk Perubahan Tingkahlaku". COMBI diperkenalkan oleh Pertubuhan Kesihatan Sedunia (WHO) pada tahun 2001 sebagai salah satu strategi untuk menangani masalah Denggi di Malaysia. COMBI merupakan satu pendekatan dinamik yang menggunakan strategi mobilisasi sosial dan komunikasi untuk mempengaruhi individu, keluarga dan komuniti ke arah perubahan tingkah laku yang sihat. *COMBI is the abbreviation for 'Communication for Behavioural Impact'. It was an initiative introduced by the World Health Organisation (WHO) in the year 2001, as one of the strategies to reduce the number of dengue cases in Malaysia. COMBI is a dynamic approach which uses social mobilisation and communication strategies to influence individuals, families and communities to change behaviours towards adopting healthy and/or healthier lifestyles.*			
M7001	Adakah anda tahu tentang kewujudan program COMBI untuk mencegah denggi? *Are you aware about the existence of the COMBI programme for dengue prevention?*		1. Ya *Yes*…**sila ke M7002** 2. Tidak *No*…**(Tamat soalan)**
M7002	Adakah pasukan COMBI wujudkan di kawasan anda? *Is there COMBI team is established in your area?*		1. Ya *Yes*…**sila ke M7002a** 2. Tidak *No*…**(Tamat soalan)**
	M7002a	Jika ya, adakah anda sertai aktiviti yang dijalankan oleh pasukan COMBI? *If yes, did you take part in activities carried out by the COMBI team?*	1. Ya *Yes* 2. Tidak *No*
Tamat, Ke Modul Seterusnya ***End, Go to the Next Module***			

MODUL N: PENYAKIT BERKAITAN HAIWAN PELIHARAAN DI RUMAH
DISEASES RELATED TO HOUSEHOLD PETS

KRITERIA KELAYAKAN: AHLI ISI RUMAH BERUMUR 13 TAHUN DAN KE ATAS
ELIGIBILITY CRITERIA: HOUSEHOLD MEMBERS AGED 13 YEARS AND ABOVE

Sila jawab **SEMUA** soalan *Please answer **ALL** questions*

BAHAGIAN A *SECTION A*

N1001	Sila berikan jawapan anda bagi semua penyataan berikut: *Please give your answer for all of the following statements:*		
	N1001a	Penyakit rabies (penyakit anjing gila) daripada anjing boleh menjangkiti manusia *Rabies from dogs can infect humans*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001b	Tanda-tanda anjing yang dijangkiti rabies ialah air liurnya meleleh dengan banyak dan berkelakuan ganas *Dogs that are infected with rabies show signs of profuse salivation and aggressive behaviour*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001c	Anda boleh dijangkiti rabies sekiranya digigit oleh anjing gila (anjing yang dijangkiti rabies) *You can get infected with rabies if you are bitten by a rabid dog (dog infected with rabies)*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001d	Luka manusia yang terdedah dengan air liur anjing gila boleh menyebabkan jangkitan rabies *Humans can be infected with rabies if their wounds are exposed to rabid dog's saliva*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001e	Cakaran anjing tidak boleh menyebarkan penyakit kepada manusia *Dog scratch cannot transmit disease to human*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001f	Sekiranya digigit oleh anjing, luka perlu dicuci dengan sabun dan air mengalir sekurang-kurangnya 15 minit *If bitten by a dog, the wound should be washed with soap and running water for at least 15 minutes*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001g	Suntikan pencegahan tetanus adalah antara rawatan yang diberikan sekiranya digigit anjing *Tetanus booster shot is one of the treatments given for dog bites*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001h	Suntikan vaksin kepada anjing adalah untuk melindunginya daripada penyakit *Vaccination for dogs serves as a protection from disease*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001i	Rawatan segera di klinik atau hospital adalah perlu sekiranya digigit oleh anjing *Prompt treatment at a clinic or hospital is necessary if bitten by a dog*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*

	N1001j	Malaysia tidak mempunyai akta khas yang melindungi kebajikan haiwan *Malaysia does not have a specific law that protects animal welfare*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
	N1001k	Individu yang melakukan penganiayaan dan kekejaman ke atas haiwan boleh disabit kesalahan penjara dan/ atau denda. *Individuals who mistreat and abuse animals may be subjected to imprisonment and/ or fine*	1. Betul *True* 2. Tidak pasti *Not sure* 3. Salah *False*
N1002	Dalam tempoh 1 tahun yang lepas, pernahkah anda digigit atau dicakar mana-mana anjing? (Yang mengakibatkan luka) *Within the past 1 year, have you ever been bitten or scratched any dogs? (Which caused an injury or a wound)*		1. Digigit anjing *Bitten by a dog*…**sila ke N1002a** 2. Dicakar anjing *Scratched by a dog*…**sila ke N1002a** 3. Tidak pernah dicakar atau digigit anjing *Never been scratched or bitten by dogs* … **sila ke N1003**
	N1002a	Apakah tindakan awal anda? *What was your immediate action?* Jawapan boleh melebihi satu *More than one answer is accepted*	1. Tidak berbuat apa-apa *Do nothing* 2. Menggunakan antiseptik, minyak sapu atau membalut luka *Apply antiseptic, ointment or wound dressing* 3. Mencuci luka dengan air sahaja *Wash the wound using water only* 4. Cuci luka dengan air mengalir dan sabun **SELAMA** 15 minit *Wash the wound using running water and soap for **AT LEAST** 15 minutes* 5. Cuci luka dengan air mengalir dan sabun **KURANG DARIPADA** 15 minit *Wash the wound using running water and soap for **LESS THAN** 15 minutes*
	N1002b	Adakah anda mendapatkan rawatan di klinik atau hospital? *Did you seek treatment at a clinic or hospital?*	1. Ya *Yes* … **sila ke N1002b1** 2. Tidak *No* …**sila ke N1002b2**
	N1002b1	Bilakah anda mendapatkan rawatan di klinik atau hospital? *When did you seek treatment at the clinic or hospital?* Pilih satu jawapan sahaja *Please choose one answer only*	1. Serta-merta *Immediately* 2. Dalam masa 24 jam *Within 24 hours* 3. Lebih daripada 24 jam *After 24 hours* 4. Mendapatkan rawatan setelah muncul gejala (demam, bengkak, nanah, lesu, menggigil) *Seek treatment after symptom appears (fever, swelling, festering, fatigue, shivering)* …**sila ke N1004**

	N1002b2	Sebab tidak mendapatkan rawatan Jawapan boleh melebihi satu *Reason for not getting a treatment* *More than one answer is accepted*	1. Kecederaan tidak serius *The injury is not serious* 2. Anjing tersebut kelihatan sihat *The dog looks healthy* 3. Anjing tersebut telah divaksin *The dog has been vaccinated* 4. Tiada risiko sebarang jangkitan kepada saya *There is no risk of infection to me* 5. Tidak percaya keberkesanan rawatan klinik/ hospital *Does not believe in the effectiveness of the clinic/hospital treatment* 6. Jarak ke klinik/hospital sangat jauh *Distance to the clinic/hospital is far* 7. Masa menunggu yang lama *Long waiting time* 8. Kos rawatan yang mahal *The treatment cost is expensive* … **sila ke N1004**
N1003	Kepada mereka yang **TIDAK PERNAH** digigit atau dicakar oleh anjing. *For those who have **NEVER** been bitten or scratched by a dog* Apakah tindakan anda sekiranya digigit oleh anjing? (Jawapan boleh melebihi satu) *What is your action if you were bitten by a dog? (More than one answer is accepted)*		1. Menggunakan antiseptik, minyak sapu atau membalut luka *Apply antiseptic, ointment or wound dressing* 2. Membiarkan anjing menjilat luka gigitan *Let the dog lick the wound* 3. Mencuci luka dengan air sahaja *Wash the wound using water only* 4. Cuci luka dengan air mengalir dan sabun **SELAMA** 15 minit *Wash the wound using running water and soap for **AT LEAST** 15 minutes* 5. Cuci luka dengan air mengalir dan sabun **KURANG DARIPADA** 15 minit *Wash the wound using running water and soap for **LESS THAN** 15 minutes* 6. Mendapatkan rawatan tradisional *Seek traditional treatment* 7. Mendapatkan rawatan di klinik atau hospital *Seek treatment at the clinic or hospital* 8. Tidak mengambil tindakan seperti di atas *Do not perform any of the above actions*
N1004	Nyatakan pandangan anda bagi semua penyataan di bawah. *Please state your view on the following statements.*		
	N1004a	Saya rasa tidak perlu rawatan pertolongan cemas (Contoh: menggunakan antiseptik, minyak sapu, membalut luka) setelah digigit oleh anjing. *I don't think I need any first aid treatment (Examples: using antiseptic, ointment, wound dressing) after being bitten by a dog.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
	N1004b	Saya percaya anjing boleh menyebarkan penyakit kepada saya. *I believe dogs can spread diseases to me.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*

	N1004c	Saya bimbang ahli keluarga yang mempunyai masalah kesihatan akan mudah mendapat penyakit daripada anjing. *I am worried that family members with health problems will be prone to contract diseases from dogs.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
	N1004d	Saya bimbang apabila kanak-kanak bermain bersama anjing jalanan/terbiar. *I am worried when children play with stray dogs.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
	N1004e	Pemakaian alat perlindungan diri (Contoh: sarung tangan, pencedok, kasut) ketika membersihkan najis anjing peliharaan adalah tidak penting. *The use of personal protective equipment (Examples: gloves, scoop, shoes/slippers) while cleaning the pet dog's waste is not important.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
	N1004f	Pemilik anjing perlu membawa anjing peliharaan mereka ke klinik haiwan untuk mendapatkan suntikan vaksin setiap tahun. *Dog owners need to bring their pet dog(s) to the veterinary clinic for annual vaccination.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
	N1004g	Saya perlu dapatkan suntikan vaksin rabies sekiranya digigit oleh anjing liar di kawasan yang mempunyai kes rabies. *I need to get vaccinated against rabies if I was bitten by a stray dog within an area that has rabies cases.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
	N1004h	Anjing di kawasan yang mempunyai kes rabies perlu mendapatkan vaksin pencegahan rabies. *Dogs within the area with rabies cases need to be vaccinated against rabies.*	1. Sangat tidak setuju *Strongly disagree* 2. Tidak setuju *Disagree* 3. Tidak pasti *Not sure* 4. Setuju *Agree* 5. Sangat setuju *Strongly agree*
	N1004i	Sekiranya anda memelihara anjing, sila jawab soalan di **BAHAGIAN B** Sekiranya tidak, sila jawab soalan di **BAHAGIAN C**. *If you have a pet dog, please answer the questions in **SECTION B*** *If not, please answer the questions in **SECTION C**.*	1. Ada memelihara anjing *Do have dog(s)*…**sila ke Bahagian B** 2. Tidak memelihara anjing *Do not have dog*… **sila ke Bahagian C**

BAHAGIAN B (Bagi yang memelihara anjing) *SECTION B (For those who have dog(s) as a pet)*			
N2001	Adakah anda mendaftarkan anjing peliharaan anda dengan pihak berkuasa tempatan (seperti Majlis Perbandaran atau Majlis Daerah)? *Do you register your pet dog(s) with the local authority (such as the Municipal Council or District Council)?*		1. Ya *Yes* 2. Tidak *No*
N2002	Adakah anda membawa anjing peliharaan anda ke klinik haiwan untuk pemeriksaan kesihatan rutin tahunan? *Do you take your pet dog(s) to the veterinary clinic for an annual routine health check-up?*		1. Ya *Yes* 2. Tidak *No*
N2003	Di manakah anjing peliharaan anda selalu membuang najis? (Sila jawab satu sahaja sama ada di dalam rumah atau di luar rumah) *Where does your pet dog(s) usually defecate?* *(Please choose only one answer either indoors or outdoors)*		1. Di dalam rumah *Indoor* a. Tandas/ bilik mandi *Toilet/ bathroom* b. Kotak najis *Litter box* c. Sangkar *Cage* 2. Di luar rumah *Outdoor* a. Rumah anjing /sangkar *Cage* b. Kotak najis *Litter box* c. Di halaman rumah *Within the house compound* d. Di luar halaman rumah/kawasan umum/ taman *Outside the house compound /public area /park*
N2004	Pernahkah anda membersihkan najis anjing peliharaan anda? *Have you ever cleaned your pet dog's waste?*		1. Ya *Yes*…**sila ke N2004a dan N2004b** 2. Tidak *No*…**sila ke N2005**
	N2004a	Adakah anda menggunakan sebarang alat perlindungan diri (Contoh: sarung tangan, pencedok, kasut/ selipar) setiap kali anda membersihkan najis anjing peliharaan? *Do you use any protective equipment (Examples: gloves, scoop, shoes/ slippers) every time you clean the pet dog's waste?*	1. Ya *Yes* 2. Tidak *No*
	N2004b	Adakah anda mencuci tangan dengan air dan sabun setiap kali anda membersihkan najis anjing peliharaan? *Do you wash your hands with water and soap every time after you clean the pet dog's waste?*	1. Ya *Yes* 2. Tidak *No*

N2005	Adakah anda mempunyai sentuhan fizikal dengan anjing peliharaan anda? (Contoh: semasa memberi makan, bermain atau membelai) *Do you have physical contact with your pet dog(s)?* *(For example: while feeding, playing or petting them)*		1. Ya *Yes*...**sila ke N2005a** 2. Tidak *No* … **tamat soalan**
	N2005a	Adakah anda membersihkan tangan atau anggota badan anda selepas itu? *Do you wash your hands or other body parts involved afterwards?*	1. Ya *Yes*...**sila ke N2005b** 2. Tidak *No*…**tamat soalan**
	N2005b	Apakah kaedah pembersihan yang selalu anda lakukan? Pilih satu jawapan **UTAMA** sahaja. *What do you usually use to clean up?* *Choose only one **MAIN** answer.*	1. Tisu basah *Wet wipes* 2. Pencuci tangan beralkohol *Hand sanitizer* 3. Air sahaja *Water only* 4. Air dan sabun *Water and soap* 5. Kain Tisu/ *Cloth/ Tissue* …**soalan tamat**
Tamat ***End***			

BAHAGIAN C (Bagi yang TIDAK memelihara anjing) *SECTION C (For those who DO NOT have a dog as pet)*		
N3001	Dalam tempoh 3 bulan yang lepas, pernahkah anda mempunyai sentuhan fizikal dengan mana-mana anjing? (Contoh: semasa memberi makan, bermain atau membelai anjing tersebut) *Within the last 3 months, have you ever had physical contact with a dog?* *(For example: while feeding, playing or petting the dog)*	1. Ya *Yes*… **sila ke N3002** 2. Tidak *No*…**Tamat soalan**
N3002	Adakah anda membersihkan tangan atau anggota badan selepas itu? *Do you clean your hands or other body parts involved afterwards?*	1. Ya *Yes* … **sila ke N3003** 2. Tidak *No* …**Tamat soalan**
N3003	Apakah kaedah pembersihan yang selalu anda lakukan? Pilih satu jawapan **UTAMA** sahaja. *How do you usually do the cleaning?* *Choose only one **MAIN** answer.*	1. Tisu basah *Wet wipes* 2. Pencuci tangan beralkohol *Hand Sanitizer* 3. Air Sahaja *Water only* 4. Air dan Sabun *Water and soap* 5. Kain / Tisu *Cloth/ Tissue*
Tamat *End*		

ANNEX B: STUDY INFORMATION SHEET (BAHASA MELAYU & ENGLISH)

RISALAH MAKLUMAT PESERTA

1. Tajuk Penyelidikan:
Tinjauan Kebangsaan Kesihatan dan Morbiditi 2020 (Penyakit Berjangkit).

2. Nama Penyelidik dan Institusi:
Penyelidik utama: En. Mohd Hatta Bin Abdul Mutalip, Institut Kesihatan Umum, Institut Kesihatan Negara, Kementerian Kesihatan Malaysia.
Penyelidik bersama:

i. Dr. Noor Aliza Binti Lodz, Institut Kesihatan Umum, Institut Kesihatan Negara, Kementerian Kesihatan Malaysia.
ii. Dr. Chong Zhuo Lin, Institut Kesihatan Umum, Institut Kesihatan Negara, Kementerian Kesihatan Malaysia.
iii. Albeny Josling Panting, Institut Penyelidikan Tingkahlaku Kesihatan, Institut Kesihatan Negara, Kementerian Kesihatan Malaysia.

3. Nama Penaja: Kementerian Kesihatan Malaysia

4. Pengenalan:
Kementerian Kesihatan Malaysia (KKM) sedang menjalankan Tinjauan Kebangsaan Kesihatan dan Morbiditi 2020 dengan skop tinjauan berkaitan penyakit berjangkit. Maklumat berikut akan menjelaskan hal-hal berkenaan tinjauan tersebut dengan lebih mendalam. Adalah penting untuk anda memahami mengapa tinjauan ini dilakukan dan apa yang perlu anda lakukan. Sila ambil masa yang secukupnya untuk membaca dengan teliti penerangan yang diberi sebelum anda bersetuju untuk menyertai tinjauan ini. Jika anda mempunyai sebarang kemusykilan ataupun memerlukan maklumat lanjut, anda boleh bertanya dengan mana-mana ahli kumpulan tinjauan ini. Setelah anda memahami maklumat tinjauan ini dan berhasrat untuk mengambil bahagian, anda perlu menandatangani **Borang Persetujuan Responden** yang disertakan pada muka surat terakhir risalah ini. Penyertaan anda dalam tinjauan ini adalah secara sukarela dan anda boleh menarik diri pada bila-bila masa. Anda boleh untuk tidak menjawab mana-mana soalan atau menarik diri dari pemeriksaan yang disebutkan sekiranya tidak mahu. Keengganan anda untuk mengambil bahagian, atau penarikan diri anda tidak akan menjejaskan sebarang manfaat perubatan atau kesihatan yang merupakan hak anda. Anda boleh menarik diri sekiranya enggan mengambil bahagian. Tinjauan ini ditaja sepenuhnya oleh Kementerian Kesihatan Malaysia dan telah mendapat kelulusan Jawatankuasa Etika dan Penyelidikan Perubatan, Kementerian Kesihatan Malaysia.

5. Apakah tujuan tinjauan ini dilakukan ?
Tujuan tinjauan ini dijalankan adalah untuk memperolehi maklumat berkaitan dengan penyakit-penyakit berjangkit di Malaysia seperti jangkitan penyakit Hepatitis B dan C. Tinjauan ini juga bertujuan menilai tahap kognitif, keberkesanan dan tingkahlaku (CAB) anda berkaitan pencegahan penyakit berjangkit yang berkaitan dengan denggi dan penyakit zoonosis bawaan haiwan peliharaan. Kajian seroprevalens antibodi COVID 19 juga akan dijalankan bersama-sama dengan tinjauan ini. Maklumat yang diperolehi ini akan dikaji dan dinilai bagi meningkatkan lagi taraf perkhidmatan kesihatan di negara ini. Tinjauan ini akan berlangsung kira-kira 5 bulan (2 bulan bagi tempoh tinjauan di lapangan dan 3 bulan bagi kaedah temuramah menerusi telefon) dan seramai 5,000 responden daripada tempat kediaman terpilih akan terlibat di dalam tinjauan ini di seluruh Malaysia.

6. Apakah prosedur penyelidikan yang akan saya terima ?
Tinjauan ini melibatkan dua (2) kaedah pengumpulan data di lapangan dan temuramah menerusi telefon.

6.1 Pengumpulan data di lapangan:

- **Temuramah secara bersemuka:**
  - Maklumat sosiodemografi dan tempat kediaman.
  - Hepatitis B dan C
  - Jangkitan virus COVID-19

- **Soalan diisi sendiri (Sulit):**
  - Faktor risiko hepatitis B dan C
  - Stigma HIV

- **Soalan diisi sendiri (CAB):**
  - Pencegahan denggi
  - Jangkitan zoonotik daripada haiwan peliharaan

- **Pengambilan spesimen biologi:**
  - Sampel darah

6.2 Temuramah menerusi telefon:
- Gejala seperti Tuberkulosis
- Penggunaan antibiotik
- Pengetahuan HIV
- Kesedaran penyakit Malaria

7. Apakah yang terjadi sekiranya saya bersetuju untuk menyertai kajian ini ?
Sebelum pengumpulan data bermula, anda akan diberi penerangan terperinci berkaitan prosedur pengumpulan data.

a) Sesi temuramah:
   - Memberi maklumbalas dan maklumat semasa sesi temuramah
   - Sesi temuramah secara bersemuka di pusat pengumpulan data mengambil masa selama sekurang-kurangnya 5 minit
   - Temuramah menerusi telefon mengambil masa selama 10 hingga 15 minit

b) Soalan diisi sendiri:
   - Soalan berbentuk diisi sendiri merupakan soalan sulit yang bertanyakan soalan-soalan yang sensitif berkaitan jangkitan penyakit hepatitis B dan C serta stigma HIV.
   - Masa diambil adalah selama 5 minit.
   - Bagi modul-modul CAB, anda bebas mengisi sendiri borang kaji selidik di rumah anda.

c) Pengambilan darah:
   Semua responden yang berumur 1 tahun dan ke atas akan diambil darah. Rujuk jadual di bawah bagi tujuan pengambilan darah daripada responden dengan kaedah tusukan vena mengikut prosedur yang bebas kuman bagi memastikan kebersihan dan pencegahan jangkitan silang:

#	Kumpulan umur	Jumlah (ml)	Anggaran
1.	≥ 15 tahun	10	Dua sudu teh
2.	Kanak-kanak < 7 tahun	3.5	¾ sudu teh
3.	Kanak-kanak 7 – 15 tahun	5	Satu sudu teh

Pengambilan darah mengambil masa sekurang-kurangnya 2 minit. Jika anda bersetuju, sebarang baki sampel darah ini akan disimpan bagi tujuan penyelidikan kajian penyakit berjangkit sahaja. Keputusan ujian darah ini akan dimaklumkan kepada anda dan jika keputusan adalah positif, anda akan dirujuk kepada fasiliti kesihatan kerajaan yang terdekat untuk tindakan susulan dan rawatan lanjut.

8. Apakah tanggungjawab saya sewaktu menyertai kajian ini ?
Adalah amat penting untuk setiap peserta memahami dan mematuhi arahan Pasukan Penyelidik. Peserta diingatkan untuk menjawab soalan dengan jujur dan lengkap. Untuk peserta yang terpilih bagi pengambilan darah, peserta diingatkan untuk mengekalkan rutin harian seperti biasa dan dilarang berpuasa pada hari-hari pengumpulan data. Sekiranya pengambilan darah tidak dapat dilakukan pada hari yang telah ditetapkan atas sebab kesihatan atau sebarang kesulitan, peserta perlu memaklumkan kepada pasukan kajian untuk menetapkan tarikh baharu. Apa-apa keraguan atau pertanyaan boleh ditujukan kepada Penyelidik Utama atau Pasukan Penyelidik.

9. Apakah risiko dan kesan-kesan sampingan menyertai tinjauan ini ?
Tiada risiko jika anda menjawab soalan-soalan secara bersemuka. Soalan berbentuk jawab sendiri mengandungi soalan yang sangat sensitif dan peribadi. Semua jawapan dan maklumat yang diterima dari anda adalah **SULIT**. Maklumat-maklumat yang diterima akan disimpan rapi dan tidak akan dikongsi dengan orang lain. Kami akan memastikan keperibadian dan kerahsiaan anda. Kejujuran anda dalam menjawab semua soalan-soalan ini adalah amat dihargai. Jika anda terpilih untuk pengambilan darah, jururawat atau ahli perubatan yang terlatih akan mengambil sampel darah anda secara tusukan salur darah (vena). Terdapat sedikit ketidakselesaan dan mungkin sedikit bengkak kecil pada kawasan tusukan, dan adalah sangat jarang anda mengalami jangkitan kuman atau pengsan daripada prosedur berkenaan.

Masalah pendarahan boleh terjadi kepada individu yang mempunyai gangguan pembekuan darah atau juga kepada individu yang mengambil ubat cair darah seperti Aspirin, Warfarin (Coumadin) dan sebagainya. Jika peserta mengalami sebarang masalah yang berkaitan dengan penyelidikan ini semasa pengumpulan data dilakukan, anda dinasihatkan untuk memaklumkan kepada Pasukan Penyelidik.

10. Apakah yang akan terjadi sekiranya saya tercedera semasa menyertai kajian ini ?
Risiko pengambilan darah adalah seperti yang diterangkan di atas manakala tiada risiko atau kesan sampingan yang diketahui daripada prosedur kajian yang selainnya. Jika terdapat ketidakselesaan ketika pengambilan darah, anda boleh memaklumkan kepada Pasukan Penyelidik untuk melengkapkan pengambilan sampel darah ini. Peserta juga adalah dinasihati untuk memaklumkan kepada Pasukan Penyelidik dalam tempoh tiga hari jika tidak sihat atau mengalami apa-apa kesusahan bagi tujuan pengambilan darah. Ini adalah bertujuan bagi mengelakkan anda terdedah kepada penyakit akibat daripada tinjauan ini.

Jika anda tercedera kerana penyertaan anda dalam penyelidikan ini, anda hendaklah menghubungi Pasukan Penyelidik anda. Sekiranya kecederaan fizikal / badan atau penyakit terhasil secara langsung akibat daripada prosedur dalam kajian ini, penyelidik akan menguruskan rawatan yang diperlukan dan berpatutan. Tetapi pihak penaja tidak akan bertanggungjawab terhadap perbelanjaan perubatan bagi penyakit atau rawatan yang telah wujud sebelum penyertaan anda dalam kajian ini, ataupun mana-mana proses rawatan yang sedang anda ikuti, ataupun sebarang masalah yang timbul sama ada

daripada kecuaian anda sendiri atau salah laku yang disengajakan, ataupun kecuaian atau salah laku yang disengajakan sama ada oleh Pasukan Penyelidik anda, pihak tapak/lokasi/pusat penyelidikan, mahupun mana-mana pihak ketiga yang terlibat. Walau bagaimanapun, anda tetap tidak kehilangan mana-mana hak anda di sisi undang-undang untuk mendapatkan pampasan sekalipun anda sudah menandatangani borang ini.

11. Apakah manfaatnya saya menyertai tinjauan ini ?
Tiada manfaat kesihatan atau kewangan secara terus yang anda perolehi apabila menyertai tinjauan ini. Walaubagaimanapun, segala maklumat yang diperolehi dapat membantu pembuat dasar kesihatan negara untuk merancang bagi meningkatkan lagi taraf perkhidmatan kesihatan dan aktiviti kawalan penyakit berjangkit di negara ini.

Jika sampel darah anda diambil, anda boleh mengetahui status kesihatan anda berkaitan jangkitan hepatitis B dan C. Penyertaan anda dalam kajian ini akan memberikan maklumat berkaitan pembentukan antibodi virus COVID-19, dimana maklumat ini dapat digunakan bagi tujuan kawalan penyakit dan pengurusan klinikal pesakit.

Jika anda didapati positif:

- Surat rujukan akan diberikan kepada anda supaya anda boleh mendapatkan rawatan susulan di fasiliti kesihatan kerajaan yang terdekat.
- Tiada sebarang kos akan dikenakan kepada ahli keluarga anda sama ada saringan atau rawatan perubatan dijalankan ke atas keluarga dan jika anda warganegara Malaysia.

12. Siapakah yang membiayai kajian ini ?
Kajian ini ditaja sepenuhnya oleh Kementerian Kesihatan Malaysia. Mana-mana prosedur dan rawatan lain yang tidak diperlukan untuk kajian ini tetapi merupakan sebahagian daripada rawatan harian anda, adalah tanggungan anda sendiri ataupun pihak insurans anda. Kami amat menghargai kerjasama dan masa yang anda luangkan untuk kajian ini. Tiada sumbangan kewangan yang akan diberi kepada peserta kajian ini, tetapi pihak kami akan memberikan bahan pendidikan kesihatan bagi setiap tempat kediaman yang terpilih dalam tinjauan ini. Jika anda terlibat dalam pengambilan darah, anda akan diberikan imbalan balik sebanyak RM 30 atas penglibatan, masa yang diluangkan dan ketidakselesaan semasa pengambilan darah semasa tinjauan ini.

13. Apakah tahap penyertaan saya di dalam kajian ini ?
Penyertaan anda dalam kajian ini adalah secara sukarela dan tidak akan ditamatkan, melainkan anda tidak memenuhi kriteria kelayakan selepas dilibatkan di dalam kajian ini.

14. Adakah maklumat saya akan dirahsiakan ?
Segala maklumat anda yang diperolehi dalam penyelidikan ini akan disimpan dan dikendalikan secara sulit, bersesuaian dengan peraturan-peraturan dan/ atau undang-undang yang berkenaan. Sekiranya hasil penyelidikan ini diterbitkan atau dibentangkan kepada orang ramai, identiti anda tidak akan didedahkan tanpa kebenaran anda terlebih dahulu. Pihak-pihak tertentu seperti individu yang terlibat dalam penyelidikan dan rawatan perubatan anda, juruaudit dan jurupantau yang terlatih, pihak penaja atau pihak gabungannya, pihak berkuasa kerajaan atau undang-undang, boleh memeriksa maklumat anda jika berkenaan dan diperlukan. Hanya anda dan Pasukan Penyelidik akan mengetahui mengenai keputusan semua ujian dari kajian ini. Jika anda terlibat dalam pengambilan darah, keputusan ujian akan dimaklumkan kepada anda secara sulit. Anda hanya akan dimaklumkan keputusan ujian dan pemeriksaan sendiri dan bukan keputusan ujian atau pemeriksaan peserta lain.

15. Siapakah akan saya hubungi sekiranya saya mempunyai sebarang pertanyaan?
Sekiranya anda mempunyai sebarang pertanyaan mengenai kajian ini, sila hubungi Penyelidik Utama, En. Mohd Hatta Bin Abdul Mutalip, atau Penyelidik bersama, Dr. Noor Aliza Lodz, Penyelidik Utama Seroprevalens Jangkitan COVID-19; Dr. Chong Zhuo Lin dari Institut Kesihatan Umum, Kompleks Kesihatan Negara, Kementerian Kesihatan Malaysia, No 1, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam 40170, Shah Alam, Selangor di talian **03-3362 8793.**

Sekiranya anda mempunyai sebarang pertanyaan berkaitan dengan hak-hak anda sebagai peserta dalam kajian ini, sila hubungi:

Jawatankuasa Etika & Penyelidikan Perubatan
Kompleks Institut Kesihatan Negara (NIH),
No 1, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam,
Selangor.
No. Tel: 03-33628407/ 33628205/ 33628888

STUDY INFORMATION SHEET

1. Title of Study:
National Health & Morbidity Survey 2020 (Communicable Diseases)

2. Name of Investigator and Institution:
Principle Investigator: En. Mohd Hatta Bin Abdul Mutalip, Institute for Public Health, National Institutes of Health Malaysia, Ministry of Health Malaysia.

Co-Investigators:

iv. Dr. Noor Aliza Lodz, Institute for Public Health, National Institutes of Health Malaysia, Ministry of Health Malaysia.
v. Dr. Chong Zhuo Lin, Institute for Public Health, National Institutes of Health Malaysia, Ministry of Health Malaysia.
vi. Albeny Josling Panting, Institute for Behavioral Health Research, National Institutes of Health Malaysia, Ministry of Health Malaysia.

3. Name of Sponsor: Ministry of Health, Malaysia

4. Introduction:
The Ministry of Health (MoH) is conducting a National Health and Morbidity Survey (NHMS) 2020 this year with a scope of communicable diseases. This leaflet will explain the details of this survey. It is important for you to understand why the survey is being done and what will be involved. Please take your time to read through and consider this information carefully before you decide if you are willing to participate. If you have any questions or need more information, you can ask any team member of this survey. Once you understand the survey information and you wish to participate, you must sign a **consent form** which is included on the last page of this information sheet. Your participation is voluntary and you may withdraw at any time. You may opt to not answer any of the questions or withdraw if you choose to do so. Your refusal to participate or withdrawal will not affect your existing rights to any medical or health care. This study is fully sponsored by the Ministry of Health Malaysia and has been approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia.

5. What is the purpose of the survey?
The purpose of this study is to obtain information on communicable diseases in Malaysia including health status related to Hepatitis B and C infections. This study will also assess respondent's cognitive, affective and behavioral (CAB) pertaining to communicable diseases prevention related to dengue and zoonoses infection. The seroprevalence COVID-19 antibody serosurvey will also be carried out in this survey. This information will be reviewed and evaluated in order to improve the health service in our country. This survey will last for 5 months (Duration of the on-site data collection is 2 months while phone interview will take approximately 3 months) and about 5,000 respondents will be involved in this study throughout Malaysia.

6. What kind of procedures will I receive?
This survey involves two (2) methods; on-site data collection and phone interview.

6.1 On-site data collection:

- **Face to face interview:**
  - Sociodemographic profiles and living arrangement
  - Hepatitis B and C
  - COVID-19 virus infection

- **Self-administered questionnaire (Confidential):**
  - Risk factors of hepatitis B and C
  - HIV stigma

- **Self-administered questionnaire (CAB):**
  - Dengue prevention practices
  - Zoonotic infections related to household pet

- **Biological specimen:**
  - Blood sample

6.2 **Phone interview:**

- TB-like-symptoms
- Antibiotic use
- HIV knowledge
- Malaria awareness

7. What will happen if I decide to take part?

Before collecting data, you will be explained in detail about the data collection procedure.

d) Face to face interview:
- To give feedback during the face-to-face interview session
- Interview session during on-site data collection will take around 5 minutes
- Phone interview will take around 10 to 15 minutes

e) Self-Administered Questionnaires (SAQ):
- The SAQ questionnaires will ask about sensitive information about the risks of hepatitis B and C infections and your stigma on HIV.
- SAQ is estimated will take around 5 minutes.
- For CAB modules, you are free to respond to all questions conveniently at home.

f) Blood collection:

All respondents aged 1 years old and above will be recruited for blood collection. Blood will be drawn from a venipuncture procedure following aseptic principles to ensure cleanliness and prevent cross-infection. Please refer to the table below for the volume of blood that will be drawn according to age and weight of the respondent.

#	Age category	Volume (ml)	Approximate
1.	≥ 15 years old	10	Two teaspoons
2.	Children < 7 years old	3.5	¾ teaspoon
3.	Children 7 – 15 years old	5	One teaspoon

Blood taking is approximately will take for at least 2 minutes. If we get further consent from you, excessive blood from blood investigation will be kept for future testing or study for Infectious diseases. You will be informed the result of blood testing and you will be referred to the nearest government health clinic for further management and treatment if you are found positive from your blood testing.

8. What are my responsibilities when taking part in this survey?

It is important that every participant to follow the instruction which has been given by the study team. Participant is also reminded to answer the questions honestly and completely. For participant recruited

for blood investigation, participant is reminded to maintain their usual daily routine and must not fast during data collection days. If there are any circumstances that blood taking cannot be made on the appointed date due to sickness or any difficulties, participant must inform the study team for a new arrangement or consultation. Any doubt or enquiries can be addressed to the Principal Investigator or study staff in each site. Participation in this survey will definitely not incur any cost to you.

9. What are the potential risks and side effects of being in this survey?

There is no risk if you participate in the face-to-face interview in this survey. The self-administered questionnaires consist of very sensitive and personal questions. All information and answers we receive from you are treated **CONFIDENTIAL**. The information will be kept safe and will not be shared with others including your family members or friends. We will ensure your privacy and confidentiality. Your honesty in answering all these questions is greatly appreciated. If you are selected for blood investigation, a trained phlebotomist or nurse will collect your blood from a venipuncture procedure. There will be a slight discomfort at the site of puncture, possible bruising and swelling around the puncture site, rarely and infection and very uncommonly faintness from the procedure.

Ongoing bleeding can be a problem for people with bleeding disorders. Aspirin, warfarin (Coumadin), and other blood-thinning medicines can make bleeding more likely. If you have bleeding or clotting problems, or if you take blood-thinning medicine, tell the medical staffs before your blood sample is taken. If participants face any problems relating to this study during the data collection period, participants are advised to report it to the data collectors.

10. What if I am injured in this study?

The risks or side effects from blood taking are as stated above where else other procedures has no known risks or side effects. In the event of other unspecified discomfort, especially during biological specimen collection participants are advised to discuss with the study team to select their best date to complete the biological sample collection. Participants are advised to inform the study team in the case of illness or any other difficulties that occur on the three days. This is to assure that you are not imposed to illness directly resulting from this study.

However, if you are injured or ill directly from the study procedure required for this study, we will incur the cost for the necessary treatment. The study team is not responsible for medical expenses due to pre-existing medical conditions, any underlying diseases, any ongoing treatment process, and your negligence or willful misconduct.

11. What are the benefits of being in this survey?

There will be no direct health benefits if you take part in this survey. However, information obtained from this study will help the policy makers to plan towards improving health services and disease control program activity in this country.

If you are recruited for blood investigation, you will get information on your health status related to hepatitis B and C infections. Participation in this study provides extra information on the presence or absence of COVID-19 antibodies in your body, which will greatly help in determining subsequent disease control and clinical management for the Ministry of Health Malaysia.

- If you are found positive:
    - We will refer you to the nearest government health clinic or hospital for further treatment and management.
    - No cost will incur for any screening or treatment for you and your family members if you are Malaysian.

12. Who is funding this study?

This study is funded by research grant from the Ministry of Health Malaysia. Whichever procedure and treatment that is not required by this study but is part of participants' daily needs, it should be covered by participant or participant's insurance. We appreciate your time spent on this study. There are no monetary incentives for participating in this study but as a sign of appreciation, a health education token will be given to each participant who takes part in this study. If you participated in blood investigation, you will be compensated a total amount of RM 30 for your participation in the study, time spent and discomfort experience during blood taking.

13. Can the study or my participation be terminated early?

Your participation in this study is voluntary and no termination will be applied unless you are known to have any non-eligibility criteria after study recruitment.

14. Will my study information be kept private?

All your information obtained in this study will be kept and handled in a confidential manner, in accordance with applicable laws and/or regulations. Your identity as a participant in the study is strictly confidential. All information available in the study records will always be kept confidential and used only for research purposes. When publishing or presenting the study results, your identity will not be revealed without your expressed consent. Individuals involved in this study and in your medical care, qualified monitors and auditors, the sponsor or its affiliates and governmental or regulatory authorities may inspect and copy your medical records, where appropriate and necessary. Only you and the study team involved will gain all the result and it will be distributed in a confidential manner. If you participated in blood investigation, we will inform you the results of the respective testing using a standardized format after the study is completed. You will only be given your own results and not results from other participants.

15. Who should I call if I have questions?

If you have any enquiries about this study or if you want further information, please contact Principal Investigator, Mohd Hatta Bin Abdul Mutalip, or Co-Investigator, Dr. Noor Aliza Lodz, or Principal Investigator Seroprevalence COVID-19; Dr. Chong Zhuo Lin from Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia, No 1, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam 40170, Shah Alam, Selangor at **03-3362 8793.**

If you have any questions regarding your rights as a patient in this survey, please contact:

Medical Research & Ethics Committee,
Ministry of Health Malaysia,
Kompleks Institut Kesihatan Negara (NIH),
No 1, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam,
Selangor.

ANNEX C: LIST OF RESEARCH TEAM MEMBERS

DENGUE PREVENTION MODULE

1. Noorlaile Jasman **(Key Module)**
2. Siti Nur Farhana Harun
3. Kamarul Zaman Salleh (Data Analyst)
4. Albeny ak Joslyn Panting
5. Dr. Rahmat Dapari
6. Ruffina Dalis Jimen
7. Dr. Normawati Ahmad
8. Abu Bakar Rahman
9. Norrafizah Jaafar
10. Mohd Hairmanshah Mohd Shah

DOG-MEDIATED ZOONOTIC DISEASES MODULE

1. Teresa Yong Sui Mien **(Key Module)**
2. Nor Hayati Ahmad Sanusi
3. Albeny ak Josyln Panting
4. Dr. Mohammad Zabri Johari
5. Komathi Perialathan
6. Masitah Ahmad
7. Nurashma Juatan
8. Mohamad Fuad Mohamad Anuar (Data Analyst)
9. Zamtira Seman (Data Analyst)
10. Dr. Rohani Jahis
11. Prof. Dr. Latiffah Hassan
12. Dr. Rozanah Asmah Abd Samad
13. Dr. Norita Samsuddin
14. Dr. Yap Siew Lee
15. Dr. Siti Hafizah Mohd Salleh

SECRETARIAT CAB TEAM

1. Albeny Joslyn Panting
   (Principal Investigator CAB Module)
2. Rosnani Kassim
3. Nadia Amirudin
4. Norbaidurah Ithnain

List of Research Officers in CAB Team

1. Gayathri Selvaraju
2. Khairul Amar Musa
3. Maryam Pisol
4. Mohd Fairuz Danik
5. Nur Izzati Norshamsul
6. Nur Nadirah Ismail
7. Siti Nur Nabilah Mohd Yunus
8. Siti Sara Mat Lazim
9. Wan Nurul Syafinaz Ahmad Zubir
10. Zafirah Muhd

Research Team Members

Research team members were established for each topic under the NHMS 2020, with a Chairperson (Principal Investigator) and head of module (for every module). The research team was responsible for the technical input for the development of the manual to assist during data collection.

Term of Reference for NHMS 2020 Research Team Members

- Set appropriate objectives according to the needs of stakeholders.
- Provide ideas and opinions in creating survey questionnaire for research.
- Perform data analysis.
- Involve in the write up such as final reports, infographics, research highlights and fact sheet.

National Health & Morbidity Survey (NHMS) 2020

Institute For Public Health (IPH)
National Institutes of Health (NIH)
No.1, Jalan Setia Murni U13/52
Seksyen U13 Setia Alam
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