



KEMENTERIAN KESIHATAN MALAYSIA



KEMENTERIAN PENDIDIKAN MALAYSIA

NATIONAL HEALTH & MORBIDITY SURVEY 2022

ADOLESCENT HEALTH SURVEY 2022



WP KUALA LUMPUR

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LIST OF ABBREVIATIONS

AHS	Adolescent Health Survey
BOD	Burden of Disease
CDC	Centers for Disease Control and Prevention
GSHS	Global School-based Student Health survey
IPH	Institute for Public Health
NMRR	National Medical Research Register
UNICEF	United Nations Children’s Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNODC	United Nation Office on Drug and Crime
WHO	World Health Organization

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EXECUTIVE SUMMARY

The Adolescent Health Survey (AHS) 2022 was conducted from June to July 2022 with the aim of determining the prevalence of health risk behaviours and protective factors among adolescents in Malaysia. This nationwide cross-sectional survey used a two-stage stratified sampling design and a validated self-administered questionnaire. Out of 2798 secondary schools under the Ministry of Education (MOE) and the Ministry of Rural and Regional Development (MARA), 240 schools were randomly selected and a total of 37,479 students were eligible to participate in the survey. The findings showed that a total of 239 schools with 33,523 adolescents were involved in this study, resulting in an overall response rate of 89.0%. In WP Kuala Lumpur, 16 secondary schools were randomly selected, and out of 2338 eligible students, 2114 students completed the survey, yielding a response rate of 90.4%.

WP Kuala Lumpur Key Findings

The study revealed that the prevalence of current use of any tobacco products, current tobacco smokers, current cigarette smokers and current e-cig/vape users among adolescents in Kuala Lumpur was 17.4%, 8.7%, 5.6% and 14.9% respectively. The prevalence of current alcohol drinkers among adolescents was 7.3%. While the prevalence of ever-alcohol drinkers among adolescents in WP Kuala Lumpur was 22%, 68.9% of them had their first alcoholic beverage before the age of 14 years. The prevalence of ever having sex and had sex in the past 30 days among adolescents was 8.4% and 7.1%, respectively. Of those who ever had sex, 23.5% had their first sexual experience before age 14, and 6.8% had at least two sexual partners. Only 10.1% of respondents or their partners had used condoms, while 11.5% used other birth control methods. A total of 21.95% of adolescents had been seriously injured in the past 12 months, with the two most common causes of injury being falls and motor vehicle accidents. Among respondents, 18.8% claimed to have been physically attacked in the past 12 months, while 19% of adolescents claimed to have been involved in physical fights. With regards to bullying, 10.6% reported having been bullied in the past 30 days. A total of 18.4% of adolescents in Kuala Lumpur reported feeling lonely, and 16.0% reported being unable to sleep “most of the time or always” due to worry in the 12 months prior to the survey. Prevalence of suicidal ideation, plan and attempt were 18.0%, 12.2%, and 11.6%, respectively. Overall, 32.4% of adolescents reported being depressed. The prevalence of truancy among adolescents in the past 30 days was 24.7%, and only 49.6% claimed to have peer support. Adolescents who reported having parental or guardian supervision, parental or guardian connectedness and parental or guardian bonding were 8.8%, 23.8% and 34.5%, respectively. Overall, 78.9% of adolescents reported brushing their teeth twice a day in

the past 30 days. A total of 47.9% of adolescents reported not knowing whether their toothpaste contained fluoride while only 21.5% used dental floss. In the past 30 days, 73.4% always used soap when washing their hands, 82.2% always washed their hands before eating, and 87.5% reported that they always washed their hands after using the toilet. In relation to dietary behaviours, 2.9% reported being hungry most of the time or always in the past 30 days because there was not enough food at home. The consumption of fruits at least twice daily was 34.5% and vegetables at least thrice daily was 25.2% in the past 30 days. Consumption of carbonated drinks at least once daily in the past 30 days was reported at 30.53%, while 10.8% consumed food from fast food restaurants for at least three days in the past seven days. The prevalence of stunting and thinness among adolescents was 5.2% and 8.4%, respectively, while the prevalence of overweight was 15.2% and obesity was 15.4%. Prevalence of being physically active was 22.2% and 36.6% of adolescents reported active transportation to school. In addition, 72.8% of adolescents had spent at least three hours on a typical or usual day in sitting activities. Overall, 5.6% reported had ever used drug and the prevalence of current drug users was 2.4%.

Malaysia Key Findings

The study revealed that the prevalence of current use of any tobacco products, current tobacco smokers, current cigarette smokers and current e-cig/vape users among adolescents in Malaysia was 18.5%, 9.0%, 6.2% and 14.9% respectively. Among those who smoked cigarettes and among those who used e-cig/vape, 65.7% had initiated cigarette smoking, and 48.5% had initiated e-cig/vape use, respectively, before the age of 14 years. The prevalence of current alcohol drinkers among adolescents was 7.4%. While the prevalence of ever-alcohol drinkers among adolescents in Malaysia was 18.6%, 64.6% of them had their first alcoholic beverage before the age of 14 years.

The prevalence of ever having sex and had sex in the past 30 days among adolescents was 7.6% and 5.7%, respectively. Of those who ever had sex, 32.8% had their first sexual experience before age 14, and 10.7% had at least two sexual partners. Only 11.8% of respondents or their partners had used condoms, while 11.9% used other birth control methods. A total of 20.4% of adolescents had been seriously injured in the past 12 months, with the two most common causes of injury being falls and motor vehicle accidents. Among respondents, 14.8% claimed to have been physically attacked in the past 12 months, while 16.0% of adolescents claimed to have been involved in physical fights. With regards to bullying, 8.6% reported having been bullied in the past 30 days.

A total of 16.2% of adolescents in Malaysia reported feeling lonely, and 4.2% said that they had no close friends. A total of 12.9% reported being unable to sleep “most of the time or always” due to worry in the 12 months prior to the survey. Prevalence of suicidal ideation, plan and attempt were 13.1%, 10.0%, and 9.5%, respectively. Overall, 26.9% of adolescents reported being depressed. The prevalence of truancy among adolescents in the past 30 days was 25.6%, and only 46.0% claimed to have peer support. Adolescents who reported having parental or guardian supervision, parental or guardian connectedness and parental or guardian bonding were 9.9%, 24.2% and 33.4%, respectively. Overall, 82.2% of adolescents reported brushing their teeth twice a day in the past 30 days. A total of 43.3% of adolescents reported not knowing whether their toothpaste contained fluoride while only 21.4% used dental floss. In the past 30 days, 69.3% always used soap when washing their hands, 84.5% always washed their hands before eating, and 86.5% reported that they always washed their hands after using the toilet.

In relation to dietary behaviours, 2.5% reported being hungry most of the time or always in the past 30 days because there was not enough food at home. The consumption of fruits at least twice daily was 37.3% and vegetables at least thrice daily was 27.1% in the past 30 days. Consumption of carbonated drinks at least once daily in the past 30 days was reported at 32.4%, while 10.6% consumed food from fast food restaurants for at least three days in the past seven days. The prevalence of stunting and thinness among adolescents was 6.8% and 8.3%, respectively, while the prevalence of overweight was 16.2% and obesity was 14.3%. Prevalence of being physically active for a total of at least 60 minutes daily for five days or more in the past seven days was 21.4% and 27.0% of adolescents reported active transportation to school. In addition, 66.7% of adolescents had spent at least three hours on a typical or usual day in sitting activities.

Recommendations:

In view of the above findings, the following recommendations are suggested:

- Strengthening the multi-approach school-based nutrition and physical activity intervention to motivate behaviour modification for improving healthy eating and lifestyle amongst adolescents.
- Improving the national school curriculum that teaches life skills such as effective coping strategies as part of “Program Minda Sihat”.
- A more comprehensive sexual and reproductive health education programmes should be planned and executed among adolescents.
- Strengthening the current law and taking legal action in controlling the accessibility of tobacco products.

1.0 INTRODUCTION

Adolescence is a life phase in which the opportunities for health are great and future patterns of adult health are established; it is a critical stage in life with significant physical, emotional, cognitive, and social development and other disruptions in their communities.¹ As much as one-third of the global Burden of Disease (BOD) is attributable to adolescent behavioural choices and events.² In order to improve adolescent health globally, the World Health Organization (WHO) has initiated the development of the health risk behaviours measurement tools known as the Global School-based Student Health Survey (GSHS).³ More than 140 countries have used the GSHS to periodically monitor the prevalence of important health risk behaviours and protective factors among adolescents.⁴ In Malaysia, adolescents comprise approximately 15.6% of the total Malaysian population, and the national data on health risks and behaviours are fundamental in developing policies and programmes for adolescents. Thus, the Ministry of Health, Malaysia took a step forward in collaborating with the WHO to conduct the first GSHS Malaysia in 2012 among adolescents aged 13 to 17 years, which aimed to determine the baseline of the health status of adolescents in Malaysia.⁵ In 2017, the second adolescent health study (AHS) using the GSHS methods and questionnaire was conducted in the country.⁶ These surveys revealed an increasing trend of health risk behaviours among adolescents in Malaysia.^{5,6} With the increasing trend of non-communicable disease risk factors and other behaviour-related risks, it is timely for the survey to be repeated in 2022 to further monitor the health status of adolescents in the country. The Ministry of Health conducted this third national survey on adolescents with the co-operation from the Ministry of Education to determine the prevalence of health risk behaviours and protective factors among adolescents in Malaysia.

1.1 Objectives

1.1.1 General Objectives

To determine the prevalence of health risk behaviours and protective factors among adolescents in Malaysia.

1.1.2 Specific Objectives

To determine the prevalence of:

- i. Alcohol use
- ii. Dietary behaviours
- iii. Drug use
- iv. Hygiene (including oral health)
- v. Mental health problems
- vi. Physical activity
- vii. Protective factors
- viii. Sexual behaviours
- ix. Tobacco use
- x. Violence and unintentional injury
- xi. Adolescents' perspectives on the impact of the COVID-19 pandemic on their families

2.0 METHODOLOGY

2.1 Study Design

The National School-Based Student Health Survey 2022 was a nationwide cross-sectional study of secondary school adolescents in Malaysia.

2.2 Sampling Frame and Target Population

The sampling frame comprised national secondary schools registered in 2021, which include government schools and private schools under the purview of the Ministry of Education (MOE) and the Ministry of Rural and Regional Development (MARA). According to the frame, there were 2798 secondary schools in Malaysia (**Table 2.1**). An equal proportion was sampled from 13 States and three Federal Territories to represent adolescents in each State / Federal Territories. The target population was secondary school adolescents aged between 13 to 17 years studying in form 1 until form 5 based on the local school categorization.

2.3 Sample Size Calculation

The sample size was calculated based on the objectives of each module using the sample size calculation formula for a single proportion. The sample size calculation was based on a few criteria, as stated below:

$$n_0 = \frac{z_{\alpha/2} p(1-p)}{e^2}$$

Where:

- Variance of proportion of the variable of interest (Based on AHS 2017 survey)
- Margin of error (e) (Between 0.01 to 0.05)
- Confidence interval of 95%

To ensure optimum sample size to estimate the prevalence of the health conditions specified in the survey with acceptable precision, a few adjustments were made to the sample size calculation as follows:

- design effect (deff) of 2,
- nonresponse rates of 20%, and
- The sample size was then adjusted according to the need of the analysis, whether the estimates were going to be done at the national or the state level.

Thus, the final sample sizes for adolescents at national and state levels were 36,000 and 2250, respectively (**Table 2.1**)

Table 2.1: Distribution of secondary schools sampled, by state

No.	State / Federal Territories	Total Number of Schools	Number of Schools Sampled	Number of adolescents sampled
1	Johor	328	16	2250
2	Kedah	219	16	2250
3	Kelantan	189	16	2250
4	Melaka	88	16	2250
5	N. Sembilan	142	16	2250
6	Pahang	211	16	2250
7	Pulau Pinang	148	16	2250
8	Perak	276	16	2250
9	Perlis	33	16	2250
10	Selangor	380	16	2250
11	Terengganu	166	16	2250
12	Sabah	245	16	2250
13	Sarawak	214	16	2250
14	WP Kuala Lumpur	135	16	2250
15	WP Labuan	12	8	2250
16	WP Putrajaya	12	8	2250
Total		2798	240	36000

2.4 Sampling Design

The country was stratified according to the 16 states, including federal territories, for the sampling. A multistage stratified cluster sampling method was used, and it involved two stages. The first stage was the selection of secondary schools from all eligible schools in Malaysia. Subsequently, the 240 schools were selected randomly with probability proportional to enrolment (PPS) in forms 1, 2, 3, 4, and 5. In each state, 16 secondary schools were selected, except for 2 smaller federal territories (Labuan, Putrajaya - 8 schools each) (**Table 2.1**). The second stage involved the selection of classes (secondary sampling units). All classes in forms 1, 2, 3, 4, and 5 were included in the sampling frame. Systematic probability sampling with a random start was used to select classes from each selected school. All adolescents in the selected classes were invited to involve in the survey.

2.5 Ethical Approval and Consent Forms

Ethical approval was obtained from the Medical and Research Ethics Committee (MREC), Ministry of Health, Malaysian (NMRR-21-157-58261). The permission to conduct the study was obtained from the Ministry of Education at the national, state and school levels. Only consented adolescents with consented parents were included in the study. Their participation in the study was voluntary.

2.6 Study Instrument

A validated self-administered questionnaire was used for data collection in NHMS 2022. The questionnaires were translated into the Malay, Chinese and Tamil languages and back-translated to English to ensure the quality of the translation. The questionnaires were then field-tested, revised, finalised, and approved by the NHMS 2022 Questionnaire Review Committee. The questionnaire consisted of 10 core modules and 1 additional module, which included the following topics:

- Alcohol use
- Dietary behaviours
- Drug use
- Hygiene (including oral health)
- Mental health problems
- Physical activity
- Protective factors
- Sexual behaviours
- Tobacco use
- Violence and unintentional injury
- Adolescents' perspectives on the impact of the COVID-19 pandemic on their families

2.7 Data Collection

This cross-sectional survey was conducted from June to July 2022 among adolescents in forms 1, 2, 3, 4, and 5 across Malaysia by 34 data collection teams: two teams for each state in Peninsular Malaysia, including Labuan and three teams for Sabah and Sarawak. Each state was assigned a field supervisor to oversee survey activities. A one-week training workshop was conducted for the field supervisor and 133 temporary data collectors before data collection. After completing the training, the assigned field supervisor and data collection teams travelled to their respective sites to conduct the survey at the selected schools. The adolescents answered the questionnaires on the optical mark recognition (OMR) answer sheet. The team leader verified the OMR sheets before posting them to Institute for Public Health (IPH).

2.8 Quality Control

Quality control of the whole survey was done at various stages. During the planning stage, quality was ensured through a robust survey design, validated questionnaires and tools, manuals, and standardised training. In the field, the team leader and field supervisor checked the quality of the data collected. At the same time, members of the Central Coordinating Team (CCT) at IPH monitored data collection progress and conducted data quality control on a weekly basis. Figure 1 detailed the organization chart at Institute for Public Health level.

2.9 Data Processing and Quality Centre

All data processing and quality activities were centralised at IPH, starting from receiving the OMR bundles from the field until the handover of the dataset to the data analysis team. Four stations were set up at this Centre to ensure the activity ran smoothly (Figure 2).

2.10 Data Analysis

SPSS version 26.0 was used for data analysis. The data was examined for quality control and cleaned for any inconsistencies. Analysis was done according to objectives, working definition and dummy tables prepared by each research team. A complex sample analysis procedure was performed with a 95% confidence interval. Prevalence and percentages were used to illustrate the findings of each scope.

2.11 References

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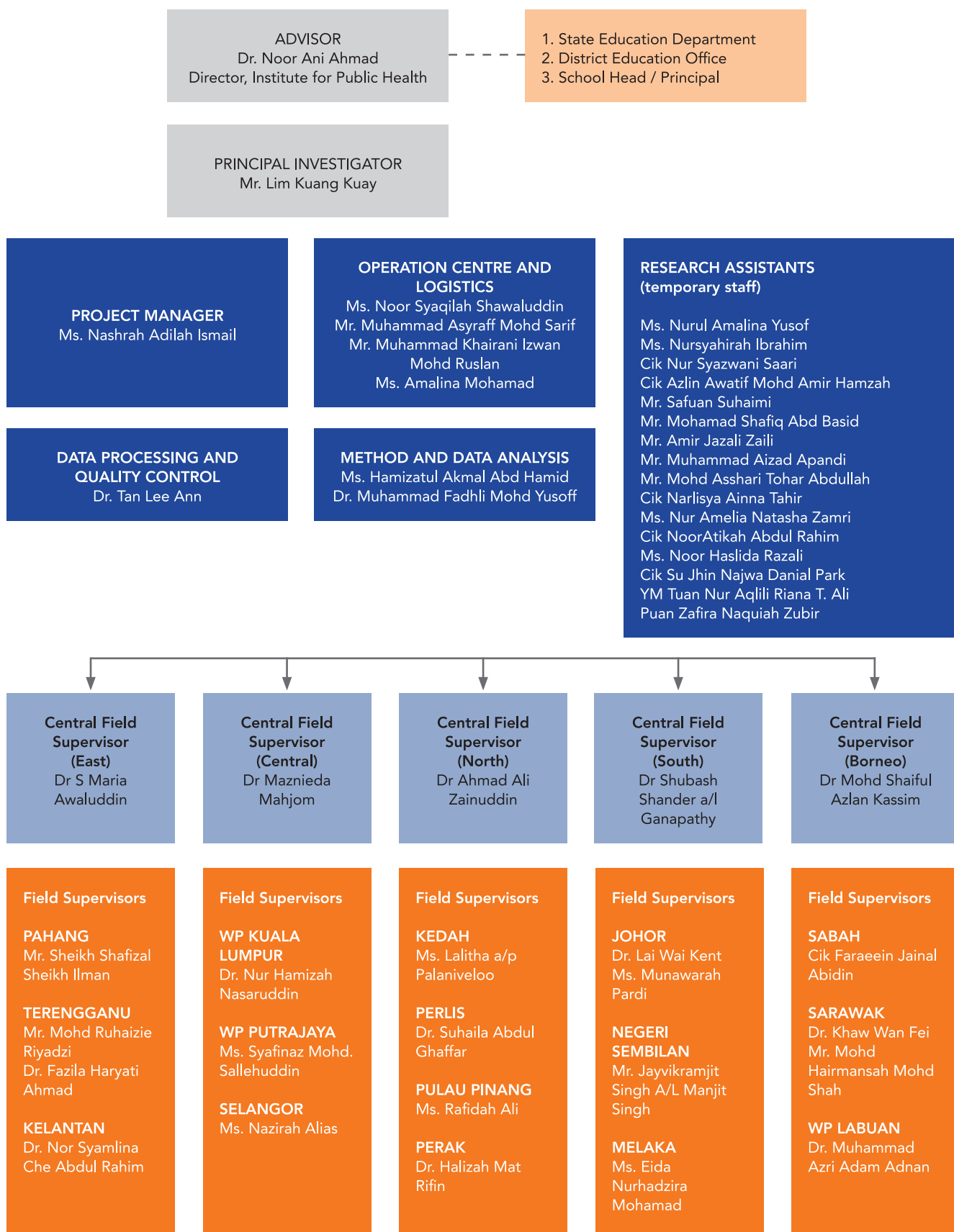


Figure 1: Organisation chart for data collection team NHMS 2022

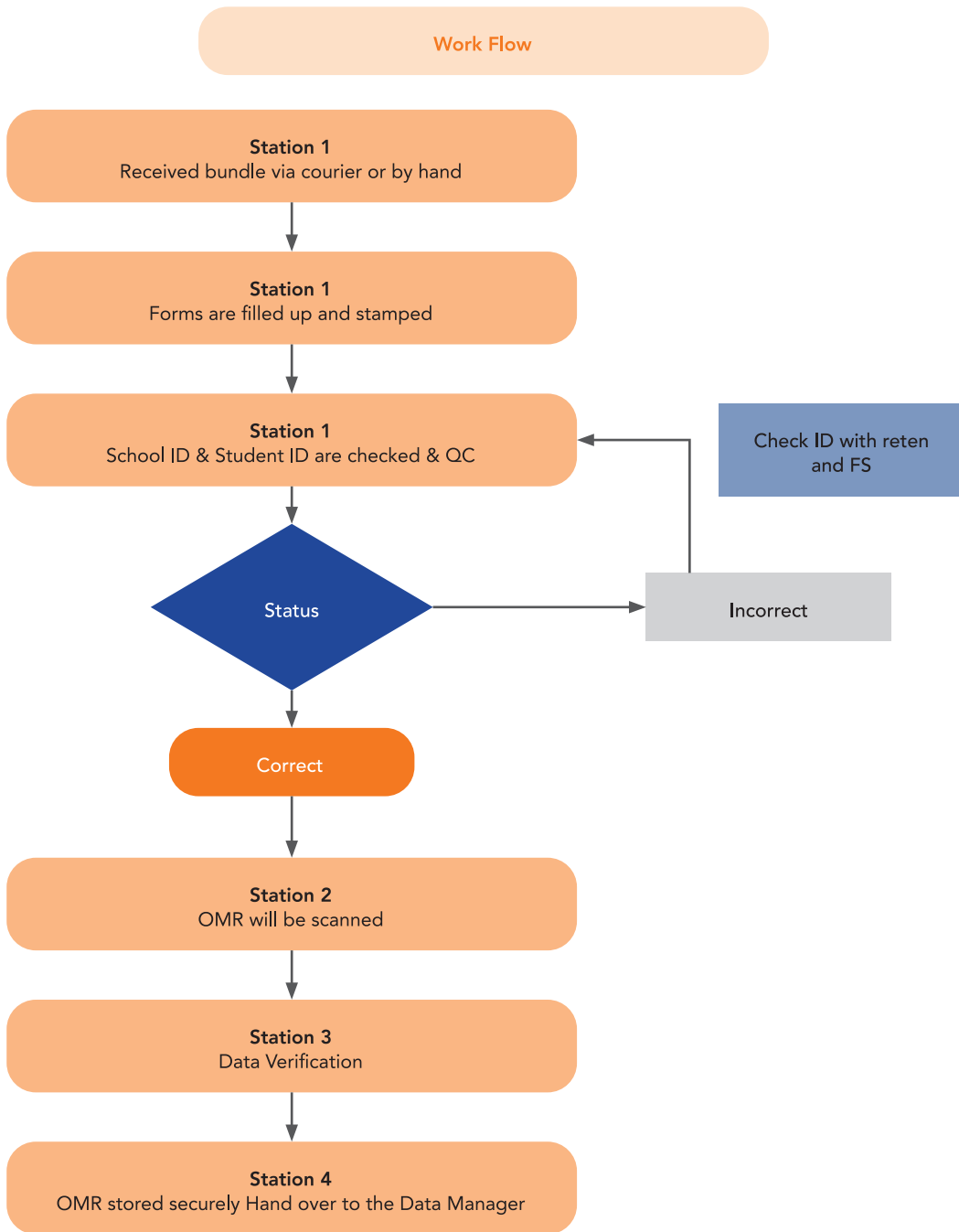


Figure 2: Workflow of Data Processing NHMS 2022

3.0 FINDINGS

3.1 General Findings

Overall, 239 out of 240 schools participated in the survey, resulting in a 99.6% school response rate. The response rate for classes was 100% and the student's response rate was 89.4% (n=33,523). Thus, the overall response rate was 89.0%. Based on the state, the highest number of adolescents who participated in the survey were from Terengganu (95.9%), and the lowest was WP Putrajaya (83.4%) (Table 3.1.1). The geographic information system (GIS) on the mapping of selected secondary schools is shown in Figure 3.

Table 3.1.1: Response rate at student level, by state, 2022

State	Selected Schools	Eligible Adolescents	Completed OMR forms	Response Rate (%)
Johor	16	2336	2005	85.83
Kedah	16	2312	2172	93.94
Kelantan	16	2368	2138	90.29
Melaka	16	2373	1986	83.69
N. Sembilan	16	2422	2210	91.25
Pahang	16	2382	2171	91.14
Pulau Pinang	16	2300	2044	88.87
Perak	16	2384	2126	89.18
Perlis	16	2160	2004	92.78
Selangor	16	2366	2048	86.56
Terengganu	16	2314	2219	95.89
Sabah	16	2342	2086	89.07
Sarawak	16	2442	2189	89.64
WP Kuala Lumpur	16	2338	2114	90.42
WP Labuan	8	2267	2033	89.68
WP Putrajaya	8	2373	1978	83.35
Total	240	37479	33523	89.44

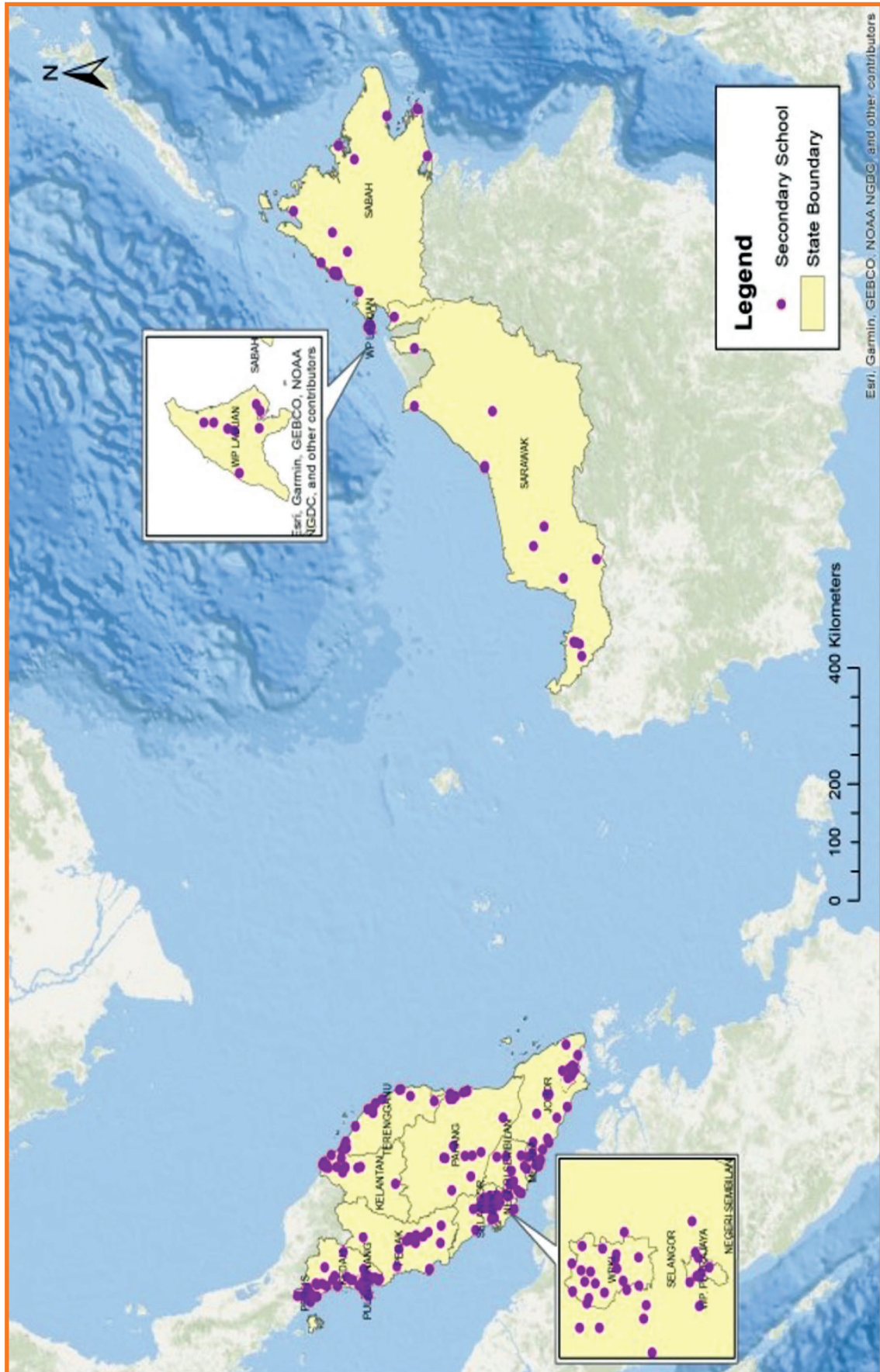


Figure 3: GIS mapping of the selected secondary schools

3.2 Alcohol Consumption

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3.2.1 Introduction

Annually, the harmful use of alcohol results in approximately 3 million deaths worldwide¹. Alcohol is responsible for 5.1% of the global burden of disease and injury, as measured by disability-adjusted life years (DALYs)¹. It is the main cause of premature death and disability in individuals aged 15 to 49, accounting for 10% of all deaths in this age group².

3.2.2 Objectives

- i. To determine the prevalence of ever and current drinkers among adolescents
- ii. To describe the socio-demographic characteristics of ever and current drinkers among adolescents
- iii. To identify the age of alcohol drinking initiation among adolescents
- iv. To identify the sources of obtaining alcoholic beverages among adolescents
- v. To identify the prevalence of drunkenness among adolescents who consume alcohol
- vi. To determine the frequency of social problems related to alcohol consumption among adolescents

3.2.3 Variable definitions

- **Drinking alcohol:** A “drink” is a glass of wine, tuak, lihing, bahar, ijuk or toddy; a can of beer, a small glass of liquor’ or mixed drink. Drinking alcohol does not include drinking a few sips of wine for religious purposes.
- **Ever drinkers:** Those who had a history of alcohol consumption in their lifetime.
- **Current drinkers:** Those who had at least a “drink” of alcohol in the past 30 days.
- **Drunkenness:** When someone demonstrates signs such as staggering when walking, not being able to speak right and throwing up after consuming alcohol in a lifetime.
- **Social problems:** Having trouble with family or friends, missed school or got into fights as a result of drinking alcohol in a lifetime.

3.2.4 Findings

Ever Alcohol Drinkers

The prevalence of ever alcohol drinkers among adolescents in WP Kuala Lumpur was 22.0% (95% CI: 13.63, 33.47). Males had a higher prevalence at 23.6% (95% CI: 13.69, 37.56) compared to females of 20.4% (95% CI: 11.82, 32.79). (Table 3.2.1)

Current Alcohol Drinkers

The prevalence of current alcohol drinkers among adolescents in WP Kuala Lumpur was 7.3% (95% CI: 4.54, 11.45) where males had a higher prevalence of 7.4% (95% CI: 4.34, 12.48) compared to females of 7.1% (95% CI: 3.88, 12.64). (Table 3.2.2)

Initiation of First Alcohol Use Before 14 years old

Among ever alcohol drinkers, 68.9% had their first alcoholic beverage before the age of 14 years. (Table 3.2.3)

Sources of Obtaining Alcoholic Beverages Among Current Alcohol Drinkers

Among current alcohol drinkers, 66.2% of adolescents obtained their alcoholic beverages from their family. (Table 3.2.4)

Social Problems as a Result of Alcohol Drinking

Overall, the majority (87.2%) of the adolescents did not get into trouble with family or friends, missed school or got into a fight as a result of drinking alcohol among ever alcohol drinkers. (Table 3.2.5)

Parental and peer drinking

Parental drinking among current alcohol drinkers in WP Kuala Lumpur was 76.4%, while peer drinking was 86.3%.

Drunkenness

Among ever alcohol drinkers, only 22.9% reported drunkenness.

3.2.5 Discussion / Conclusion

According to this study, 68.9% of adolescents drank alcohol for the first time before turning 14 years old and this figure remained high. As in the other states, family members remained the primary source of acquiring alcoholic beverages. Majority of the adolescents did not get into trouble with family or friends, missed school or got into a fight as a result of drinking alcohol. The percentage of peer drinking among the current drinkers in WP Kuala Lumpur was quite high compared to other states which stood at 87.8%.

3.2.6 Recommendations

Given that adolescence is the age when adult habits and social standards are formed, it is essential to look into the issue of adolescent drinking. The detrimental effects of alcohol drinking at a young age should be made clear to parents and other caregivers through mass media. Enhance school-based prevention programmes in school with high rates of alcohol consumption to enable teachers to assess pupils for alcohol consumption and launch early intervention for such adolescents.

3.2.7 References

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Table 3.2.1: Prevalence of ever alcohol drinkers among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	483	22935	22.0	13.63	33.47
Sex					
Male	244	12279	23.6	13.69	37.56
Female	239	10656	20.4	11.82	32.79
Form					
Form 1	75	3993	17.7	10.10	29.29
Form 2	62	3747	16.9	9.60	27.93
Form 3	82	-	-	-	-
Form 4	122	5008	25.1	13.96	40.93
Form 5	142	6196	33.0	20.08	49.07
Ethnicity					
Malay	58	2862	4.5	3.35	6.16
Chinese	379	17778	58.4	50.83	65.66
Indian	24	1163	15.4	10.81	21.55
Bumiputera Sabah	8	-	-	-	-
Bumiputera Sarawak	4	-	-	-	-
Others	10	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.2.2: Prevalence of current alcohol drinkers among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	164	7586	7.3	4.54	11.45
Sex					
Male	81	3873	7.4	4.34	12.48
Female	83	3714	7.1	3.88	12.64
Form					
Form 1	27	-	-	-	-
Form 2	22	-	-	-	-
Form 3	21	-	-	-	-
Form 4	46	1853	9.3	5.41	15.49
Form 5	48	2087	11.1	6.22	19.05
Ethnicity					
Malay	20	939	1.5	0.99	2.24
Chinese	133	6154	20.2	16.71	24.27
Indian	7	-	-	-	-
Bumiputera Sabah	1	-	-	-	-
Bumiputera Sarawak	0	-	-	-	-
Others	3	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.2.3: Proportion of ever alcohol drinkers according to alcohol initiation age among adolescents in WP Kuala Lumpur, 2022

Initiation age of alcohol drinking	Unweighted count	Percentage (%)
Below 14 years old	292	68.9
14 years old and above	143	31.1

Table 3.2.4: Usual sources of obtaining alcohol in the past 30 days among current drinkers among adolescents in WP Kuala Lumpur, 2022

Sources of obtaining alcohol	Unweighted count	Percentage (%)
I bought from a store, shop or from a street vendor	25	-
I gave someone else money to buy it for me	6	-
I got it from my friend	9	-
I got it from my family	102	66.2
I stole it or got it without permission	2	-
I got it some other way	9	-

- Prevalence with high RSE, not reported

Table 3.2.5: Number of times (got into trouble with family or friends, missed school or got into a fight as a result of drinking alcohol) among ever alcohol drinkers (proportion) among adolescents in WP Kuala Lumpur, 2022

Number of times	Unweighted count	Percentage (%)
0 times	423	87.2
1 to 2 times	44	-
3 to 9 times	8	-
10 or more times	8	-

- Prevalence with high RSE, not reported

3.3 Dietary Behaviours

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3.3.1 Introduction

The changes in dietary practices are required across all age ranges, but adolescence should be a focus of particular attention because the changes in lifestyle and the development of dietary habits during that stage of life have striking effects¹. Poor dietary intake during this life stage is closely related to overweight and obesity, and unhealthy eating practices which lead to detrimental health effects later in life². Therefore, a study was conducted to examine dietary practices with regards to fruit and vegetable intakes, carbonated drinks, plain water, milk and milk products intake and fast-food consumption among adolescents in WP Kuala Lumpur. Establishing and consuming a nutrient-dense diet during the transition from adolescence into young adulthood may protect against future chronic diseases, promote optimal health outcomes and to prevent excess weight gain³.

3.3.2 Objectives

- i. To describe the prevalence of adolescents who had gone hungry in the past 30 days
- ii. To describe the prevalence of fruit intakes of at least twice daily in the past 30 days among adolescents
- iii. To identify the prevalence of vegetable consumption of at least three times daily in the past 30 days
- iv. To identify the prevalence of fruit and vegetables consumption of at least five times daily in the past 30 days
- v. To describe the prevalence of carbonated drink intake of at least once a day in the past 30 days
- vi. To describe the prevalence of plain water intake of less than 6 glasses per day in the past 30 days
- vii. To identify the prevalence of milk and milk product intakes of at least two times daily in the past 30 days
- viii. To identify the prevalence of fast-food consumption of at least three days in the past 7 days

3.3.3 Variable definitions

- **Gone Hungry:** Adolescents who had gone hungry most of the time or always because there was not enough food at home for the past 30 days, or living without financial means to access enough food for active and healthy living.
- **Fruit intakes:** Fruits intake of at least twice daily in the past 30 days, inclusive all types of fruits.
- **Vegetable intakes:** Vegetable intakes of at least three times daily in the past 30 days.
- **Plain water intake:** Includes mineral water, boiled water or tap water

- **Carbonated drinks intake:** carbonated drinks consumption of at least once daily in the past 30 days.
- **Dairy product intake:** milk and milk product intakes at least two times daily in the past 30 days.
- **Fast food intake:** Consuming food from fast food outlets at least three days in the past seven days.

3.3.4 Findings

Gone hungry

About 2.9% (95% CI: 2.13, 4.00) of adolescents reported being hungry most of the time or always because there was not enough food at home in the past 30 days (**Table 3.3.1**). Prevalence of being hungry was higher among females (3.6%, 95% CI: 2.35, 5.49) as compared to male counterparts (2.2%, 95% CI: 1.47, 3.40).

Fruit consumption

A total of 34.5% (95% CI: 30.74, 38.41) of adolescents consumed fruit at least twice daily in the past 30 days (**Table 3.3.2**). Female (34.6%, 95% CI: 29.99, 39.57) reported higher fruit intake than males (34.3%, 95% CI: 28.72, 40.40).

Vegetable consumption

About 25.2% (95% CI: 23.32, 27.10) of adolescents consumed vegetables at least three times daily in the past 30 days (**Table 3.3.3**). Males reported significantly higher vegetable intake (25.9%, 95% CI: 23.72, 28.28) compared to females (24.4%, 95% CI: 21.74, 27.25).

Fruits and vegetables intake

About 14.4% (95% CI: 12.77, 16.31) of adolescents consumed fruits and vegetables at least five times daily in the past 30 days (**Table 3.3.4**). Females (15.0%, 95% CI: 12.49, 17.85) reported significantly higher consumption of fruits and vegetables than males (13.9%, 95% CI: 11.57, 16.66).

Never consume fruit

About 8.6% (95% CI: 6.95, 10.52) of adolescents reported never consume fruit in the past 30 days (**Table 3.3.5**). Prevalence of never consume fruit was 10.1% (95% CI: 8.05, 12.64) among males and 7.0% (95% CI: 5.72, 8.63) among females.

Never Consume Vegetable

About 9.2% (95% CI: 7.10, 11.80) of adolescents never consume vegetable in the past 30 days (**Table 3.3.5**). Prevalence of never consume vegetable was 9.9% (95% CI: 7.73, 12.68) among males and 8.4% (95% CI: 6.15, 11.48) among females.

Never Consume Fruit and Vegetable

A total of 2.3% (95% CI: 1.56, 3.40) of adolescents never consume fruit and vegetable in the past 30 days (**Table 3.3.5**). Prevalence of never consume fruit and vegetable was 2.8% (95% CI: 1.84, 4.33) among males and 1.8% (95% CI: 0.94, 3.36) among females.

Carbonated soft drinks intake

Overall, 30.53% (95% CI: 25.09, 35.56) of adolescents consumed carbonated soft drinks at least once daily in the past 30 days (Table 3.3.6). Males (33.52%, 95% CI: 26.48, 41.39) consumed carbonated soft drinks more frequently than females (27.55%, 95% CI: 22.76, 32.92).

Plain water intake

About 42.4% (95% CI: 38.71, 46.09) adolescents drank plain water less than six glasses per day in the past 30 days (Table 3.3.7). The prevalence of plain water intake of less than six glasses per day among females (50.4%, 95% CI: 45.67, 55.14) was significantly higher than males (34.3%, 95% CI: 29.84, 38.95).

Milk and milk products intake

About 26.0% (95% CI: 23.25, 28.96) of adolescents consumed milk/milk products at least two times per day in the past 30 days (Table 3.3.8). Findings showed that the prevalence of milk/milk products consumption among females (26.5%, 95% CI: 22.72, 30.60) was slightly higher compared to males (25.5%, 95% CI: 22.11, 29.27).

Fast food intake

About 10.8% (95% CI: 8.82, 13.24) of adolescents consumed fast food at least three days in the past seven days (Table 3.3.9). The prevalence of fast-food intake was significantly higher among males (11.9%, 95% CI: 9.23, 15.20) compared to females (9.8%, 95% CI: 7.84, 12.13).

3.3.5 Discussions / Conclusion

There were 2.9% of adolescents who reported being hungry due to lack of food at homes. Prevalence of adolescents reported consuming fruits at least twice daily and vegetables at least three times daily was 34.5% and 25.2%, respectively. However, only 14.4% of them consumed fruits and vegetables five times daily. About 42.4% of adolescents reported drinking plain water less than 6 glasses and 26.0% consumed milk/milk products at least two times daily. The consumption of carbonated soft drinks of at least once daily in the past 30 days was reported at 30.5% while 10.8% consumed food from fast food restaurants for at least three days in the past seven days.

3.3.6 Recommendations

The research finding shows that there is a crucial need to alter the behaviours of WP Kuala Lumpur adolescents in order to prepare them for healthier adulthood. Poor dietary behaviours developed during adolescence may lead to diet related diseases in later years. Behaviour modification is the key recommendation suggested for improving healthy eating and lifestyle. It is necessary to improve dietary behaviour by encouraging them to consume nutritious foods such as fruits, vegetables, milk and milk products. This may be achieved through strengthening school-based nutrition interventions, using social marketing approach and mobilising families and communities into support. It

is crucial to extend school-based nutrition intervention programmes, such as *Program Hidangan Berkhasiat di Sekolah* (HiTS) to all schools. Aggressive promotion of healthy foods and the benefits of eating it should be made in all platforms, including social media. Intersectoral collaboration through various sectors is essential for the implementation of these strategies, so that nutrition programmes could be incorporated into their policies and improve access and availability of healthy foods in schools, food premises and the community.

Table: Dietary behaviour trend among adolescents in WP Kuala Lumpur

	NHMS 2012	NHMS 2017	NHMS 2022
Most of the time or always went hungry	6.9	5.7	2.9
Fruits intake of at least twice daily	42.4	35.4	34.5
Vegetables intake of at least three times daily	27.2	28.7	25.2
Fruits and vegetables intake of at least five times daily	26.0	15.7	14.4
Carbonated soft drinks consumption at least once daily	30.0	31.9	30.53
Milk/milk products intake of at least two times daily	Not reported	30.0	26.0
Fast food intake of at least three days in the past seven days	7.2	12.4	10.8

3.3.7 References

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Table 3.3.1: Prevalence of adolescents in WP Kuala Lumpur who most of the time or always went hungry in the past 30 days because there was not enough food in his/her home, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	63	3065	2.9	2.13	4.00
Sex					
Male	21	1170	2.2	1.47	3.40
Female	42	1895	3.6	2.35	5.49
Form					
Form 1	6	-	-	-	-
Form 2	13	730	3.3	2.06	5.20
Form 3	15	-	-	-	-
Form 4	12	-	-	-	-
Form 5	17	703	3.7	2.15	6.43
Ethnicity					
Malay	41	1923	3.1	1.97	4.71
Chinese	12	-	-	-	-
Indian	8	-	-	-	-
Bumiputera Sabah	1	-	-	-	-
Bumiputera Sarawak	0	-	-	-	-
Others	1	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.3.2: Prevalence of fruit intake of at least twice daily in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	712	36102	34.5	30.74	38.41
Sex					
Male	330	17897	34.3	28.72	40.40
Female	382	18204	34.6	29.99	39.57
Form					
Form 1	176	9624	42.8	36.45	49.33
Form 2	140	8264	37.2	30.28	44.69
Form 3	128	6408	30.3	24.36	36.93
Form 4	156	6984	34.8	27.82	42.58
Form 5	112	4821	25.7	20.63	31.43
Ethnicity					
Malay	458	23733	37.7	34.67	40.88
Chinese	161	7864	25.6	20.39	31.63
Indian	64	3077	40.3	33.24	47.86
Bumiputera Sabah	12	561	46.8	24.86	70.12
Bumiputera Sarawak	3	-	-	-	-
Others	14	693	38.7	18.25	64.02

- Prevalence with high RSE, not reported

Table 3.3.3: Prevalence of vegetables intake of at least three times daily in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	525	26349	25.2	23.32	27.10
Sex					
Male	252	13523	25.9	23.72	28.28
Female	273	12825	24.4	21.74	27.25
Form					
Form 1	111	5962	26.5	22.21	31.28
Form 2	106	6219	28.0	23.62	32.83
Form 3	92	4653	22.0	17.49	27.25
Form 4	125	5458	27.2	22.67	32.31
Form 5	91	4056	21.6	18.10	25.53
Ethnicity					
Malay	282	14434	22.9	20.18	25.96
Chinese	188	9200	30.0	27.30	32.76
Indian	41	2030	26.6	20.48	33.80
Bumiputera Sabah	0	-	-	-	-
Bumiputera Sarawak	3	-	-	-	-
Others	11	549	30.7	18.74	45.87

- Prevalence with high RSE, not reported

Table 3.3.4: Prevalence of fruits and vegetables intake of at least five times daily in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	302	15147	14.4	12.77	16.31
Sex					
Male	136	7270	13.9	11.57	16.66
Female	166	7877	15.0	12.49	17.85
Form					
Form 1	72	3879	17.2	13.14	22.29
Form 2	59	3395	15.3	10.20	22.27
Form 3	51	2546	12.0	8.91	15.93
Form 4	72	3238	16.1	12.00	21.32
Form 5	48	2090	11.1	8.48	14.45
Ethnicity					
Malay	170	8681	13.8	11.94	15.86
Chinese	97	4829	15.7	11.93	20.41
Indian	26	1205	15.8	10.81	22.52
Bumiputera Sabah	0	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	8	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.3.5: Prevalence of adolescents who did not consume fruit, vegetable or both in the past 30 days in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Never consume fruit				Never consume vegetable				Never consume fruit and vegetable			
	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper
WP KUALA LUMPUR	179	8974	8.6	6.95 10.52	192	9617	9.2	7.10 11.80	48	2416	2.3	1.56 3.40
Sex												
Male	100	5275	10.1	8.05 12.64	98	5180	9.9	7.73 12.68	28	1477	2.8	1.84 4.33
Female	79	3699	7.0	5.72 8.63	94	4437	8.4	6.15 11.48	20	939	1.8	0.94 3.36
Form												
Form 1	31	1685	7.5	5.13 10.80	47	2465	11.0	8.32 14.30	10	527	2.3	1.29 4.22
Form 2	37	2156	9.7	7.12 13.09	30	1749	7.9	5.62 10.92	5	-	-	-
Form 3	24	1306	6.2	3.76 9.96	37	1917	9.1	5.69 14.11	7	-	-	-
Form 4	43	1898	9.5	6.67 13.28	43	1964	9.8	6.59 14.33	13	-	-	-
Form 5	44	1929	10.3	7.22 14.40	35	1522	8.1	5.40 11.98	13	-	-	-
Ethnicity												
Malay	134	6762	10.7	8.97 12.84	158	7920	12.6	10.92 14.48	40	2033	3.2	2.19 4.75
Chinese	29	1418	4.6	3.27 6.49	16	-	-	-	4	-	-	-
Indian	13	640	8.4	6.09 11.46	12	593	7.8	4.65 12.70	4	-	-	-
Bumiputera Sabah	2	-	-	-	4	213	17.8	10.63 28.17	0	-	-	-
Bumiputera Sarawak	1	-	-	-	1	-	-	-	0	-	-	-
Others	0	-	-	-	1	-	-	-	0	-	-	-

- Prevalence with high RSE, not reported

Table 3.3.6: Prevalence of carbonated soft drinks intake of at least once a day in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	631	31949	30.53	25.09	36.56
Sex					
Male	326	17462	33.52	26.48	41.39
Female	305	14487	27.55	22.76	32.92
Form					
Form 1	154	8267	36.74	29.42	44.72
Form 2	118	6849	30.83	23.92	38.71
Form 3	113	5849	27.63	21.48	34.77
Form 4	134	6062	30.32	21.81	40.44
Form 5	112	4922	26.20	18.86	35.15
Ethnicity					
Malay	428	22030	35.05	29.65	40.86
Chinese	126	6132	19.97	13.84	27.92
Indian	49	2410	31.58	21.20	44.20
Bumiputera Sabah	15	726	60.56	47.25	72.47
Bumiputera Sarawak	3	-	-	-	-
Others	10	498	27.76	13.94	47.70

- Prevalence with high RSE, not reported

Table 3.3.7: Prevalence of plain water intake of less than 6 glasses per day in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	910	44342	42.4	38.71	46.09
Sex					
Male	339	17860	34.3	29.84	38.95
Female	571	26481	50.4	45.67	55.14
Form					
Form 1	175	9249	41.1	34.64	47.89
Form 2	166	9341	42.0	37.20	47.05
Form 3	175	8737	41.3	35.32	47.51
Form 4	212	9323	46.6	39.21	54.17
Form 5	182	7690	40.9	36.18	45.85
Ethnicity					
Malay	550	27212	43.3	38.27	48.38
Chinese	256	12063	39.3	35.69	43.11
Indian	72	3510	46.0	38.03	54.20
Bumiputera Sabah	12	548	45.8	28.60	63.98
Bumiputera Sarawak	4	-	-	-	-
Others	16	823	45.9	30.94	61.66

- Prevalence with high RSE, not reported

Table 3.3.8: Prevalence of milk and milk products intake of at least two servings per day in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	543	27229	26.0	23.25	28.96
Sex					
Male	245	13310	25.5	22.11	29.27
Female	298	13919	26.5	22.72	30.60
Form					
Form 1	113	6173	27.4	23.50	31.75
Form 2	103	5969	26.9	21.13	33.50
Form 3	95	4850	22.9	19.25	27.04
Form 4	137	6021	30.0	24.37	36.38
Form 5	95	4215	22.4	18.18	27.35
Ethnicity					
Malay	359	18186	28.9	26.91	30.99
Chinese	112	5610	18.3	14.94	22.14
Indian	48	2258	29.6	23.07	37.09
Bumiputera Sabah	7	334	27.9	19.64	37.98
Bumiputera Sarawak	3	-	-	-	-
Others	14	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.3.9: Prevalence of fast-food intake of at least three days in the past 7 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	229	11341	10.8	8.82	13.24
Sex					
Male	118	6202	11.9	9.23	15.20
Female	111	5140	9.8	7.84	12.13
Form					
Form 1	47	2591	11.5	7.92	16.45
Form 2	40	2384	10.7	7.63	14.89
Form 3	30	1586	7.5	4.86	11.39
Form 4	65	2757	13.8	10.30	18.14
Form 5	47	2024	10.8	6.98	16.26
Ethnicity					
Malay	156	7807	12.4	10.67	14.39
Chinese	40	1940	6.3	4.27	9.25
Indian	24	1174	15.4	8.75	25.65
Bumiputera Sabah	3	-	-	-	-
Bumiputera Sarawak	2	-	-	-	-
Others	4	-	-	-	-

- Prevalence with high RSE, not reported

3.4 Nutritional Status

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3.4.1 Introduction

Adolescence is a unique phase of human development for individuals between the ages of 10 and 19 years old, as it caters to rapid growth, as well as sexual and behavioural changes. Good nutrition during adolescence is critical to address current nutritional needs and to fill nutrient gaps that have occurred during childhood¹. The nutritional status of adolescents is assessed using anthropometric measurements (weight and height) and interpreted using WHO 2007 Growth Reference Data for 5-19 years². The indicators include stunting, thinness, overweight and obesity.

3.4.2 Objectives

- i. To determine the prevalence of stunting among adolescents
- ii. To determine the prevalence of thinness among adolescents
- iii. To determine the prevalence of overweight and obesity among adolescents

3.4.3 Variable definitions

- **Body mass index (BMI):** commonly used to determine weight status. BMI is calculated by dividing a person's weight in kilograms by the square of height in meters.
- **Height for age z-score (HAZ):** an index used to assess how a child's height compares to the expected height of a healthy child of the same age and sex based on the WHO 2007 Growth reference data for 5-19 years.
- **BMI for age z-score (BAZ):** an index used to assess BMI is age- and sex-specific compares to the BMI of a healthy child of the same age and sex based on the WHO 2007 Growth reference data for 5-19 years.
- **Stunting:** Those who have their HAZ more than two standard deviations below the WHO Child Growth Standards median(<-2SD).
- **Thinness:** Those who have their BAZ more than two standard deviations below the WHO Child Growth Standards median(<-2SD).
- **Overweight:** Those who have their BAZ is more than one standard deviations to two standard deviations above the WHO Child Growth Standards median (>+1SD to ≤+2SD).
- **Obesity:** Those who have their BAZ more than two standard deviations above the WHO Child Growth Standards median(>+2SD).

3.4.4 Findings

Height-for-Age z-score

The prevalence of stunting among adolescents was 5.2% (95% CI: 4.05, 6.65). Females [6.6%, (95% CI: 4.69, 9.18)] showed higher prevalence compared to males [3.8%, (95% CI: 2.74, 5.26)]. (Table 3.4.1).

BMI -for-Age z-score

According to the WHO 2007 Growth Reference Data for 5-19 years, the prevalence of thinness among adolescents was 8.4% (95% CI: 7.43, 9.54). The data showed that the prevalence of thinness was significantly higher among males [10.9%, (95% CI: 9.34, 12.72)] compared to females [5.9%, (95% CI: 4.68, 7.54)]. (Table 3.4.2).

Overweight and Obesity

The prevalence of overweight was 15.2% (95% CI: 13.82, 16.67). Comparing the sexes, females had a higher prevalence at 16.1% (95% CI: 14.42, 18.04)] compared to males [14.2% (95% CI: 11.56, 17.37)]. (Table 3.4.3). For obesity, the prevalence was 15.4% (95% CI: 0.13, 0.18). Between the sexes, males had a higher prevalence of obesity at 17.8% (95% CI: 0.15, 0.21) compared to females [13.0% (95% CI: 0.11, 0.16)]. (Table 3.4.3).

3.4.5 Discussion / Conclusion

Overall, the prevalence of overweight and obesity totalling 30.6% was higher than thinness (8.4%) and stunting (5.2%). It can be concluded that adolescents in WP Kuala Lumpur is facing a dual burden of malnutrition, with overnutrition appearing to be a larger problem than undernutrition.

3.4.6 Recommendations

Based on the findings, the integration of targeted interventions and policies is required to simultaneously address both undernutrition and the increasing rates of overweight and obesity among adolescents. Evidence-based nutrition-sensitive interventions, inclusive of diet counselling and nutrition education provided through school-based platforms, adolescent youth centres/ peer education and technology-based platforms should be strengthened. A comprehensive intervention such as MyBFF@school (an intervention consisting of nutrition education, physical activity and motivational component) could be implemented nationwide with the support of the Ministry of Education.

3.4.7 References

1. Das JK, Salam RA, Thornburg KL, et al. Nutrition in adolescents: physiology, metabolism, and nutritional needs. *Ann. N. Y. Acad. Sci.* 2017 Apr;1393(1):21-33
2. World Health Organization 2007. Growth reference data for 5-19 years. Geneva: WHO

Table 3.4.1: Prevalence of stunting (HAZ <-2SD) among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	116	5446	5.2	4.05	6.65
Sex					
Male	39	1985	3.8	2.74	5.26
Female	77	3461	6.6	4.69	9.18
Form					
Form 1	12	653	2.9	2.00	4.18
Form 2	17	952	4.3	2.60	6.99
Form 3	25	1182	5.6	3.31	9.24
Form 4	29	1328	6.6	4.55	9.53
Form 5	33	1330	7.1	4.28	11.50
Ethnicity					
Malay	81	3794	6.0	4.39	8.21
Chinese	24	1102	3.6	2.36	5.40
Indian	3	-	-	-	-
Bumiputera Sabah	0	-	-	-	-
Bumiputera Sarawak	2	-	-	-	-
Others	6	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.4.2: Prevalence of thinness (BAZ <-2SD) among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	175	8826	8.4	7.43	9.54
Sex					
Male	105	5699	10.9	9.34	12.72
Female	70	3127	5.9	4.68	7.54
Form					
Form 1	25	1411	6.3	4.24	9.18
Form 2	28	1655	7.4	4.92	11.13
Form 3	42	2167	10.2	8.44	12.33
Form 4	40	1733	8.6	6.57	11.27
Form 5	40	1860	9.9	6.10	15.68
Ethnicity					
Malay	95	4959	7.9	6.60	9.36
Chinese	56	2657	8.6	6.04	12.22
Indian	14	-	-	-	-
Bumiputera Sabah	2	107	8.9	5.19	14.84
Bumiputera Sarawak	0	-	-	-	-
Others	8	391	21.8	12.39	35.55

- Prevalence with high RSE, not reported

Table 3.4.3: Prevalence of overweight (BAZ >+1SD to ≤+2SD) and obesity (BAZ >+2SD) among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Overweight (>+1SD to ≤+2SD)					Obese (>+2SD)				
	Unweighted count	Estimated population	Prevalence (%)		95 % CI	Unweighted count	Estimated population	Prevalence (%)		95 % CI
			Lower	Upper				Lower	Upper	
WP KUALA LUMPUR	323	15915	15.2	13.82	16.67	312	16110	15.4	0.13	0.18
Sex										
Male	141	7426	14.2	11.56	17.37	169	9275	17.8	0.15	0.21
Female	182	8489	16.1	14.42	18.04	143	6835	13.0	0.11	0.16
Form										
Form 1	83	4381	19.5	16.29	23.10	78	4263	18.9	0.14	0.25
Form 2	55	3209	14.4	11.37	18.17	68	4019	18.1	0.15	0.22
Form 3	51	2495	11.8	8.95	15.33	51	2695	12.7	0.09	0.18
Form 4	66	2943	14.7	10.88	19.46	66	2938	14.6	0.11	0.19
Form 5	68	2888	15.4	11.51	20.23	49	2194	11.7	0.08	0.17
Ethnicity										
Malay	200	9888	15.7	13.82	17.78	208	10886	17.3	0.15	0.20
Chinese	85	4146	13.5	10.60	17.00	58	2930	9.5	0.08	0.11
Indian	31	1531	20.2	14.00	28.18	34	1672	22.0	0.17	0.28
Bumiputera Sabah	3	-	-	-	-	3	150	12.6	0.08	0.20
Bumiputera Sarawak	0	-	-	-	-	-	-	-	-	0.73
Others	4	-	-	-	-	6	319	17.8	0.09	0.31

- Prevalence with high RSE, not reported

3.5 Drug Use

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3.5.1 Introduction

According to the World Drug Report 2022 (WDR 2022) by the United Nations Office on Drugs and Crime (UNODC), an estimated 284 million people had used drugs within the previous year, which accounts for a 26% increase over the previous decade.¹ Drug use accounts for 5% of all substance related death and 9% of substance-use-related DALYs. Despite the report showing that young people continue to use more drugs than adults, it was found that drug use by adolescents decreased during the COVID-19 pandemic, which coincided with the lockdown periods.¹ Marijuana or cannabis remains the world's most widely used drug, with an annual prevalence of 4% of the adult population, or an estimated 209 million users in the past year.¹ Amphetamines remain the second most commonly used drug worldwide, with an estimated 34 million in 2020, representing 0.7% of the global population. NHMS 2019 showed that marijuana is the highest taken in Malaysia, followed by kratom.² Based on the statistics provided by the National Anti-Drug Agency in 2020 showed that ATS is the most commonly used drug among adolescents in Malaysia aged 13 to 18 years old, followed by marijuana and opiate.³ In this survey, we have added new questions, which include kratom and inhalant, to get baseline data on adolescent usage in Malaysia, as we don't have preliminary national data on these drugs.

3.5.2 Objectives

- i. To determine the prevalence and sociodemographic characteristics of ever and current drug use among adolescents
- ii. To determine the prevalence and sociodemographic characteristics of ever and current marijuana use among adolescents in Malaysia
- iii. To determine the prevalence and sociodemographic characteristics of ever and current amphetamines or methamphetamines use among adolescents in Malaysia
- iv. To determine the prevalence and sociodemographic characteristics of ever and current inhalant use among adolescents in Malaysia
- v. To determine the prevalence and sociodemographic characteristics of ever and current kratom use among adolescents in Malaysia
- vi. To identify the age of initiation and the sources of obtaining drugs among adolescents in Malaysia

3.5.3 Variable Definitions

- **Drug use:**
 - i. **2017** definition: taking heroin, morphine, glue, amphetamine, or methamphetamines (ecstasy, syabu, ice), marijuana (except prescribed medicine).
 - ii. **2022** definition: taking opiates, amphetamine-type stimulants, marijuana, psychotropic pill, cocaine, inhalant and others (depressants, hallucinogens).
- **Ever drug use:** adolescents who had a history of drug use in their lifetime
- **Current drug use:** adolescents who used drugs in the past 30 days
- **Ever marijuana use:** adolescents who had a history of marijuana use in their lifetime
- **Current marijuana use:** adolescents who used marijuana in the past 30 days
- **Ever amphetamine or methamphetamine use:** adolescents with a history of amphetamine or methamphetamines use in their lifetime
- **Ever inhalant use:** adolescents who had a history of inhalant use in their lifetime
- **Current inhalant use:** adolescents who used an inhalant in the past 30 days
- **Ever kratom use:** adolescents who had a history of kratom use in their lifetime
- **Current kratom use:** adolescents who used kratom in the past 30 days

3.5.4 Findings

Overall, 5.6% (95% CI: 4.25, 7.32) of adolescents reported that they had ever used drug during their lifetime and it was significantly higher among males [6.5% (95%CI: 5.35, 7.94)] as compared to females [4.7% (95%CI: 2.66, 8.03)] (**Table 3.5.1**). The prevalence of current drug users was 2.4% (95%CI: 1.86, 3.18); males [3.0% (95%CI: 2.15, 4.26)] were significantly higher than females [1.8% (95%CI: 1.15, 2.95)] (**Table 3.5.2**). Overall, 3.4% (95% CI: 2.26, 5.13) of adolescents reported had ever used inhalant during their lifetime. Females was significantly higher [3.8% (95% CI: 2.12, 6.60)] than males [3.1% (95% CI: 2.00, 4.64)] (**Table 3.5.3**). Overall, 1.5% (95% CI: 1.03, 2.11) of adolescents reported had current used inhalant in the past 30 days. Females was also significantly higher [1.7% (95% CI: 1.02, 2.78)] than males [1.3% (95% CI: 0.69, 2.28)] (**Table 3.5.3**). Among ever drug users, 83.4% (95% CI: 64.99, 93.19) of them had initiated before the age of 14 years old (**Table 3.5.4**).

3.5.5 Discussion / Conclusion

Unlike other drugs, this survey found that inhalant use was most common among female adolescents.

3.5.6 Recommendations

The effectiveness of drug education at primary schools plays a vital role in reducing current drug use prevalence in 2022 compared to 2017. Drug prevention among adolescents should be improved and regularly reviewed to meet the ever-changing trend of drug use locally and globally. New strategies and approaches can be developed to address issues of inhalant and kratom use among adolescents by focusing more on the danger of inhalant and kratom use. An adolescent who has been exposed to and involved in drug abuse must be given access to treatment and provided educational opportunities, vocational skills training and other socioeconomic support needed. School drug prevention programs developed for adolescents can be integrated with technology, such as web-based intervention, to make it more interesting in increasing awareness and help build self-resilience among adolescents through:

- Conducting early detection of an adolescent with problems or who are at risk of drug abuse
- Increasing the knowledge, understanding and awareness of the dangers of drug abuse
- Increasing life skills such as assertiveness, coping skills and stress management
- Reinforcing positive attitudes and healthy lifestyles among school children

3.5.7 References

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3. Bahagian Dasar, Perancangan dan Penyelidikan, Agensi Antidadah Kebangsaan, Kementerian Dalam Negeri; Info Dadah Siri 1/2020; Penyalahgunaan Dadah Dalam Kalangan Remaja; 4 JUN 2020

Table 3.5.1: Prevalence of ever drug use among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Ever used drug* based on 2017				Ever used drug**			
	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper
WP KUALA LUMPUR	91	4256	4.1	2.91 5.85	121	5773	5.6	4.25 7.32
Sex								
Male	42	2136	4.2	3.03 5.75	65	3350	6.5	5.35 7.94
Female	49	2120	4.1	2.27 7.25	56	2423	4.7	2.66 8.03
Form								
Form 1	16	-	-	- -	25	1285	5.7	3.60 8.99
Form 2	10	-	-	- -	12	653	3.0	1.68 5.15
Form 3	17	863	4.3	2.48 7.33	25	1340	6.6	3.85 11.18
Form 4	14	-	-	- -	22	883	4.5	2.47 7.88
Form 5	34	1485	7.9	4.52 13.51	37	1612	8.6	5.08 14.19
Ethnicity								
Malay	39	1737	2.8	1.50 5.18	64	3035	4.9	3.04 7.71
Chinese	34	1657	5.5	4.00 7.47	35	1689	5.6	4.11 7.56
Indian	9	428	5.8	3.52 9.50	12	570	7.8	4.97 11.90
Bumiputera Sabah	3	-	-	- -	4	-	-	- -
Bumiputera Sarawak	0	-	-	- -	0	-	-	- -
Others	6	300	16.8	9.66 27.47	6	300	16.8	9.66 27.47

- Prevalence with high RSE, not reported

*Drug includes heroin, morphine, glue, amphetamine, ecstasy, methamphetamine, ice and marijuana.

**Drug includes opiate, amphetamine, marijuana, psychotropic pill, cocaine, inhalant, kratom and others.

Table 3.5.2: Prevalence of current drug use among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Current used drug* based on 2017				Current used drug** based on 2022			
	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper
WP KUALA LUMPUR	43	2060	2.0	1.41 2.81	52	2518	2.4	1.86 3.18
Sex								
Male	23	1149	2.2	1.43 3.47	31	1560	3.0	2.15 4.26
Female	20	911	1.8	1.03 2.96	21	958	1.8	1.15 2.95
Form								
Form 1	10	-	-	- -	12	607	2.7	1.61 4.52
Form 2	8	-	-	- -	8	-	-	- -
Form 3	7	-	-	- -	8	-	-	- -
Form 4	5	-	-	- -	10	-	-	- -
Form 5	13	-	-	- -	14	-	-	- -
Ethnicity								
Malay	25	-	-	- -	31	1499	2.4	1.43 4.01
Chinese	10	478	1.6	0.89 2.78	11	511	1.7	0.98 2.88
Indian	4	-	-	- -	6	-	-	- -
Bumiputera Sabah	2	-	-	- -	2	-	-	- -
Bumiputera Sarawak	0	-	-	- -	0	-	-	- -
Others	2	-	-	- -	2	-	-	- -

- Prevalence with high RSE, not reported

*Drug includes heroin, morphine, glue, amphetamine, ecstasy, methamphetamine, ice and marijuana.

**Drug includes opiate, amphetamine, marijuana, psychotropic pill, cocaine, inhalant, kratom and others.

Table 3.5.3: Prevalence of inhalant use among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Ever used inhalant in a lifetime				Current used inhalant in the past 30 days					
	Unweighted count	Estimated population	Prevalence (%)	95 % CI		Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper				Lower	Upper
WP KUALA LUMPUR	76	3530	3.4	2.26	5.13	32	1525	1.5	1.03	2.11
Sex										
Male	31	1570	3.1	2.00	4.64	13	647	1.3	0.69	2.28
Female	45	1960	3.8	2.12	6.60	19	878	1.7	1.02	2.78
Form										
Form 1	15	-	-	-	-	9	-	-	-	-
Form 2	9	-	-	-	-	7	-	-	-	-
Form 3	13	658	3.3	1.71	6.11	5	-	-	-	-
Form 4	12	-	-	-	-	4	-	-	-	-
Form 5	27	1165	6.2	3.55	10.64	7	-	-	-	-
Ethnicity										
Malay	29	-	-	-	-	18	-	-	-	-
Chinese	32	1552	5.1	3.74	7.01	9	429	1.4	0.81	2.48
Indian	8	366	5.0	2.70	8.97	4	-	-	-	-
Bumiputera Sabah	2	-	-	-	-	0	-	-	-	-
Bumiputera Sarawak	0	-	-	-	-	0	-	-	-	-
Others	5	-	-	-	-	1	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.5.4: Prevalence of first use of drug before the age of 14 years among ever used drug among adolescents in WP Kuala Lumpur, 2022

Prevalence	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
Yes	22	1123	83.4	64.99	93.19
No	5	-	-	-	-

- Prevalence with high RSE, not reported

3.6 Oral and Hand Hygiene

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3.6.1 Introduction

Oral health is integral to general health as it promotes a positive quality of life and social self-confidence. Currently, oral diseases affect close to 3.5 billion people worldwide, and their prevalence is noted to be increasing globally. A resolution on oral health in 2021 by the WHO recommends a more preventive approach towards oral health, including oral health promotions at schools¹. Empowering good oral hygiene habits during adolescence is important in sustaining this behaviour into adulthood². Therefore, early and adequate plaque control is key in preventing oral health diseases such as dental caries and periodontal diseases, which may affect school performance and attendance, as well as permanent dental problems in adulthood. This can be achieved via regular tooth brushing with fluoridated toothpaste, dental flossing, tongue cleaning, and a minimum yearly dental check-up³. Appropriate hand hygiene practices using soap, especially before eating and after using the toilet, are protective against a multitude of infections. These practices will enable adolescents to thrive and contribute actively to learning and reduce the rate of absenteeism⁴. Assessing practices on good hand washing among adolescents will help detect at-risk groups among school attendees⁴.

3.6.2 Objectives

3.6.2.1 General objective

To determine the prevalence of oral and hand hygiene behaviour among adolescents in Malaysia.

3.6.2.2 Specific objectives for oral hygiene

To describe the prevalence of:

- i. Self-oral health perception
- ii. Tooth brushing frequency in the past 30 days
- iii. Tongue cleaning practice
- iv. Fluoridated toothpaste usage
- v. Dental floss usage
- vi. Timing of the last visit to a dentist or dental nurse
- vii. Having missed class or not participating in online learning due to toothache in the past 12 months
- viii. Avoidance of smile or laughing due to the appearance of their teeth

3.6.2.3 Specific objectives for hand washing

To describe the prevalence of:

- i. Hand washing with soap in the past 30 days
- ii. Hand washing before eating in the past 30 days
- iii. Hand washing after using the toilet in the past 30 days
- iv. Hand washing method before eating at school in the past 30 days

3.6.3 Variable definitions

- **Clean or brush teeth:** Regular tooth brushing using toothbrush and toothpaste to keep the mouth, teeth and gums clean and healthy
- **Last saw a dentist or dental nurse:** Seen a dentist or dental nurse for a check-up, scaling or other dental treatment

3.6.4 Findings

5.2% (95%CI: 3.74, 7.14) of adolescents in WP Kuala Lumpur perceived their oral health as poor or very poor (**Table 3.6.1**). 78.9% (95%CI: 75.52, 81.89) brushed their teeth twice daily which was significantly higher in females [86.2% (95%CI: 83.46, 88.53)] (**Table 3.6.2**), 9.0% (95% CI: 6.74, 11.84) never performed daily tongue cleaning (**Table 3.6.3**), 47.9% (95%CI: 42.84, 52.98) reported not knowing whether their toothpaste contained fluoride (**Table 3.6.4**) and only 21.5% (95%CI: 19.06, 24.22) used dental floss for cleaning their teeth (**Table 3.6.5**). Only 34.2% (95%CI: 29.24, 39.47) reported to have their last dental visit in the past 12 months (**Table 3.6.6**), 9.2% (95% CI: 7.15, 11.70) had toothache in the past 12 months and had missed class or not participated with online learning (PdPR) (**Table 3.6.7**), 32.2% (95%CI: 29.54, 35.00) reported that they had avoided smiling or laughing due to the appearance of their teeth which was significantly higher among females [39.8% (95%CI: 36.11, 43.67)] (**Table 3.6.8**). The prevalence of WP Kuala Lumpur adolescents who used soap most of the time or always was 73.4% (95%CI: 69.47, 76.94) which was significantly higher among females [78.6% (95%CI: 75.71, 81.19)] (**Table 3.6.9**). About 82.2% (95%CI: 76.05, 86.97) and 87.5% (95%CI: 84.54, 90.00) of adolescents washed their hands most of the time or always before eating (**Table 3.6.10**) or after using toilet respectively (**Table 3.6.11**). Only 53.0% (95%CI: 45.85, 60.01) washed hands with running water before eating at school (**Table 3.6.12**).

3.6.5 Discussion / Conclusion

In general, oral hygiene behaviour among adolescents may be related to the COVID-19 pandemic that reduces school dental programs and attendance for dental checkups, which in turn may cause inadequate knowledge regarding best oral health practice among adolescents. Ironically, hand hygiene practice appear to be good which may also reflect the effect of COVID-19 pandemic that promotes frequent handwashing practice in general.

3.6.6 Recommendations

Taking cognizance of these findings, there is a need for continuous emphasis on promoting good personal oral and hand hygiene among adolescents through knowledge, attitude and behavioural improvements with these following recommendations:

- Oral health education at schools need to deliver captivating methods that can be easily assimilated into the adolescents' daily school and home routines which will enhance their retention of oral health care knowledge. Effective oral health education should be regularly revised, updated and tailored specifically for young adults to improve and empower their decision making in maintaining good oral health. Adolescents at high risk of developing oral diseases should be identified early and oral health intervention delivered and tailored to these targeted groups to enhance engagement and personalisation of oral care needs.
- Interventions to promote hand washing need to be tailored to the adolescent's understanding and relevant social norms to trigger and reinforce good and ideal handwashing practice and habit formation according to their environment and social situations. Schools should have policies that inculcate good handwashing behavior including adequate infrastructures to support regular and ideal handwashing practices, and readily available information visual aids about the correct hand washing technique at key times and places in schools. School health education unit with regular hygiene education programs should be included in the formal and non-formal curricular, preferably starting from pre and primary schools. Further studies are needed to develop an understanding and knowledge gap of the cultural context of handwashing habits in various ethnic and cultural groups.

3.6.7 References

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Table 3.6.1: Prevalence of poor or very poor perception of oral health among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	108	5426	5.2	3.74	7.14
Sex					
Male	53	2805	5.4	3.29	8.67
Female	55	2621	5.0	3.54	6.99
Form					
Form 1	14	805	3.6	1.92	6.58
Form 2	24	1436	6.5	4.16	9.93
Form 3	30	1486	7.0	4.10	11.86
Form 4	15	581	2.9	1.59	5.21
Form 5	25	1117	5.9	3.76	9.29
Ethnicity					
Malay	40	2059	3.3	2.40	4.45
Chinese	58	2828	9.2	5.79	14.32
Indian	5	-	-	-	-
Bumiputera Sabah	2	-	-	-	-
Bumiputera Sarawak	2	-	-	-	-
Others	1	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.6.2: Prevalence of teeth brushing 2 times a day in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1670	82489	78.9	75.52	81.89
Sex					
Male	695	37254	71.5	67.50	75.23
Female	975	45235	86.2	83.46	88.53
Form					
Form 1	322	17404	77.3	72.28	81.73
Form 2	305	17614	79.5	73.94	84.10
Form 3	326	16535	78.6	71.38	84.39
Form 4	368	16043	79.9	73.30	85.19
Form 5	349	14891	79.2	73.03	84.35
Ethnicity					
Malay	1013	50896	81.0	76.49	84.76
Chinese	478	22862	74.5	68.98	79.32
Indian	126	6057	79.8	70.28	86.87
Bumiputera Sabah	22	1062	88.6	64.84	97.04
Bumiputera Sarawak	7	375	78.1	34.40	96.05
Others	24	1238	70.4	51.61	84.16

Table 3.6.3: Prevalence of never did tongue cleaning among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	185	9384	9.0	6.74	11.84
Sex					
Male	108	5837	11.2	8.53	14.59
Female	77	3546	6.8	4.16	10.77
Form					
Form 1	31	1553	6.9	3.62	12.76
Form 2	31	1960	8.8	5.55	13.81
Form 3	41	2213	10.5	6.66	16.15
Form 4	43	1843	9.2	6.17	13.44
Form 5	39	1815	9.7	6.95	13.27
Ethnicity					
Malay	72	3766	6.0	4.57	7.80
Chinese	105	5175	16.9	13.89	20.33
Indian	4	-	-	-	-
Bumiputera Sabah	2	101	8.4	4.64	14.73
Bumiputera Sarawak	0	-	-	-	-
Others	2	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.6.4: Prevalence of did not know if their toothpaste is fluoridated among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1024	50066	47.9	42.84	52.98
Sex					
Male	453	23702	45.5	39.77	51.37
Female	571	26364	50.2	44.02	56.46
Form					
Form 1	219	11617	51.8	43.42	60.03
Form 2	180	10285	46.3	39.37	53.37
Form 3	206	10329	49.0	40.24	57.78
Form 4	215	9079	45.3	37.33	53.61
Form 5	204	8755	46.6	38.65	54.72
Ethnicity					
Malay	543	27126	43.2	38.19	48.27
Chinese	385	18252	59.5	51.59	66.93
Indian	62	2953	38.9	32.06	46.22
Bumiputera Sabah	9	456	38.1	21.97	57.35
Bumiputera Sarawak	3	-	-	-	-
Others	22	1097	62.4	43.32	78.34

- Prevalence with high RSE, not reported

Table 3.6.5: Prevalence of use of dental floss among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	462	22533	21.5	19.06	24.22
Sex					
Male	177	9505	18.2	14.91	22.10
Female	285	13028	24.8	21.63	28.27
Form					
Form 1	94	4968	22.1	17.57	27.36
Form 2	81	4609	20.7	15.71	26.89
Form 3	90	4582	21.7	17.95	26.05
Form 4	97	4223	21.0	16.73	26.09
Form 5	100	4151	22.1	18.65	25.96
Ethnicity					
Malay	264	12911	20.5	16.55	25.17
Chinese	137	6643	21.6	19.68	23.67
Indian	42	2070	27.3	18.09	38.91
Bumiputera Sabah	8	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	10	498	28.3	13.96	49.03

- Prevalence with high RSE, not reported

Table 3.6.6: Prevalence of last dental visit in the past 12 months among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	727	35758	34.2	29.24	39.47
Sex					
Male	311	17101	32.8	26.12	40.26
Female	416	18657	35.5	29.34	42.26
Form					
Form 1	140	7689	34.2	26.99	42.17
Form 2	121	7034	31.7	27.17	36.52
Form 3	139	7046	33.4	25.35	42.57
Form 4	151	6520	32.5	26.00	39.80
Form 5	176	7468	39.7	30.94	49.27
Ethnicity					
Malay	403	20262	32.2	26.52	38.48
Chinese	251	12143	39.5	32.09	47.51
Indian	50	2261	29.8	18.12	44.86
Bumiputera Sabah	8	-	-	-	-
Bumiputera Sarawak	4	-	-	-	-
Others	11	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.6.7: Prevalence of having missed classes or online learning among adolescents with toothache in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	110	5369	9.2	7.15	11.70
Sex					
Male	47	2399	8.0	5.04	12.36
Female	63	2970	10.5	8.10	13.41
Form					
Form 1	31	1603	11.9	8.03	17.37
Form 2	18	1035	8.3	4.51	14.64
Form 3	16	-	-	-	-
Form 4	21	-	-	-	-
Form 5	24	1039	10.0	6.05	16.17
Ethnicity					
Malay	72	3559	9.7	7.77	12.12
Chinese	21	985	6.4	4.04	9.87
Indian	14	-	-	-	-
Bumiputera Sabah	1	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	1	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.6.8: Prevalence of avoidance of smiling due to teeth appearance among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	692	33671	32.2	29.54	35.00
Sex					
Male	245	12786	24.5	21.90	27.39
Female	447	20886	39.8	36.11	43.67
Form					
Form 1	150	8066	35.8	30.32	41.77
Form 2	112	6254	28.2	25.70	30.91
Form 3	144	7152	33.9	29.44	38.70
Form 4	145	6211	31.1	25.44	37.30
Form 5	141	5989	31.9	25.55	38.95
Ethnicity					
Malay	438	21580	34.3	29.32	39.74
Chinese	200	9473	30.9	28.20	33.72
Indian	37	1777	23.4	18.43	29.28
Bumiputera Sabah	5	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	11	574	32.7	20.49	47.72

- Prevalence with high RSE, not reported

Table 3.6.9: Prevalence of using soap most of the time or always during handwashing in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
WP KUALA LUMPUR	1562	76684	73.4	69.47	76.94
Sex					
Male	669	35429	68.1	62.77	73.03
Female	893	41255	78.6	75.71	81.19
Form					
Form 1	299	15831	70.5	64.16	76.19
Form 2	283	16382	73.7	66.44	79.92
Form 3	314	15814	75.0	68.53	80.50
Form 4	337	14657	73.3	68.53	77.51
Form 5	329	14000	74.7	68.81	79.72
Ethnicity					
Malay	940	46861	74.5	69.08	79.32
Chinese	441	21056	68.6	64.89	72.16
Indian	129	6176	82.0	69.11	90.25
Bumiputera Sabah	17	797	66.5	52.81	77.96
Bumiputera Sarawak	7	391	81.6	50.78	95.01
Others	28	1402	79.8	56.90	92.18

Table 3.6.10: Prevalence of handwashing most of the time or always before eating in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1742	85940	82.2	76.05	86.97
Sex					
Male	779	41490	79.6	72.05	85.56
Female	963	44450	84.7	77.61	89.79
Form					
Form 1	346	18558	82.5	74.95	88.10
Form 2	309	17818	80.2	71.56	86.71
Form 3	349	17623	83.6	74.52	89.84
Form 4	385	16761	83.8	74.07	90.32
Form 5	353	15179	80.8	72.82	86.83
Ethnicity					
Malay	1131	56882	90.5	87.63	92.72
Chinese	416	19574	63.7	56.97	70.00
Indian	136	6532	86.1	79.22	90.93
Bumiputera Sabah	21	1000	83.5	61.47	94.11
Bumiputera Sarawak	8	430	89.6	57.44	98.21
Others	30	1522	86.6	67.45	95.26

- Prevalence with high RSE, not reported

Table 3.6.11: Prevalence of handwashing most of the time or always after using the toilet in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1857	91555	87.5	84.54	90.00
Sex					
Male	833	44258	84.9	80.27	88.66
Female	1024	47297	90.1	87.93	91.90
Form					
Form 1	349	18636	82.8	77.17	87.30
Form 2	336	19483	87.7	84.21	90.50
Form 3	365	18488	87.7	81.83	91.81
Form 4	408	17668	88.3	81.26	92.93
Form 5	399	17282	92.0	88.64	94.39
Ethnicity					
Malay	1075	53858	85.7	81.68	88.90
Chinese	586	28100	91.5	87.76	94.17
Indian	136	6591	86.9	80.79	91.21
Bumiputera Sabah	19	919	76.7	65.69	84.99
Bumiputera Sarawak	9	-	-	-	-
Others	32	1608	91.5	75.78	97.39

- Prevalence with high RSE, not reported

Table 3.6.12: Prevalence of handwashing using running water before eating at school in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1112	55307	53.0	45.85	60.01
Sex					
Male	498	26896	51.7	42.32	60.93
Female	614	28411	54.3	46.09	62.28
Form					
Form 1	196	10552	47.0	39.05	55.16
Form 2	195	11249	50.6	42.15	59.08
Form 3	238	12233	58.3	47.60	68.21
Form 4	258	11512	57.6	45.43	68.99
Form 5	225	9762	52.1	42.33	61.67
Ethnicity					
Malay	760	38225	61.0	52.52	68.81
Chinese	262	12739	41.6	30.17	53.94
Indian	59	2748	36.2	23.49	51.21
Bumiputera Sabah	12	583	48.6	26.90	70.91
Bumiputera Sarawak	4	-	-	-	-
Others	15	767	43.6	26.19	62.83

- Prevalence with high RSE, not reported

3.7 Mental Health Problems

3.7.1 Mental Health Problems

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3.7.1.1 Introduction

According to the World Health Organization (WHO), one in every seven children and adolescents suffers from mental health problems, accounting for 13.0% of the global disease burden in this age group.¹ In Malaysia, the National Health and Morbidity Survey (NHMS) 2015 found that the prevalence of mental health problems was 34.7% among those aged 16 to 19, and 11.4% among those aged 10 to 15.² However, findings from the NHMS 2019 revealed that the prevalence of mental health problems had decreased to 9.5% among those aged 10 to 15 years old.³ In particular, WHO reported that suicide is the fourth leading cause of death among 15-19 year-olds.¹ In 2017, 10.0% of secondary school adolescents reported suicidal ideation, according to the NHMS.⁴

3.7.1.2 Objectives

- i. To identify the prevalence of loneliness in the past 12 months
- ii. To identify the prevalence of inability to sleep due to worry in the past 12 months
- iii. To identify the prevalence of suicidal ideation in the past 12 months
- iv. To identify the prevalence of suicidal plan in the past 12 months
- v. To identify the prevalence of suicidal attempt in the past 12 months
- vi. To identify the prevalence of not having close friends

3.7.1.3 Variable definitions

- **Lonely "most of the time or always"**: Responded either "most of the time" or "always" for felt lonely during the past 12 months prior to the survey.
- **Unable to sleep "most of the time or always" due to worry**: Responded either "most of the time" or "always" for being worried about something that he/she could not sleep at night during the past 12 months prior to the survey.
- **Suicidal ideation**: ever seriously considered attempting suicide in the past 12 months prior to the survey.
- **Suicidal plan**: made a plan of attempted suicide in the past 12 months prior to the survey.
- **Suicidal attempt**: attempted suicide at least once in the past 12 months prior to the survey.
- **No close friend**: Do not have any close friend.

3.7.1.4 Findings

Overall, 18.4% (95%CI: 16.24, 20.80) of adolescents in WP Kuala Lumpur reported feeling lonely "most of the time or always" (**Table 3.7.1**). A total of 16.0% (95% CI: 13.93, 18.34) of adolescents reported being unable to sleep "most of the time or always" due to worry (**Table 3.7.2**). In the past 12 months prior to the survey, suicidal ideation, suicidal plan, and suicidal attempt, were reported 18.0% (95% CI: 16.11, 20.06), 12.2% (95% CI: 10.50, 14.15), and 11.6% (95% CI: 9.70, 13.79), respectively. (**Table 3.7.3**), (**Table 3.7.4**), (**Table 3.7.5**). The survey also observed that 4.7% (95% CI: 4.00, 5.55) of the adolescents had no close friends (**Table 3.7.6**).

3.7.1.5 Discussion / Conclusion

The trend of suicidal ideation among secondary school students in WP Kuala Lumpur (18.0%) was higher than GSHS 2012 (10.3%) and GSHS 2017 (13.2%). This figure was also higher in comparison to national prevalence of 13.1%. Prevalence of suicidal plan in this survey (12.2%) was higher compared to the prevalence in GSHS 2012 (7.6%) and GSHS 2017 (8.2%). In addition, this prevalence was higher compared to the national prevalence of 10.0%. Prevalence of suicidal attempts in this survey (11.6%) was reported higher compared to the prevalence in GSHS 2012 (6.6%) and GSHS 2017 (6.9%). This prevalence was also higher compared to national prevalence (9.5%). In addition to these, more students (4.7%) in WP Kuala Lumpur reported having no close friends as compared to previous GSHS 2012 (3.4%) and GSHS 2017 (4.1%). This figure was also higher compared to national prevalence (4.2%).

3.7.1.6 Recommendations

1. Enhanced the screening of at-risk adolescents by School Health Teams and referral for further management.
2. Intensify efforts to prevent suicide among student especially among high-risk group (attempt suicide).
3. Strengthen adolescents coping skills and resilience through interactive health promotion activities.
4. To introduce culturally competent programmes in school that upskill teachers and educate parents about risk of suicide among adolescents.
5. To improve the National school curriculum that teaches life skills such as effective coping strategies and develops mental resilience.
6. To review workplace policies with the aim of strengthening family ties such as the introduction of flexible working hours or the provision of options to work from home to increase quality time among parents and children.
7. To review school curriculum and teaching hours to optimize more time for physical activity and quality time for social and professional interaction among adolescents to improve adolescents' life skills.

Table: Mental Health Problems Trend in WP Kuala Lumpur

	NHMS 2012	NHMS 2017	NHMS 2022
Loneliness	9.6	13.4	18.4
Inability to sleep due to worry	6.1	9.8	16.0
Suicidal ideation	10.3	13.2	18.0
Suicidal plan	7.6	8.2	12.2
Suicidal attempt	6.6	6.9	11.6
Not having any close friend	3.4	4.1	4.7

3.7.1.7 References

1. WHO Fact Sheet. Adolescent mental health. <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health>. Updated on 17 November 2021
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3.7.2 Depression

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3.7.2.1 Introduction

Depression is a common mental health problem among adolescents worldwide. Depression can manifest as symptoms such as sadness, guilt, low self-esteem, a lack of happiness, and dissatisfaction with their surroundings.¹ Furthermore, depression can cause individual problems such as difficulty sleeping, loss of appetite, lack of energy, and easy despair, leading to suicidal ideation.² According to the World Health Organization (WHO), depression affects 1.1% of adolescents aged 10-14 years and 2.8% of those aged 15-19 years.³ In Malaysia, the National Health and Morbidity Survey (NHMS) 2019 found that the prevalence of depression was 2.1% among those aged 15 to 19 years old.⁴

3.7.2.2 Objectives

To determine the prevalence of depression among Malaysian adolescents.

3.7.2.3 Variable definitions

Depression: A positive score was defined as a score of 10 and above for Patient Health Questionnaire (PHQ-9), and participants with these scores were categorized as having depression.

3.7.2.4 Findings

Overall, 32.4% (95% CI: 29.11, 35.86) of WP Kuala Lumpur adolescents reported depression. The prevalence of depression was significantly higher in female students 40.7% (95% CI: 36.93, 44.64) compared to males 24.0% (95% CI: 20.03, 28.53) (Table 3.7.7).

3.7.2.5 Discussion / Conclusion

This survey indicated a prevalence of depression almost similar to the research done by Normala et al. among 1800 Malaysian secondary school students aged 13 to 17 years old, which reported a 32.7% prevalence of depression among adolescents. Normala's study employed the same depression-measuring tool, the PHQ-9, but it was limited to 10 of 37 randomly chosen secondary schools in the Hulu Langat district area in the state of Selangor. However, the prevalence of depression in WP Kuala Lumpur was higher compared to the national figure 26.9%.

3.7.2.6 Recommendations

1. Enhanced the screening of at-risk adolescents by School Health Teams and referral for further management.
2. Holistic intervention programmes targeted to adolescents at risk of depression.
3. Strengthen adolescents coping skills and resilience through interactive health promotion activities.
4. To introduce culturally competent programmes in school that upskill teachers and educate parents about discipline style and pro social parenting techniques.
5. To improve the National school curriculum that teaches life skills such as effective coping strategies and develops mental resilience.
6. To review workplace policies with the aim of strengthening family ties, such as the introduction of flexible working hours or the provision of options to work from home to increase quality time among parents and children.
7. To review school curriculum and teaching hours to optimize more time for physical activity and quality time for social and professional interaction among adolescents to improve adolescents' life skills.

3.7.2.7 References

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3. WHO Fact Sheet. Adolescent mental health. <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health>. Updated on 17 November 2021
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Table 3.7.1: Prevalence of loneliness “most of the time or always” in the past 12 months among adolescents in Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	396	19302	18.4	16.24	20.80
Sex					
Male	134	7172	13.7	11.77	15.97
Female	262	12130	23.1	19.34	27.24
Form					
Form 1	63	3254	14.5	10.68	19.29
Form 2	77	4280	19.3	14.95	24.46
Form 3	76	3806	17.9	15.25	20.94
Form 4	80	3555	17.7	14.66	21.22
Form 5	100	4407	23.5	17.46	30.73
Ethnicity					
Malay	260	12659	20.1	16.84	23.81
Chinese	84	4190	13.6	10.93	16.87
Indian	38	1786	23.4	18.39	29.30
Bumiputera Sabah	6	289	24.1	12.85	40.72
Bumiputera Sarawak	2	-	-	-	-
Others	6	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.7.2: Prevalence of inability to sleep “most of the time or always” due to worry in the past 12 months among adolescents in Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	348	16772	16.0	13.93	18.34
Sex					
Male	115	6059	11.6	9.72	13.83
Female	233	10713	20.4	17.93	23.03
Form					
Form 1	49	2620	11.6	9.00	14.93
Form 2	61	3390	15.3	12.44	18.69
Form 3	69	3382	15.9	12.18	20.55
Form 4	74	3244	16.2	13.53	19.18
Form 5	95	4136	22.0	16.55	28.66
Ethnicity					
Malay	232	11202	17.8	14.99	20.98
Chinese	69	3326	10.8	8.96	13.01
Indian	33	1592	21.1	16.97	25.84
Bumiputera Sabah	6	283	23.7	13.02	39.06
Bumiputera Sarawak	2	-	-	-	-
Others	6	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.7.3: Prevalence of suicidal ideation in the past 12 months among adolescents in Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	390	18857	18.0	16.11	20.06
Sex					
Male	122	6364	12.2	9.76	15.16
Female	268	12493	23.7	21.27	26.42
Form					
Form 1	59	3014	13.4	8.73	20.01
Form 2	87	4715	21.3	16.06	27.67
Form 3	72	3611	17.0	13.66	20.95
Form 4	80	3457	17.2	14.94	19.75
Form 5	92	4060	21.6	16.52	27.74
Ethnicity					
Malay	226	10828	17.2	14.42	20.36
Chinese	115	5704	18.6	15.60	21.92
Indian	31	1445	19.1	13.54	26.30
Bumiputera Sabah	8	367	30.6	20.56	42.91
Bumiputera Sarawak	2	-	-	-	-
Others	8	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.7.4: Prevalence of suicidal plan in the past 12 months among adolescents in Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	264	12782	12.2	10.50	14.15
Sex					
Male	74	3894	7.5	5.88	9.43
Female	190	8888	16.9	14.84	19.21
Form					
Form 1	49	2461	11.0	6.97	16.84
Form 2	57	3077	13.9	10.22	18.60
Form 3	46	2297	10.8	8.29	14.00
Form 4	52	2338	11.6	8.79	15.26
Form 5	60	2608	13.9	10.34	18.38
Ethnicity					
Malay	166	8088	12.8	10.41	15.74
Chinese	59	2877	9.4	7.65	11.40
Indian	26	1208	16.0	12.17	20.70
Bumiputera Sabah	5	231	19.3	12.00	29.50
Bumiputera Sarawak	1	-	-	-	-
Others	7	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.7.5: Prevalence of suicidal attempt “at least once” in the past 12 months among adolescents in Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	253	12141	11.6	9.70	13.79
Sex					
Male	73	3823	7.3	5.45	9.79
Female	180	8319	15.8	12.71	19.51
Form					
Form 1	39	1976	8.8	5.22	14.40
Form 2	57	3095	14.0	10.12	18.99
Form 3	45	2307	10.9	8.05	14.50
Form 4	49	2171	10.8	7.48	15.39
Form 5	63	2592	13.8	9.66	19.32
Ethnicity					
Malay	145	6993	11.1	8.87	13.82
Chinese	70	3291	10.7	7.05	15.93
Indian	28	1356	17.9	10.81	28.28
Bumiputera Sabah	2	107	8.9	5.19	14.84
Bumiputera Sarawak	1	-	-	-	-
Others	7	353	19.7	10.16	34.75

- Prevalence with high RSE, not reported

Table 3.7.6: Prevalence of not having any close friend among adolescents in Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	99	4941	4.7	4.00	5.55
Sex					
Male	55	2919	5.6	4.32	7.20
Female	44	2022	3.8	2.84	5.19
Form					
Form 1	15	821	3.6	2.19	6.01
Form 2	16	959	4.3	2.55	7.21
Form 3	20	1074	5.1	2.68	9.36
Form 4	23	960	4.8	3.29	6.90
Form 5	25	1127	6.0	3.77	9.45
Ethnicity					
Malay	51	2575	4.1	3.09	5.40
Chinese	30	1451	4.7	3.52	6.31
Indian	12	595	7.8	4.15	14.20
Bumiputera Sabah	2	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	3	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.7.7: Prevalence of depression among adolescents in Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	695	33759	32.4	29.11	35.86
Sex					
Male	234	12481	24.0	20.03	28.53
Female	461	21278	40.7	36.93	44.64
Form					
Form 1	101	5268	23.6	17.60	30.78
Form 2	136	7540	34.3	28.92	40.14
Form 3	140	6910	32.7	27.75	37.98
Form 4	147	6507	32.7	27.62	38.14
Form 5	171	7534	40.1	31.63	49.20
Ethnicity					
Malay	441	21461	34.2	28.43	40.50
Chinese	173	8381	27.6	22.90	32.75
Indian	57	2726	35.9	29.94	42.37
Bumiputera Sabah	7	342	28.5	20.55	38.12
Bumiputera Sarawak	4	-	-	-	-
Others	13	638	35.6	18.32	57.62

- Prevalence with high RSE, not reported

3.8 Physical Activity

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3.8.1 Introduction

World Health Organization (WHO) defines physical activity as any bodily movement produced by skeletal muscles that require energy expenditure.¹ Based on WHO, at least 60 minutes per day of moderate-to-vigorous intensity physical activity were recommended for children and adolescents aged 5–17 years.¹ Sufficient physical activity has substantial health benefits for children and adolescents in terms of improving cardio-metabolic health, better musculoskeletal health, increased psychosocial well-being and academic performance.² Despite these established benefits, a substantial proportion of young people fail to meet physical activity guidelines. In addition, adolescents are also exposed to sedentary behaviours, as most of them spend greater time engaged in recreational activities, such as screen-based entertainment and digital communications.³ Agenda National Malaysia Sihat (ANMS) and National Strategic Plan for Active Living (NASPAL) targeted to increase the adoption of healthy lifestyles among Malaysians which includes reducing the prevalence of physical inactivity among the general population, including adolescents by 10% within 10 years of implementation.⁴ Thus, this study will provide more information regarding physical activity among adolescents in WP Kuala Lumpur.

3.8.2 Objectives

- i. To identify the prevalence of being physically active for a total of at least 60 minutes daily for five days or more in the past seven days among adolescents in WP Kuala Lumpur
- ii. To identify the prevalence of active transportation or commuting among adolescents in WP Kuala Lumpur
- iii. To identify the prevalence of sitting behavior among adolescents in WP Kuala Lumpur

3.8.3 Variable Definitions

- **Physically active:** physically active for at least 60 minutes per day, for a minimum of five days per week (sum of all the time spent in any kind of physical activity each day).
- **Active transportation/ commuting:** walking or riding a bicycle for at least three days a week to or from school.

- **Sitting behaviour:** Spending time sitting for 3 hours or more in a typical or usual day for leisure activities such as watching television, playing computer games, talking with friends, or surfing the internet.

3.8.4 Findings

Physically active

The prevalence of being physically active was 22.2% (95% CI: 19.26, 25.51), among adolescents in WP Kuala Lumpur. The prevalence was significantly higher in males [29.2% (95% CI: 24.97, 33.83)] than in females [15.3% (95% CI: 12.73, 18.29)] (**Table 3.8.1**).

Active Transportation/ Commuting

Overall, 36.6% (95% CI: 26.63, 47.85) adolescents reported active transportation to school. The prevalence was higher in males [42.5% (95% CI: 31.56, 54.32)] compared to females (**Table 3.8.2**).

Sitting behaviour

A total of 72.8% (95% CI: 69.98, 75.47) had spent at least three hours in a typical or usual day engaging in sitting activities. The higher prevalence was observed in females [73.1% (95% CI: 68.73, 77.04)] compared to males (**Table 3.8.3**).

3.8.5 Discussion / Conclusion

The prevalence of being physically active among school adolescents in WP Kuala Lumpur was slightly higher than national findings (22.2% vs. 21.4%). In addition, the prevalence of active commuting and sitting behaviour were higher than the national finding (36.6% vs. 27.0%, and 72.8% vs. 66.7%, respectively). Compared to previous NHMS findings, the prevalence of being physically active in the current study was lower than in the previous WP Kuala Lumpur AHS 2017 (22.2% vs. 23.9%). The prevalence of sitting behaviour increased from 2012 to the current survey (59.0% in 2012, 62.1% in 2017, and 72.8% in 2022).

3.8.6 Recommendations

A comprehensive, integrated, intersectoral approach is required to increase the prevalence of physical activity among secondary school adolescents. Those initiatives and collaborative efforts jointly implemented across diverse ministries, agencies, private sectors, and civil service societies seem very effective, realizing that the social determinants of active living are beyond the health sectors. The recommendations are as below:

1. To explore more behavioral science and behavioral insights into physical inactivity and sedentary behavior among adolescents in WP Kuala Lumpur to help us to design evidence-based health promotion and education initiatives with underlying effective 'nudging' techniques.
2. To examine the association between the frequency of use of online-related behaviors (time spent on

social media, online communication, and e-games) with a sufficient level of physical activity and sedentary behavior in a more specific manner.

3. To include parents in the interventions and health promotion programs on physical activity among adolescents to encourage and support their children’s participation in physical activity.

Table: Physical Activity trend in WP Kuala Lumpur

	NHMS 2012	NHMS 2017	NHMS 2022
Physical activity	25.5%	23.9%	22.2%
Active commuting	33.0%	-	36.6%
Sitting behavior	59.0%	62.1%	72.8%

3.8.7 References

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Table 3.8.1: Prevalence of being physically active (at least 60 minutes daily) for a total of 5 days or more in the past 7 days in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	459	23249	22.2	19.26	25.51
Sex					
Male	286	15217	29.2	24.97	33.83
Female	173	8032	15.3	12.73	18.29
Form					
Form 1	81	4293	19.1	14.95	24.04
Form 2	87	5346	24.1	18.85	30.18
Form 3	89	4709	22.3	17.35	28.28
Form 4	114	4943	24.7	21.04	28.77
Form 5	88	3958	21.1	14.99	28.76
Ethnicity					
Malay	293	15160	24.1	19.43	29.51
Chinese	111	5498	17.9	14.24	22.27
Indian	40	1867	24.7	17.35	33.77
Bumiputera Sabah	9	-	-	-	-
Bumiputera Sarawak	0	-	-	-	-
Others	6	293	16.7	8.92	28.96

- Prevalence with high RSE, not reported

Table 3.8.2: Prevalence of active commuting to school (walk or ride a bicycle to or from school for at least 3 days or more in the past 7 days) in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	755	38226	36.6	26.63	47.85
Sex					
Male	410	22118	42.5	31.56	54.32
Female	345	16107	30.7	20.21	43.63
Form					
Form 1	142	7668	34.1	22.26	48.27
Form 2	124	7337	33.1	21.34	47.49
Form 3	170	8935	42.5	30.58	55.36
Form 4	167	7594	37.9	25.95	51.62
Form 5	152	6692	35.6	23.60	49.76
Ethnicity					
Malay	562	28815	45.8	33.86	58.30
Chinese	123	5778	18.8	11.74	28.76
Indian	47	2451	32.7	16.55	54.25
Bumiputera Sabah	12	594	51.7	42.94	60.34
Bumiputera Sarawak	2	-	-	-	-
Others	9	477	27.1	13.69	46.69

- Prevalence with high RSE, not reported

Table 3.8.3: Prevalence of spending at least 3 hours in sitting activities in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1540	76023	72.8	69.98	75.47
Sex					
Male	708	37715	72.5	68.70	76.07
Female	832	38308	73.1	68.73	77.04
Form					
Form 1	243	13099	58.6	52.12	64.85
Form 2	279	16150	72.7	66.45	78.15
Form 3	335	17030	80.9	75.39	85.44
Form 4	351	15290	76.4	71.81	80.45
Form 5	332	14453	76.9	71.22	81.78
Ethnicity					
Malay	886	44441	70.9	67.94	73.61
Chinese	512	24600	80.2	76.02	83.84
Indian	87	4204	55.4	49.41	61.22
Bumiputera Sabah	21	1016	84.8	74.34	91.43
Bumiputera Sarawak	8	430	89.6	57.44	98.21
Others	26	1333	75.8	56.29	88.43

- Prevalence with high RSE, not reported

3.9 Protective Factors

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3.9.1 Introduction

Protective factors are individual or environmental characteristics or conditions that promote adolescent health and well-being¹. The role of protective factors in adolescents is to improve the likelihood of positive health behaviours or outcomes (such as healthy diet, exercise, hygiene practices) and to reduce the negative impacts of risk factors (for example tobacco, alcohol and drug use, violence). Multiple protective factors at the school, peer and family levels can foster healthy behaviours and promote mental health². At the school level, truancy is seen as an indicator that is monitored by lower prevalence, as truancy often acts as a precursor of many harmful behaviours. During adolescence, peer support and parental factors can be fundamental aspects of establishing positive health behaviours to prevent chronic diseases. In line with the strategies stated in the National Adolescent Health Policy, this study focuses on identifying protective factors at family, school, and peer levels that influence adolescent health and integrating these protective factors into health promotion among adolescents in WP Kuala Lumpur.

3.9.2 Objectives

- i. To determine the prevalence of truancy in the past 30 days among adolescents
- ii. To determine the prevalence of peer support in the past 30 days among adolescents
- iii. To determine the prevalence of parental or guardian supervision in the past 30 days among adolescents
- iv. To determine the prevalence of parental or guardian connectedness in the past 30 days among adolescents
- v. To determine the prevalence of parental or guardian bonding in the past 30 days among adolescents
- vi. To determine the prevalence of parental or guardian respect for privacy in the past 30 days among adolescents

3.9.3 Variable definitions

- **Truancy:** Missed class or school without permission for at least one day in the past 30 days. (This variable is monitored with lower prevalence to define as protective factors).
- **Peer support:** Adolescents in their school were kind and helpful most of the time or always during the past 30 days.

- **Parental or guardian supervision:** Parents or guardians had always or most of the time, checked to see if their homework was done in the past 30 days.
- **Parental or guardian connectedness:** Parents or guardians had always or most of the time, understood their problems and worries in the past 30 days.
- **Parental or guardian bonding:** Parents or guardians had always or most of the time, really knew what they were doing with their free time in the past 30 days.
- **Parental or guardian respect for privacy:** Parents or guardians had never or rarely gone through their things without their approval in the past 30 days.

3.9.4 Findings

Truancy

The prevalence of truancy in the past 30 days among adolescents was 24.7% (95% CI: 20.21, 29.85). It was higher in females (25.4%, 95% CI: 21.10, 30.31) compared to males (24.0%, 95% CI: 18.13, 31.02). Truancy was highest among Form 5 students with 34.3% (95% CI: 26.70, 42.85) (**Table 3.9.1**).

Having Peer Support

The prevalence of having peer support in the past 30 days among adolescents was 49.6% (95% CI: 43.87, 55.27). It was higher in females (57.0%, 95% CI: 51.35, 62.52) compared to males (42.0%, 95% CI: 35.29, 49.05). Having peer support was highest among Form 3 students with 55.8% (95% CI: 46.22, 65.04) (**Table 3.9.2**).

Having Parental or Guardian Supervision

The prevalence of having parental or guardian supervision in the past 30 days among adolescents was 8.8% (95% CI: 7.71, 10.01). It was higher in males (9.0%, 95% CI: 7.36, 10.85) compared to females (8.6%, 95% CI: 7.40, 10.07). Having parental or guardian supervision was highest among Form 1 students with 16.6% (95% CI: 12.50, 21.75) (**Table 3.9.3**).

Having Parental or Guardian Connectedness

The prevalence of having parental or guardian connectedness in the past 30 days among adolescents was 23.8% (95% CI: 21.00, 26.91). It was higher in males (25.6%, 95% CI: 21.76, 29.87) compared to females (22.1%, 95% CI: 18.67, 25.90). Having parental or guardian connectedness was highest among Form 1 students with 32.5% (95% CI: 26.37, 39.20). (**Table 3.9.4**).

Having Parental or Guardian Bonding

The prevalence of having parental or guardian bonding in the past 30 days among adolescents was 34.5% (95% CI: 30.96, 38.31). It was higher in males (36.4%, 95% CI: 31.97, 41.18) compared to females (32.7%, 95% CI: 28.28, 37.38). Having parental or guardian bonding was highest among Form 1 students with 38.0% (95% CI: 31.99, 44.33) (**Table 3.9.5**).

Having Parental or Guardian Respect for Privacy

The prevalence of having parental or guardian respect for privacy in the past 30 days among adolescents was 81.2% (95% CI: 78.91, 83.30). It was higher in females (82.2%, 95% CI: 80.00, 84.25) compared to males (80.2%, 95% CI: 77.01, 83.01). Having parental or guardian respect for privacy was highest among Form 5 students with 87.4% (95% CI: 82.91, 90.78) (Table 3.9.6).

3.9.5 Discussion / Conclusion

Parental protective factors which were parent or guardian supervision, connectedness and bonding showed a decreasing trend. This is quite worrisome because parent/guardian-adolescent relation is a strong protective factor by providing a secure base for them especially in social support and might determine their children's lives and behaviour during adolescence. Therefore, a comprehensive intervention policies or programmes must be further designed to address and to tackle this issue.

3.9.6 Recommendations

Development of interventions that strengthen the protective factors among school adolescents is important and more effective in reducing risk in order to improve the outcomes experienced by the adolescents. Among the interventions that can be implemented are:

1. Monitoring attendance closely by participation of schools, parent and local organizations through enforcement of mandatory attendance law allows identification of at risk and truancy behaviour among school adolescents.
2. Establishment of school programs that need parent's supervision will help in improving the parenting skills especially in parental attachment.

3.9.7 References

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Table: Protective Factors Trend in WP Kuala Lumpur

	NHMS 2012	NHMS 2017	NHMS 2022
Truancy	27.0	29.1	24.7
Having peer support	44.5	42.9	49.6
Having parental or guardian supervision	12.1	10.7	8.8
Having parental or guardian connectedness	33.1	30.8	23.8
Having parental or guardian bonding	49.0	44.9	34.5
Having parental or guardian respect for privacy	77.0	77.3	81.2

Table 3.9.1: Prevalence of truancy in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	528	25624	24.7	20.21	29.85
Sex					
Male	238	12382	24.0	18.13	31.02
Female	290	13242	25.4	21.10	30.31
Form					
Form 1	75	3990	17.7	12.37	24.76
Form 2	79	4364	19.7	13.87	27.21
Form 3	108	5551	27.3	19.71	36.59
Form 4	120	5271	26.4	20.56	33.27
Form 5	146	6449	34.3	26.70	42.85
Ethnicity					
Malay	378	18595	29.7	23.99	36.24
Chinese	89	4200	13.9	10.40	18.23
Indian	39	1796	24.3	19.44	29.85
Bumiputera Sabah	9	431	35.9	24.34	49.43
Bumiputera Sarawak	3	-	-	-	-
Others	10	474	26.5	21.38	32.26

- Prevalence with high RSE, not reported

Table 3.9.2: Prevalence of having peer support in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1058	51294	49.6	43.87	55.27
Sex					
Male	411	21599	42.0	35.29	49.05
Female	647	29696	57.0	51.35	62.52
Form					
Form 1	168	8966	40.0	34.05	46.20
Form 2	187	10660	48.4	39.22	57.71
Form 3	231	11336	55.8	46.22	65.04
Form 4	248	10770	54.0	44.20	63.50
Form 5	224	9563	50.9	40.26	61.45
Ethnicity					
Malay	634	31211	50.0	42.99	56.99
Chinese	330	15701	51.9	41.85	61.85
Indian	62	2855	38.6	25.65	53.35
Bumiputera Sabah	8	-	-	-	-
Bumiputera Sarawak	3	-	-	-	-
Others	21	1031	57.5	41.66	71.98

- Prevalence with high RSE, not reported

Table 3.9.3: Prevalence of having parental or guardian supervision in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	175	9111	8.8	7.71	10.01
Sex					
Male	83	4617	9.0	7.36	10.85
Female	92	4494	8.6	7.40	10.07
Form					
Form 1	70	3731	16.6	12.50	21.75
Form 2	33	2038	9.2	5.98	13.91
Form 3	32	1625	8.0	4.92	12.77
Form 4	22	929	4.7	3.22	6.69
Form 5	18	-	-	-	-
Ethnicity					
Malay	90	4765	7.6	6.49	8.96
Chinese	46	2363	7.8	5.40	11.12
Indian	28	1427	19.3	13.21	27.26
Bumiputera Sabah	5	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	5	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.9.4: Prevalence of having parental or guardian connectedness in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	486	24657	23.8	21.00	26.91
Sex					
Male	240	13183	25.6	21.76	29.87
Female	246	11474	22.1	18.67	25.90
Form					
Form 1	135	7282	32.5	26.37	39.20
Form 2	85	5123	23.2	18.31	29.04
Form 3	87	4509	22.3	17.61	27.71
Form 4	86	3785	19.0	15.05	23.65
Form 5	93	3959	21.1	15.64	27.76
Ethnicity					
Malay	285	14750	23.6	19.07	28.90
Chinese	140	6813	22.5	17.22	28.88
Indian	44	2234	30.4	21.73	40.78
Bumiputera Sabah	9	441	36.8	27.68	47.05
Bumiputera Sarawak	1	-	-	-	-
Others	7	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.9.5: Prevalence of having parental or guardian bonding in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	713	35779	34.5	30.96	38.31
Sex					
Male	347	18770	36.4	31.97	41.18
Female	366	17008	32.7	28.28	37.38
Form					
Form 1	157	8518	38.0	31.99	44.33
Form 2	127	7649	34.6	27.90	42.00
Form 3	147	7443	36.7	29.19	44.85
Form 4	150	6518	32.7	26.90	39.04
Form 5	132	5650	30.1	24.28	36.58
Ethnicity					
Malay	391	20178	32.3	28.32	36.58
Chinese	238	11591	38.3	31.99	45.06
Indian	62	2947	39.8	31.64	48.62
Bumiputera Sabah	6	279	23.3	13.04	38.16
Bumiputera Sarawak	3	-	-	-	-
Others	13	641	35.7	25.46	47.53

- Prevalence with high RSE, not reported

Table 3.9.6: Prevalence of having parental or guardian respect for privacy in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	1708	84002	81.2	78.91	83.30
Sex					
Male	780	41265	80.2	77.01	83.01
Female	928	42737	82.2	80.00	84.25
Form					
Form 1	330	17579	78.3	71.68	83.80
Form 2	285	16372	74.4	71.59	76.99
Form 3	334	17024	83.9	79.15	87.68
Form 4	380	16611	83.5	78.92	87.19
Form 5	379	16415	87.4	82.91	90.78
Ethnicity					
Malay	1029	51738	82.9	80.59	85.07
Chinese	517	24326	80.6	75.18	85.00
Indian	107	5161	69.7	60.98	77.27
Bumiputera Sabah	19	929	77.5	54.12	90.95
Bumiputera Sarawak	7	393	82.0	40.33	96.83
Others	29	1455	81.2	60.82	92.32

- Prevalence with high RSE, not reported

3.10 Sexual Behaviours

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3.10.1 Introduction

Adolescent sexual behaviour contributes to various sexual and reproductive health issues. The Global Summary HIV Epidemic Report, there were 150,000 adolescents aged 10-19 that were newly infected with HIV while 1,750,000 adolescents were already living with HIV¹. It was also reported that the highest rate of sexual transmitted illness (STI) worldwide is among young people aged 15 to 24 years². In Malaysia, the incidence of HIV reported among adolescents aged 13 to 19 was 2.4 per 100,000 population in 2021 and this trend has been steadily increasing in the past 10 years². The WHO reported that 50% of young unmarried girls aged 15 to 19 years in low- and middle-income countries had an unintended pregnancy in 2019³. Globally, there were 41 births per 1000 girls aged 15-19 years in 2020 and 14% of maternal deaths. Good knowledge of HIV would help in reducing the transmission as shown in a study that a person with inadequate knowledge of HIV is more vulnerable to acquire the infection and may spread the disease throughout the population⁴. Good knowledge on HIV transmission was also associated with intention to engage in low-risk sexual behaviour⁵. Therefore, this study also aims to assess the knowledge of HIV transmission based on United Nation General Assembly Special Session (UNGASS) indicators among the school adolescents to determine the prevalence of HIV knowledge among them.

3.10.2 Objectives

To determine:

- i. the prevalence of ever having sexual intercourse among adolescents in Malaysia
- ii. the prevalence of current sexual intercourse in the past 30 days among adolescents in Malaysia
- iii. the percentage of first sexual experience before the age 14 years among those who ever had sex
- iv. the percentage of having at least two sexual partners among those who ever had sex
- v. the percentage of condom usage during the last sexual intercourse among those who ever had sex
- vi. the percentage of "other birth control methods" usage during the last sexual intercourse among those who ever had sex
- vii. the prevalence of adequate HIV knowledge among adolescents in Malaysia
- viii. the percentage of correct responses in each of UNGASS indicators among adolescents in Malaysia

3.10.3 Variable Definitions

- **Sexual intercourse:** sexual acts of penile penetration into the vagina or anus.
- **Risky sexual behaviour:** behaviours such as early sex debut, multiple sex partners and unprotected sex that could lead to health problems.
- **Other birth control methods:** pregnancy prevention methods other than barrier methods (condom usage) including withdrawal, birth control pills or any other non-barrier methods.
- **Ever had sex:** any positive answer for first sexual intercourse.
- **Current sexual intercourse:** sexual intercourse in the past 30 days.
- **Adequate HIV Knowledge:** provided correct responses to all five items of UNGASS indicators/questions.

3.10.4 Findings

Prevalence of ever had sex among adolescents in WP Kuala Lumpur was 8.4% (95% CI: 6.65, 10.60), male adolescents showed significantly higher prevalence 10.7% (95% CI: 8.35, 13.59) compared to females, 6.2% (95% CI: 4.37, 8.63) (**Table 3.10.1**). Prevalence of current sexual intercourse among adolescents in WP Kuala Lumpur was 7.1% (95% CI: 5.70, 8.82), male adolescents had higher prevalence of currently having sexual intercourse which was 9.0% (95% CI: 6.98, 11.62) compared to female; 5.2% (95% CI: 4.04, 6.68) (**Table 3.10.2**). Of those who ever had sex, 23.5% had sex before the age of 14. It was noted that 11.5% of them used other birth control methods and 10.1% used condom during their last sexual intercourse while 6.8% of those who had at least two sexual partners (**Table 3.10.3**).

The percentage of correct responses by each item was highest for question "Can a healthy-looking person have HIV?" with 35.2%. "Can a person get HIV from mosquito bites?" with percentage 30.1%. Followed by question "Can a person reduce the risk of getting HIV using a condom every time they have sex?" the percentage was 23.1%. "Can a person get HIV by sharing food with someone who is infected?" the percentage was 22.8%. While the least 17.5% for "Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partner?" (**Table 3.10.4**)

3.10.5 Discussion / Conclusion

This study found that majority of sexually active adolescents are engaging in risky sexual behaviour, i.e., sex debut before age 14 years, having multiple sexual partners and unprotected sex. While from the UNGASS indicators, adequate knowledge on HIV transmission among adolescents are still low.

3.10.6 Recommendations

1. To strengthen sexual and reproductive health education to be more effective and comprehensive in empowering adolescents with appropriate knowledge, attitude, and skills.
2. To enhance the promotion of various existing sexual and reproductive health modules designed to guide and assist parents / guardians / caregivers to talk about sexuality at home and institutions.
3. To improve on parenting skills and effective communication in sexual and reproductive health related matters.
4. To conduct more studies especially qualitative studies in exploring the determinants of risky sexual behaviours among adolescents.
5. To reactivate the Healthy Programme Without AIDS for Adolescents (PROSTAR) to increase HIV/STI awareness and knowledge.
6. To utilise creative and innovative approaches through social media, peer educator programmes, public-private-NGO (triparty) partnerships and etc.
7. To utilise creative and innovative approaches through social media, peer educator programmes, public-private-NGO (triparty) partnerships and etc.

3.10.7 References

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Table 3.10.1: Prevalence of ever had sexual intercourse among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	168	8710	8.4	6.65	10.60
Sex					
Male	100	5503	10.7	8.35	13.59
Female	68	3207	6.2	4.37	8.63
Form					
Form 1	34	1911	8.5	5.88	12.23
Form 2	41	2395	10.8	8.28	13.92
Form 3	31	1599	7.9	4.64	13.21
Form 4	34	1536	7.7	5.50	10.68
Form 5	28	1268	6.8	3.66	12.17
Ethnicity					
Malay	95	4841	7.8	5.74	10.41
Chinese	41	2217	7.3	4.70	11.28
Indian	21	1108	15.0	7.92	26.50
Bumiputera Sabah	4	-	-	-	-
Bumiputera Sarawak	2	-	-	-	-
Others	5	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.10.2: Prevalence of current sexual intercourse in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	141	7353	7.1	5.70	8.82
Sex					
Male	84	4647	9.0	6.98	11.62
Female	57	2706	5.2	4.04	6.68
Form					
Form 1	33	1859	8.3	5.68	12.00
Form 2	36	2116	9.5	7.28	12.36
Form 3	23	1173	5.8	3.04	10.82
Form 4	23	1035	5.2	3.69	7.26
Form 5	26	-	-	-	-
Ethnicity					
Malay	75	3817	6.1	4.65	8.01
Chinese	37	2025	6.7	4.14	10.67
Indian	20	1055	14.3	7.55	25.30
Bumiputera Sabah	3	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	5	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.10.3: Proportion of sexual practices among those who ever had sex among adolescents in WP Kuala Lumpur, 2022

Sexual Practices	Unweighted count	Percentage (%)
Percentage of first sex before the age 14 years	39	23.5
Percentage of having at least two sexual partners	12	6.8
Percentage of reported condom use during last sexual intercourse	17	10.1
Percentage of reported using other birth control method during last sexual intercourse	19	11.5

Table 3.10.4: Percentage of Correct Responses by item of UNGASS Indicator among adolescents in WP Kuala Lumpur, 2022

Sexual Practices	Unweighted count	Percentage (%)
Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	386	17.5
Can a person reduce the risk of getting HIV using a condom every time they have sex?	501	23.1
Can a healthy-looking person have HIV?	779	35.2
Can a person get HIV from mosquito bites?	660	30.1
Can a person get HIV by sharing food with someone who is infected?	499	22.8

3.11 Tobacco Use

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3.11.1 Introduction

Tobacco use including cigarette and e-cig/vape is predominantly an issue for male adolescents. Malaysia is committed to achieve smoke free generation by 2040¹. Various anti-tobacco programs for youths have been established especially at school level. Continuous surveillance of tobacco use among adolescents is essential in monitoring the progress of tobacco control programs in Malaysia generally and at state level of WP Kuala Lumpur, specifically.

3.11.2 Objectives

General objective:

To determine the use of tobacco among adolescents in WP Kuala Lumpur.

Specific objectives:

- i. To identify the prevalence of the current use of any tobacco product adolescents in WP Kuala Lumpur
- ii. To identify the prevalence of the current tobacco smoking (current smoking) among adolescent in WP Kuala Lumpur
- iii. To identify the prevalence of the current cigarette smoking among adolescent in WP Kuala Lumpur
- iv. To identify the prevalence of the current e-cig/vape use among adolescent in WP Kuala Lumpur
- v. To determine the latest source of cigarette obtained among adolescent cigarette smokers in WP Kuala Lumpur
- vi. To determine the latest source of e-cig/vape obtained among adolescent e-cig/vape users in WP Kuala Lumpur
- vii. To determine the prevalence of exposure to second-hand smoke among adolescent in WP Kuala Lumpur
- viii. To determine the prevalence of exposure to tobacco products advertisement or promotion in the point of sales among adolescents in WP Kuala Lumpur

3.11.3 Variable Definitions

- **Current any tobacco use** - the use any of the following tobacco product during the last 30 days: manufactured cigarette, traditional hand rolled cigarettes, roll-your-own cigarettes with cigarette papers, cigar/cigarillos, tobacco pipe (pipe

smoking), shisha/hookah, electronic cigarette/vape, heated tobacco product, snuff or chewed tobacco

- **Current tobacco smoker or current smoker** - the use of any of the following tobacco products during the last 30 days: manufactured cigarette, traditional hand rolled cigarettes, roll-your-own cigarettes with cigarette papers, cigar/cigarillos, tobacco pipe (pipe smoking) or shisha/hookah
- **Current cigarette smoker** - the use of any of the following tobacco products during the last 30 days: manufactured cigarettes, traditional hand rolled cigarettes, roll-your-own cigarettes with cigarette papers or cigar/cigarillos
- **Current e-cig/vape user** - the use of e-cig/vape during the last 30 days

3.11.4 Findings

In WP Kuala Lumpur, the prevalence of current use of any tobacco products was 17.4% (95%CI: 12.82, 23.08), which was slightly lower as compared to the national level [18.5% (95%CI: 17.09, 19.92)]. Males have two and half times higher prevalence [24.8% (95%CI: 18.79, 32.04)] as compared to females [9.9% (95%CI: 6.96, 14.00)] (**Table 3.11.1**). The prevalence of current smokers in WP Kuala Lumpur was 8.7% (95%CI: 6.31, 11.80) with males dominating the prevalence for three times higher as compared to females [13.0% (95%CI: 9.59, 17.48) vs. 4.3% (95%CI: 2.99, 6.23)] (**Table 3.11.2**), while the current cigarette smoker prevalence was 5.6% (95%CI: 3.72, 8.24) (**Table 3.11.3**). The prevalence of the e-cig/vape user among adolescents in WP Kuala Lumpur was 14.9% (95%CI: 10.68, 20.39) with the prevalence of males was nearly three times higher compared to females [22.0% (95%CI: 16.19, 29.12) vs. 7.9% (95%CI: 5.29, 11.53)] (**Table 3.11.4**).

Most of the cigarettes obtained by buying them from static premises (36.6%) and by getting them from friends (29.7%) (**Table 3.11.5**). Most of the e-cig/vape were obtained by buying them from specific e-cig/vape shops (38.2%) and by getting them from friends (33.6%) (**Table 3.11.6**). Nearly two-fifths of the adolescents [39.6% (95%CI: 33.42, 46.10)] reported they have parent or guardian who smoked or used any type of tobacco products, with almost half of them [22.7% (95%CI: 19.12, 26.76)] reported they have e-cig/vape used parent or guardians, while nearly two-fifths [39.6% (95%CI: 34.43, 44.92)] of the adolescents reported they're exposed to second-hand smoke when someone else smoking nearby in their presence within the past 7 days (**Table 3.11.7**). One-fifth of the adolescents claimed they were exposed to the tobacco products point-of-sale advertising and promotion for the past 30 days [20.7% (95%CI: 18.09, 23.55)] (**Table 3.11.8**).

3.11.5 Discussion / Conclusion

The prevalence of tobacco use among adolescents in WP Kuala Lumpur just has some narrow difference as compared with the prevalence in Malaysia. There was a significant increase in the prevalence of e-cig/vape use among adolescents, as compared with findings in 2017². This indicates a switch in the preference of nicotine delivery among adolescents in Malaysia, as well as in WP Kuala Lumpur within the past five years. Various factors could have contributed to these recent findings. Special concern should also be given to female adolescents as the prevalence of e-cig/vape users has doubled since 2017².

3.11.6 Recommendation

Tobacco use, which includes vaping, is a major harmful determinant for human health. It is worrying that the current anti-tobacco programs seem to have not diminished Malaysian adolescents' interest in vaping. A smokefree generation requires participation and dedication from all sectors, including family institutions, education sector, politicians, government and non-governmental organizations. Moving forward, it is high time for all sectors to come together and agree on banning tobacco use among future Malaysian generations. Strengthening the current law and taking legal action are vital in controlling the accessibility of tobacco products, especially e-cig/vape by adolescents. For those who have developed a nicotine addiction, the visibility of quit smoking services should be increased more aggressively to attract more adolescents to seek help. All screening, prevention, and intervention programs among adolescents must be strengthened and delivered in synergy by all governmental and nongovernmental agencies.

3.11.7 References

1. Tobacco Control Sector and FCTC Secretariat, 2021. National Strategic Plan for The Control of Tobacco & Smoking Products 2021-2030. Ministry of Health Malaysia
2. Institute for Public Health (IPH). 2017. National Health and Morbidity Survey, NHMS 2017. Ministry of Health Malaysia

Table 3.11.1: Prevalence of current any tobacco use among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	358	18165	17.4	12.82	23.08
Sex					
Male	245	12945	24.8	18.79	32.04
Female	113	5220	9.9	6.96	14.00
Form					
Form 1	47	2633	11.7	6.66	19.74
Form 2	61	3631	16.3	11.08	23.43
Form 3	68	3648	17.3	10.51	27.14
Form 4	103	4589	22.9	15.77	32.02
Form 5	79	3664	19.5	12.87	28.42
Ethnicity					
Malay	277	14267	22.7	17.29	29.16
Chinese	47	2271	7.4	4.36	12.28
Indian	17	794	10.5	5.94	17.78
Bumiputera Sabah	9	431	36.0	18.23	58.59
Bumiputera Sarawak	1	-	-	-	-
Others	7	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.11.2: Prevalence of current tobacco smoker among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	176	9069	8.7	6.31	11.80
Sex					
Male	127	6795	13.0	9.59	17.48
Female	49	2274	4.3	2.99	6.23
Form					
Form 1	22	-	-	-	-
Form 2	29	1776	8.0	5.42	11.65
Form 3	34	1876	8.9	4.91	15.60
Form 4	50	2229	11.1	7.63	15.92
Form 5	41	1924	10.2	6.42	15.95
Ethnicity					
Malay	122	6382	10.1	7.14	14.22
Chinese	35	1731	5.6	3.35	9.33
Indian	9	-	-	-	-
Bumiputera Sabah	5	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	4	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.11.3: Prevalence of current cigarettes smoker among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	113	5821	5.6	3.72	8.24
Sex					
Male	88	4717	9.1	6.33	12.80
Female	25	1104	2.1	1.12	3.90
Form					
Form 1	11	-	-	-	-
Form 2	15	-	-	-	-
Form 3	22	-	-	-	-
Form 4	32	1449	7.2	4.21	12.19
Form 5	33	1563	8.3	4.68	14.36
Ethnicity					
Malay	88	4582	7.3	5.06	10.37
Chinese	13	-	-	-	-
Indian	5	-	-	-	-
Bumiputera Sabah	4	-	-	-	-
Bumiputera Sarawak	1	-	-	-	-
Others	2	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.11.4: Prevalence of current e-cig/vape use among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	307	15588	14.9	10.68	20.39
Sex					
Male	217	11460	22.0	16.19	29.12
Female	90	4127	7.9	5.29	11.53
Form					
Form 1	32	1851	8.2	3.57	17.84
Form 2	53	3143	14.1	8.95	21.65
Form 3	58	3104	14.7	8.22	24.96
Form 4	96	4283	21.4	14.91	29.65
Form 5	68	3205	17.1	11.00	25.51
Ethnicity					
Malay	244	12631	20.1	14.79	26.66
Chinese	34	1538	5.0	3.13	7.93
Indian	13	633	8.3	4.58	14.69
Bumiputera Sabah	9	431	36.0	18.23	58.59
Bumiputera Sarawak	1	50	10.4	1.79	42.56
Others	6	305	17.4	6.31	39.64

- Prevalence with high RSE, not reported

Table 3.11.5: Proportion of source of cigarette obtaining during the last time smoking in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Percentage (%)
Bought from static premises	43	36.6
Bought from non-static premises	10	9.1
Food establishment	8	-
Bought online	3	-
Get from friends	34	29.7
Get from family members	5	-
Got some other ways	13	11.0

- Prevalence with high RSE, not reported

Table 3.11.6: Proportion of source of e-cigarette/vape obtaining during the last time smoking in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Percentage (%)
Bought from static premises	93	38.2
Bought from non-static premises	4	-
Food establishment	18	-
Bought online	13	-
Get from friends	80	33.6
Get from family members	21	8.2
Got some other ways	15	6.0

- Prevalence with high RSE, not reported

Table 3.11.7: Prevalence of exposure to second hand smoke among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
Having parent or guardian who smoked/used any type of tobacco products	782	39126	39.6	33.42	46.10
Having e-cigarette/vape use parent or guardian	444	22429	22.7	19.12	26.76
Someone smoking nearby in the presence of respondent in the past 7 days	835	41367	39.6	34.43	44.92

Table 3.11.8: Prevalence of currently see or notice any tobacco products advertising or promotion in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
Currently see or notice any tobacco product advertising or promotion in the point of sales in the past 30 days	429	21596	20.7	18.09	23.55

3.12 Violence and Unintentional Injury

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3.12.1 Introduction

Malaysia supports the mandate under resolutions WHA67.15 (2014) and WHA69.5 (2016) on implementing the WHO global plan of action to strengthen the role of the health system within a national multisectoral response to address interpersonal violence in particular against women and girls, and against children. Global school-based health surveys have shown that up to 42% of adolescent boys and 37% of adolescent girls were exposed to bullying¹. Due to lockdowns caused by the ongoing COVID-19 pandemic, adolescents may be subjected to mistreatment and violence when they are forced to remain at home with their aggressors². In addition, cyberbullying is another issue of concern that is closely related to adolescents' mental health and development³.

3.12.2 Objectives

To describe the prevalence of:

- i. Having been physically attacked at least once in the past 12 months
- ii. Involvement in a physical fight at least once in the past 12 months
- iii. Having had a serious injury at least once in the past 12 months
- iv. Physical abuse at home at least once in the past 30 days
- v. Verbal abuse at home at least once in the past 30 days
- vi. Having been bullied at least once in the past 30 days
- vii. Involvement in the perpetration of cyberbullying a few times within a year or more

3.12.3 Variable Definitions

- **Physical attack:** when one or more persons hurt another person with or without a weapon such as sticks or knives in the past 12 months. It is NOT a physical attack when two individuals or adolescents of about the same strength or power choose to fight each other.
- **Physical fight:** when two individuals or adolescents of about the same strength or power choose to fight each other in the past 12 months.
- **Unintentional injury:** a serious injury which makes the student miss at least one full day of usual activity (such as school, sports or a job) OR requires treatment by doctor or medical personnel in the past 12 months.

- **Physical abuse at home:** when someone is hit so hard that it left a mark OR caused an injury in the past 30 days.
- **Verbal abuse at home:** when someone has had hurtful or insulting things said to them in the past 30 days.
- **Bullying:** when a student or group of adolescents say or do bad and unpleasant things to another student, such as teasing a lot in an unpleasant way or leaving out things on purpose in the past 30 days. It is NOT bullying when two adolescents of about the same strength or power argue or fight or when teasing is done in a friendly and fun way.
- **Cyberbullying (perpetrator):** bullying or harassment through the internet, cell phones, or other electronic devices (ie, sending insulting messages, posting digitally altered photos, engaging in online fighting, making aggressive comments, sharing someone's embarrassing information, or sending messages that include threats of harm through e-mail, instant messaging, in a chat room, on a website, or sent to a cell phone).

3.12.4 Findings

The prevalence of adolescents who had been physically attacked in the past 12 months was 18.8% (95% CI: 16.66, 21.12) and this was higher in male [19.1% (95% CI: 16.07, 22.54)] compared to female [18.5% (95% CI: 15.73, 21.60)]. (Table 3.12.1). Overall, 19% (95% CI: 16.67, 21.65) adolescents claimed to have been involved in a physical fight, which was higher in male [22% (95% CI: 18.11, 26.52)] compared to female [16.1% (95% CI: 13.21, 19.40)]. (Table 3.12.1).

The prevalence of adolescents who had a serious injury in the past 12 months was 22.0% (95% CI: 18.95, 25.27). Male adolescents showed a higher prevalence [24.0% (95% CI: 18.84, 30.06)] compared to female [19.9% (95% CI: 16.83, 23.39)]. (Table 3.12.2). However, among those who had been seriously injured, the two most common causes of serious injury were falls [9.3% (95% CI: 7.49, 11.39)] and motor vehicle accidents [3.1% (95% CI: 2.16, 4.45)]. (Table 3.12.3).

The prevalence of adolescents reported had experienced physical abuse at home was 8.5% (95% CI: 6.70, 10.73) which was higher among female at 10.4% (95% CI: 7.88, 13.61) compared to male at 6.6% (95% CI: 4.30, 9.97)]. (Table 3.12.4). Overall, 45.5% (95% CI: 39.77, 51.30) adolescents reported being abused verbally at home and it was significantly higher among female [54.8% (95% CI: 47.83, 61.60)] compared to male [36.1% (95% CI: 30.92, 41.55)]. (Table 3.12.4).

In terms of bullying, 10.6% (95% CI: 9.25, 12.18) adolescents reported having been bullied. This was higher among male [12.2% (95% CI: 10.42, 14.28)] compared to female [9% (95% CI: 7.40, 11.00)]. (Table 3.12.5). The most common

form of bullying was, 'Making fun of how my body or face looks' [2.5% (95% CI: 1.75, 3.49)]. (Table 3.12.6).

With regards to involvement in cyberbullying activities from the perspective of the perpetrator, 23% (95% CI: 19.81, 26.49) of adolescents reported that they had been involved in cyberbullying activities a few times within the past year or more. Male adolescents showed a significantly higher prevalence [29.3% (95% CI: 24.54, 34.48)] compared to female [16.7% (95% CI: 13.40, 20.70)]. (Table 3.12.7). The two most common forms of adolescents' involvement in cyberbullying activities were 'Ever made rude comments to anyone online' [14.7% (95% CI: 12.01, 17.93)] and 'Ever spread rumours about someone online' [8.3% (95% CI: 6.59, 10.28)]. (Table 3.12.8).

3.12.5 Discussion / Conclusion

Pandemic situations reduced the prevalence of violence significantly through restricted movement, reduced social exposure, and reduced exposure to physical violence. The prevalence of perpetration of cyberbullying found in this survey is consistent with only a few countries in the world. Despite the reduction in all domains, further strategic steps should be taken to improve the outcome of the survey.

3.12.6 Recommendations

In the previous two surveys, recommendations touched on identifying the risk factors that contributed to the problems. The recommendations in this survey are more focused on dealing with abuse, bullying, cyberbullying, and falling. Approaches should be comprehensive with the involvement of relevant agencies.

- i. Promotion of "Bystander Revolution" as part of a bully cessation program, where adolescents are empowered to stop and report a bullying event.
- ii. Awareness programmes for cyberbullying should now focus on the perpetrator, as there are already approaches to manage victims of cyberbully.
- iii. In schools, life skills education and the implementation of programmes to strengthen the communication between adolescents and teachers.
- iv. The overall approach to cyber safety emphasises media watch, written policies and laws to control media contents (violence acts and pornography) and enhancing tele-health and digitalization for accessibility to get help.

3.12.7 References

1. WHO. (2022) Fact sheet: Adolescent and young adult health
2. Garstang, J. et al. (2020) Effect of COVID-19 lockdown on child protection medical assessments: A retrospective observational study in Birmingham, UK. *BMJ Open* 10, 1–6
3. Vaillancourt, T. et al. (2021) School bullying before and during COVID-19: Results from a population based randomized design. *Aggress. Behav.* 47, 557–569

Table 3.12.1: Prevalence of involvement in violence at least once in the past 12 months among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Having been physically attacked at least once				Involvement in physical fight at least once			
	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper
WP KUALA LUMPUR	387	19581	18.8	16.66 21.12	387	19824	19.0	16.67 21.65
Sex								
Male	183	9911	19.1	16.07 22.54	211	11419	22.0	18.11 26.52
Female	204	9670	18.5	15.73 21.60	176	8405	16.1	13.21 19.40
Form								
Form 1	81	4276	19.0	14.93 23.87	103	5425	24.1	19.55 29.35
Form 2	86	5051	22.7	18.31 27.86	76	4645	20.9	16.52 26.09
Form 3	64	3285	15.8	10.73 22.73	63	3308	16.0	10.51 23.54
Form 4	82	3684	18.5	13.91 24.11	74	3346	16.8	11.95 23.05
Form 5	74	3285	17.5	13.45 22.42	71	3100	16.5	12.50 21.47
Ethnicity								
Malay	249	12630	20.1	17.39 23.07	248	12737	20.2	17.67 23.10
Chinese	96	4836	15.9	13.17 19.14	88	4505	14.8	11.13 19.52
Indian	28	1432	19.2	14.90 24.32	33	1676	22.6	17.76 28.28
Bumiputera Sabah	5	222	18.6	12.19 27.22	10	470	39.3	22.57 58.89
Bumiputera Sarawak	4	-	-	- -	2	-	-	- -
Others	5	-	-	- -	6	-	-	- -

- Prevalence with high RSE, not reported

Table 3.12.2: Prevalence of had serious injury at least once in the past 12 months among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	456	22839	22.0	18.95	25.27
Sex					
Male	234	12430	24.0	18.84	30.06
Female	222	10409	19.9	16.83	23.39
Form					
Form 1	89	4675	20.8	15.47	27.31
Form 2	79	4696	21.1	14.98	28.96
Form 3	91	4747	23.0	19.21	27.22
Form 4	98	4296	21.5	16.91	27.02
Form 5	99	4426	23.6	18.24	29.99
Ethnicity					
Malay	306	15502	24.7	21.50	28.13
Chinese	100	4812	15.9	12.87	19.42
Indian	32	1632	21.9	15.53	29.84
Bumiputera Sabah	5	237	20.6	12.45	32.21
Bumiputera Sarawak	5	282	58.8	28.26	83.79
Others	8	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.12.3: Major cause of the most serious injury sustained in the past 12 months among adolescents who were injured in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
In a motor vehicle accident or hit by a motor vehicle	56	2876	3.1	2.16	4.45
Fell	168	8561	9.3	7.49	11.39
Something fell or hit him/her	27	1222	1.3	0.92	1.90
Attacked of abused or fighting with someone	24	1210	1.3	0.82	2.08
In a fire or too near a flame or something hot	5	-	-	-	-
Inhaled or swallowed something bad	1	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.12.4: Prevalence of being abused at least once in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Physical abuse at home at least once				Verbal abuse at home at least once			
	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper	Unweighted count	Estimated population	Prevalence (%)	95 % CI Lower Upper
WP KUALA LUMPUR	176	8850	8.5	6.70 10.73	968	47385	45.5	39.77 51.30
Sex								
Male	64	3419	6.6	4.30 9.97	349	18712	36.1	30.92 41.55
Female	112	5431	10.4	7.88 13.61	619	28673	54.8	47.83 61.60
Form								
Form 1	47	2503	11.1	7.99 15.27	166	8759	38.9	31.39 47.03
Form 2	39	2187	9.9	6.49 14.75	192	10826	48.7	41.40 56.12
Form 3	32	1648	7.9	4.89 12.64	191	9664	46.6	38.17 55.16
Form 4	26	1131	5.7	3.70 8.63	209	9062	45.4	35.30 55.96
Form 5	32	1382	7.4	5.23 10.25	210	9073	48.3	41.09 55.55
Ethnicity								
Malay	103	5182	8.2	6.23 10.84	660	32276	51.3	43.79 58.77
Chinese	46	2354	7.8	5.26 11.28	213	10484	34.5	25.12 45.35
Indian	21	1030	13.8	7.92 22.93	67	3215	43.0	34.00 52.57
Bumiputera Sabah	4	-	-	- -	12	582	48.6	37.43 59.82
Bumiputera Sarawak	0	-	-	- -	5	-	-	- -
Others	2	-	-	- -	11	539	30.1	15.58 50.09

- Prevalence with high RSE, not reported

Table 3.12.5: Prevalence of experience in being bullied at least once in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	211	11067	10.6	9.25	12.18
Sex					
Male	114	6341	12.2	10.42	14.28
Female	97	4726	9.0	7.40	11.00
Form					
Form 1	64	3493	15.5	12.59	18.99
Form 2	43	2627	11.8	8.86	15.61
Form 3	40	2163	10.4	6.96	15.39
Form 4	33	1398	7.0	4.74	10.25
Form 5	31	1385	7.4	4.81	11.14
Ethnicity					
Malay	136	7157	11.4	9.70	13.32
Chinese	50	2656	8.7	6.72	11.32
Indian	18	928	12.4	8.35	18.08
Bumiputera Sabah	3	136	11.3	6.02	20.30
Bumiputera Sarawak					
Others	4	-	-	-	-

- Prevalence with high RSE, not reported

Table 3.12.6: Most common ways of being bullied at least once in the past 30 days among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
Hit, kicked, pushed, shoved around or locked indoor	22	1259	1.3	0.85	1.91
Made fun of race, nationality or color	18	914	0.9	0.53	1.60
Made fun because of religion	5	-	-	-	-
Made fun with sexual jokes, comments of gestures	25	1283	1.3	0.95	1.77
Left out activities on purpose of completely ignored	18	841	0.9	0.53	1.36
Made fun of how body or face looks	47	2450	2.5	1.75	3.49

- Prevalence with high RSE, not reported

Table 3.12.7: Prevalence of involvement in cyberbullying activities (perpetrator) a few times within a year or more among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
WP KUALA LUMPUR	472	24086	23.0	19.81	26.49
Sex					
Male	282	15282	29.3	24.54	34.48
Female	190	8804	16.7	13.40	20.70
Form					
Form 1	72	3916	17.4	12.92	23.04
Form 2	102	6060	27.3	21.92	33.37
Form 3	103	5479	25.8	19.50	33.29
Form 4	102	4424	22.0	18.37	26.18
Form 5	93	4207	22.4	16.97	28.94
Ethnicity					
Malay	307	15579	24.7	22.08	27.60
Chinese	134	6899	22.4	15.72	30.97
Indian	14	-	-	-	-
Bumiputera Sabah	6	284	23.7	15.22	34.94
Bumiputera Sarawak	3	-	-	-	-
Others	8	382	21.3	11.25	36.62

- Prevalence with high RSE, not reported

Table 3.12.8: Most common ways of involvement in cyberbullying activities (perpetrator) a few times within a year or more among adolescents in WP Kuala Lumpur, 2022

Socio-demographic characteristics	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
Ever made rude comments to anyone online	296	15320	14.7	12.01	17.93
Ever sent or posted others' embarrassing photos online	122	5889	5.7	4.18	7.60
Ever spread rumours about someone online	171	8597	8.3	6.59	10.28
Ever made threatening comments to hurt someone online	48	2541	2.4	1.78	3.35
Ever asked someone to talk about sex online	46	2474	2.4	1.57	3.58
Ever asked someone to do something sexual online	22	-	-	-	-

- Prevalence with high RSE, not reported

3.13 Adolescents' Perspectives on the Impact of COVID-19 on their families

Contributors: S Maria Awaluddin, Lim Kuang Kuay, Noor Syaqlah Shawaluddin, Tuan Mohd Amin Tuan Lah, Maznieda Mahjom, Noor Ani Ahmad, Saidatul Norbaya Buang, Nik Rubiah Nik Abdul Rashid.

3.13.1 Introduction

The COVID-19 pandemic has impacted adolescents in many aspects, such as their developmental milestones and well-being, even though they are less affected by the COVID-19 disease¹. Adolescents may have many positive and negative perspectives towards the government restrictions on gathering and outdoor activities, which will affect their mental health status².

3.13.2 Objectives

To determine the prevalence of adolescents, reported that:

- i. Parents lost their jobs due to the COVID-19 pandemic.
- ii. Their family has to cut their expenses due to the COVID-19 pandemic.
- iii. Their family needs to move to a less expensive rental house due to the COVID-19 pandemic
- iv. Their family had to sell properties due to the COVID-19 pandemic
- v. Family relationships became strained due to the COVID-19 pandemic
- vi. Family had no changes due to the COVID-19 pandemic
- vii. Their family ever been infected with COVID-19

3.13.3 Variable definitions

- **Parents lost job:** the adolescent answered option "Yes" to the statement My parent/s lost his/her/their job.
- **Family has to cut their expenses:** the adolescent answered option "Yes" to the statement "Our family has to cut our expenses".
- **Family has moved to a less expensive rental house:** the adolescent answered option "Yes" to the statement My parent(s) lost his/her/their job.
- **Family had to sell properties:** the adolescent answered option "Yes" to the statement "Our family has to sell properties".
- **Family relationships became strain:** the adolescent answered option "Yes" to the statement family relationships became strained/not close.
- **Family had no changes:** adolescent who answered "No" for each subquestion of 6(a), 6(b), 6(c), 6(d), 6(e) and 6(f).
- **Family ever been infected with COVID-19:** the adolescent answered option "Yes" to the question "Has your family ever been infected with COVID-19?".

3.13.4 Findings

The prevalence of adolescents in Wilayah Persekutuan Kuala Lumpur reported that parents lost their job due to the COVID-19 pandemic was 10.2% (95% CI: 7.94, 12.90). Adolescents also reported that their family had to cut their expenses, needed to move to a less expensive rental house and had to sell properties, 38.5% (95% CI: 34.27, 43.01), 4.1% (95% CI: 2.97, 5.68) and 3.2% (95% CI: 2.49, 4.23), respectively. The prevalence of adolescents reported that family relationships became strained was 10.5% (95% CI: 8.55, 12.72). About 53.4% (95% CI: 48.50, 58.15) of adolescents reported that their family had no negative impact during the pandemic COVID-19. In terms of adolescents reporting family members ever been infected with COVID-19, the prevalence was 62.1% (95% CI: 58.35, 65.63). (Table 3.13.1).

3.13.5 Discussion / Conclusion

About half of the adolescents reported that their family had experienced negative consequences following the pandemic COVID-19 including family members ever been infected with COVID-19. Identification of the family who experienced a negative impact due to the COVID-19 pandemic can prevent further mental health problems among the affected population.

3.13.6 Recommendations

Pandemic COVID-19 caused a serious impact on the marginal of the family unit in terms of economic sustainability and parent-adolescent relationships. Therefore, the recommendations are:

- i. To work up on the emergency financial support system in reaching the affected family
- ii. To strengthen community support such as fundraising, food donation and emergency shelter
- iii. To spread awareness on Covid-19 prevention at home to prevent further disease spread
- iv. To encourage adolescents to reach out for help in any difficult situation.

3.13.7 References

1. Rao N, Fisher PA. The impact of the COVID-19 pandemic on child and adolescent development around the world. *Child Dev.* 2021;92(5): e738–48
2. Panchal U, Salazar de Pablo G, Franco M, Moreno C, Parellada M, Arango C, et al. The impact of COVID-19 lockdown on child and adolescent mental health: systematic review. *Eur Child Adolesc Psychiatry* [Internet]. 2021;(0123456789). Available from: <https://doi.org/10.1007/s00787-021-01856-w>

Table 3.13.1: Adolescents’ perspectives on the impact of COVID-19 pandemic to their family: Self-reported findings from the adolescents in WP Kuala Lumpur, 2022

Categories of COVID-19 impact	Unweighted count	Estimated population	Prevalence (%)	95 % CI	
				Lower	Upper
Parents lost job	215	10636	10.2	7.94	12.90
Family had to cut their expenses	818	40358	38.5	34.27	43.01
Family needed to move to less expensive rental house	84	4309	4.1	2.97	5.68
Family had to sell properties	67	3399	3.2	2.49	4.23
Family relationships became strain	226	10937	10.5	8.55	12.72
Family had no changes	1124	55899	53.4	48.5	58.15

APPENDICIES

Appendix 1: Members of Steering Committee NHMS 2019-2022

1. Director General of Health
2. Deputy Director General of Health (Research & Technical Support)
3. Deputy Director General of Health (Public Health)
4. Deputy Director General of Health (Medical)
5. Principal Director, Oral Health Programme
6. Principal Director, Pharmaceutical Services
7. Principal Director, Food Safety and Quality Division
8. Director, Medical Development Division
9. Director, Planning Division
10. Director, Health Education Division
11. Director, Disease Control Division
12. Director, Family Health Development Division
13. Director, Nutrition Division
14. Representative of State Directors
15. Director, Institute for Public Health
16. Dean Faculty of Medicine, University of Malaya
17. Dean Faculty of Medicine, National University of Malaysia
18. Principal Investigator, NHMS

Appendix 2: Terms of reference for NHMS 2022 Steering Committee

1. To approve the objectives and scopes of NHMS 2019 - 2022
2. To facilitate inter and intra sectorial collaboration
3. To monitor the implementation of NHMS 2019 - 2022
4. To facilitate the utilization of the NHMS 2019 - 2022 findings

Appendix 3: List of members of Central Coordinating Committee, NHMS 2022

1. Dr. Noor Ani Ahmad, Director of Institute for Public Health
2. Mr. Lim Kuang Kuay, Principal Investigator of Adolescent Health Survey
3. Dr. Muhammad Fadhli Mohd Yusoff, Method And Statistic
4. Ms. Hamizatul Akmal Abd Hamid, Data Manager
5. Dr. Shubash Shander Ganapathy, Central Field Supervisor of Negeri Sembilan, Melaka & Johor
6. Dr. Ahmad Ali Hj Zainuddin, Central Field Supervisor of Kedah, Perlis, Pulau Pinang & Perak
7. Dr. S Maria Awaluddin, Central Field Supervisor of Kelantan, Terengganu & Pahang
8. Dr. Maznieda Mahjom, Central Field Supervisor of Selangor, Kuala Lumpur & Wilayah Putrajaya
9. Dr. Mohd Shaiful Azlan Kassim, Central Field Supervisor of Sabah, Labuan & Sarawak
10. Dr. Tan Lee Ann, Data Processing & Quality
11. Ms Noor Syaqilah Shawaluddin, Logistic Support
12. Ms. Nashrah Adilah Ismail, Project Manager

Appendix 4: Terms of Reference for NHMS 2022 Central Coordinating Team (CCT)

No	Team	Duties	Officers
1	Project Management and Finance	<ul style="list-style-type: none"> • Work closely with recruitment group for employment of temporary Research Assistant • Prepare Questionnaires manual, Data collection manual • Meeting with research team members, and stakeholders • Planning for data collection training • Prepare security cards/name tags for research team Arrangement for advanced payment for survey research teams • Process claims of Field Supervisors • Monitor the expenditure/budget 	<p>Mr. Lim Kuang Kuay Dr. S. Maria Awaluddin Ms. Nashrah Adilah Ismail Ms. Nurul Amalina Yusof Mr. Muhammad Safuan Suhaimi Mr. Mohamad Shafiq Abd Basid</p>
2	Method and Data Analysis	<p>Before Data Collection</p> <ul style="list-style-type: none"> • Calculate the sample size • Determine the sample distribution by state • Selection of schools samples for each state • Selection of class samples from the selected school • Prepare unique ID for the selected schools and classes • Check module cover and dummy table prepared by key module <p>During Data Collection</p> <ul style="list-style-type: none"> • Monitoring the quality of data received from data processing team • Conducting daily data cleaning • Merge the clean dataset • Updating the monitoring board for data processing and data quality during CCT meeting • Analyst the estimate prevalence for each module during data collection <p>After Data Collection</p> <ul style="list-style-type: none"> • Check syntax analysis to ensure the analysis meet the module objectives • Prepare sampling weight for complex sample analysis • Check the table analysis for technical report • Prepare final database • Prepare data dictionary for reference 	<p>Ms. Hamizatul Akmal Abd Hamid Dr. Muhammad Fadhli Mohd Yusoff Ms. Nur Syahirah Ibrahim</p>
3	Data Processing and Quality	<ul style="list-style-type: none"> • Setting up data processing facility Development of directory of variables database • Development of quality control (QC) manual for data processing Specify data structure for data processing and data output requirement • Responsible for data entry and data cleaning • Monitoring and evaluation of QC performance for data processing Maintenance of the scanning machine • Daily back up for databases 	<p>Dr. Tan Lee Ann Ms. Nurul Haniyah Roslan Ms. Nur Faraeein Zainal Abidin Ms. Azlin Awatif Mohd Amir Hamzah</p>

No	Team	Duties	Officers
4	Central Field Supervisors	<p>Before Data Collection</p> <ul style="list-style-type: none"> Central Field Supervisors are expected to prepare for the initiation of data collection. The preparation tasks include: <ul style="list-style-type: none"> Conduct meeting with State Education Office, School Principals, Teacher in-charged for the selected schools. To ensure adequate logistic support for the data collection and liaise with the District Education Office, District Health Office and other relevant departments to ensure that: <ul style="list-style-type: none"> Human resources are available: Field Supervisors, Team leaders, Research Assistants and drivers. Manage transport: Vehicles Manage survey instruments and relevant form Manage lodging for data collectors <p>During Data Collection</p> <ul style="list-style-type: none"> Gather feedback from the field on the data collection status and problems related to logistics. Visit the field to help data collectors solve the problem if necessary. To ensure all data collection monitoring forms have been received on time. To ensure bundle from field received by the Operation Centre by hand and by post. Updating the monitoring board for state achievement and attending CCT meeting. 	<p>Dr. Ahmad Ali Zainuddin Dr. Maznieda Mahjom Dr. Mohd Shaiful Azlan Kassim Dr. S Maria Awaluddin Dr. Shubash Shander Ganapathy</p>
5	Operation Centre	<ul style="list-style-type: none"> Arrange date and place of meeting Prepare and circulate briefing materials Prepare and circulate minutes of CCT meeting Prepare letters of appointment for Central Field Supervisors, Field Supervisors and data collectors Prepare advertisement material for recruitment of data collectors Prepare letters of notifications for data collections Prepare manuals for field Supervisors and data collectors Develop a system/format and monitor the distribution of materials/ equipment for field work 	<p>Mr. Lim Kuang Kuay Ms. Nashrah Adilah Ismail</p>

Appendix 5: List of Research Team Members, NHMS 2022

Alcohol Use

1. Dr. Rusdi Abd Rashid
2. Dr. Norli Abdul Jabbar
3. Mr. Faizul Akmal Abdul Rahim
4. Ms. Hamizatul Akmal Abd Hamid
5. Ms. Halizah Mat Rifin
6. Ms. Hasimah Ismail
7. Mr. Mohd Hatta Abdul Mutalip
8. Dr. Muhammad Fadhli Mohd Yusoff
9. Dr. Thamil Arasu Saminathan
10. Dr. Tania Gayle Robert
11. Dr. Chong Zhuo Lin

Dietary Behaviours

1. Dr. Ahmad Ali Zainuddin
2. Ms. Ainan Nasrina Ismail
3. Ms. Teh Wai Siew
4. Dr. Lai Wai Kent
5. Dr. Suhaila Abdul Ghaffar
6. Mr. Azli Bin Baharudin@ Shahrudin
7. Mr. Chong Chean Tat
8. Ms. Lalitha Palaniveloo
9. Mr. Muhammad Faiz Mohd Hisham
10. Ms. Munawara Pardi
11. Dr. Norsyamliina Che Abdul Rahim
12. Ms. Nurul Huda Ibrahim
13. Ms. Siti Adibah Ab. Halim
14. Ms. Syafinaz Mohd Sallehuddin

Nutritional Status

1. Ms. Ainan Nasrina Ismail
2. Dr. Ahmad Ali Zainuddin
3. Ms. Lalitha Palaniveloo
4. Mr. Khairul Hasnan Amali
5. Ms. Siti Adibah Ab. Halim

Drug Use

1. Dr. Mohamad Salleh Abdul Ghani
2. Dr. Norli Abdul Jabbar
3. Dr. Rushidi Abd Rashid
4. Dr. Thamil Arasu Saminathan
5. Dr. Maznieda Mahjom
6. Ms. Hasimah Ismail
7. Ms. Hamizatul Akmal Abd Hamid
8. Dr. Muhammad Fadhli Mohd Yusoff
9. Mr. Mohd Haniff Bistari
10. Dr. Halizah Mat Rifin
11. Dr. Tania Gayle Rober

Hygiene (Including Oral Health)

1. Dr. Fazila Haryati
2. Ms. Rafidah Ali
3. Dr. Chan Yee Mang
4. Mr. Mohd Hatta Abdul Mutalip
5. Dr. Nik Adilah Shahein
6. Ms. Norzawati Yoep
7. Dr. Annapurny Venkiteswaran
8. Dr. Nurulasmak Mohamed
9. Dr. Nik Daliana Nik Farid
10. Dr. Saidatul Norbaya Buang

Mental Health Problems

1. Dr. Nurashikin Ibrahim
2. Dr. Nor Rahidah Abdul Rahim
3. Dr. Noor Raihan Khamal
4. Dr. Noor Ani Ahmad,
5. Dr. Sherina Mohd Sidek
6. Ms. Norhafizah Sahril
7. Dr. Chan Yee Mang
8. Dr. Kishwen Kanna Yoga Ratnam
9. Mr. Mohd Ruhaizie Riyadzi
10. Mr. Mohd Haniff Bistari
11. Dr. Muhammad Azri Adam Adnan
12. Dr. Muhamad Khairul Nazrin Khalil
13. Dr. Mohd Shaiful Azlan Kassim
14. Mr. Mohamad Aznuddin Abd Razak
15. Ms. Nur Hidayatun Fadhilah Mohd Nor
16. Mr. Sheikh Shafizal Sheikh Iلمان

Physical Activity

1. Dr. Hazizi Abu Saad
2. Dr. Mohd Azahadi Omar
3. Ms. Nur Hidayatun Fadhilah Mohd Nor
4. Dr. Muhammad Solihin Rezali
5. Dr. Affendi Isa
6. Ms. Siti Balkhis Shafie
7. Mr. Lim Kuang Kuay
8. Mr. Mohamad Aznuddin Abd Razak
9. Dr. Mohd Shaiful Azlan Kassim
10. Mr. Azli Baharudin@ Shahrudin
11. Mr. Mohd Hairmansah Mohd Shah
12. Ms. Nor'Ain Ab Wahab
13. Ms. Norliza Shamsuddin
14. Ms. Nazirah Alias
15. Ms. Nurul Haniyah Roslan

Protective Factors

1. Dr. Nik Rubiah Nik Abdul Rashid
2. Dr. Nik Daliana Nik Farid
3. Dr. Zamzaireen Zainal Abidin
4. Ms. Nazirah Alias
5. Ms. Eida Nurhadzira Muhammad
6. Ms. Filza Noor Asari
7. Mr. Faizul Akmal Abdul Rahim
8. Dr. Tan Lee Ann
9. Dr. S Maria Awaluddin
10. Dr. Khaw Wan-Fei
11. Mr. Mohd Amierul Fikri Mahmud
12. Mr. Mohd Farihan Md Yatim
13. Dr. Nur Hamizah Nasaruddin

Sexual Behaviour that contribute to HIV infection, other STI and unintended pregnancy

1. Dr. Anita Suleiman
2. Dr. Nik Rubiah Nik Abdul Rashid
3. Dr. Chong Zhuo Lin
4. Dr. Fatin Athira Tahir
5. Dr. Mazliza Ramly
6. Dr. Maznieda Mahjom
7. Dr. Nik Adilah Shahein
8. Dr. S Maria Awaluddin
9. Dr. Noor Aliza Lodz
10. Dr. Amal Shamsudin

Tobacco Use

1. Dr. Noraryana Hassan
2. Dr. Norliana Ismail
3. Dr. Muhammad Hairul Nizam Abd Hamid
4. Ms. Ummi Nadiah Yusoff
5. Dr. Nizam Baharom
6. Mr. Lim Kuang Hock
7. Mr. Mohd Ruhaizie Riyadzi
8. Dr. Muhammad Fadhli Mohd Yusoff
9. Dr. Thamil Arasu Saminathan
10. Dr. Tania Galye Robert Lourdes
11. Dr. Halizah Mat Rifin
12. Ms. Hamizatul Akmal Abd Hamid
13. Ms. Hasimah Ismail
14. Dr. Wan Kim Sui
15. Dr. Kishwen Kanna Yoga Ratnam

Violence and Unintentional Injury

1. Ms. Hamizatul Akmal Abd Hamid
2. Dr. Tan Lee Ann
3. Dr. Nor Rahidah Abd Rahim
4. Dr. Noor Raihan Khamal
5. Mr. Mohd Hazrin Hasim@Hashim
6. Ms. Nur Faraeein Zainal Abidin
7. Dr. Noor Suraya Muhamad
8. Dr. Shubash Shander Ganapathy
9. Mr. Muhammad Hanafi Bakri

Adolescents' Perspective on the Impact of COVID-19 to their family

1. Dr. S Maria Awaluddin
2. Mr. Lim Kuang Kuay
3. Ms. Noor Syaqlah Shawaluddin
4. Mr. Tuan Mohd Amin Tuan Lah
5. Dr. Maznieda Mahjom
6. Dr. Noor Ani Ahmad
7. Dr. Saidatul Norbaya Buang
8. Dr. Nik Rubiah Nik Abdul Rashid

Appendix 6: List of Data Collection Teams, NHMS 2022

JOHOR

Field Supervisor

Dr. Lai Wai Kent

Drivers

1. Mr. Muhammad Azraei Alias
2. Mr. Mohammad Nazrin Nazmuding

Research Assistants

1. Ms. Salsabeela Mohd Ariff
2. Ms. Nurfatin Syazwana Ayob
3. Ms. Raja Nur Fatin Ainsyah Raja Omar
4. Ms. Nor Diana Zulkefli
5. Mr. Mohammad Luqman Abdul Aziz
6. Ms. Siti Noorul Nadhirah Zamrus

KEDAH

Field Supervisor

Mrs. Lalitha Palaniveloo

Drivers

1. Mr. Muhammad Shahrul Arieff Shahrudin
2. Mr. Mohamad Najmi Shahrin

Research Assistants

1. Ms. Nur Liyana Rosle
2. Mr. Muhammad Iqbal Mat Rosdi
3. Ms. Siti Nur Adibah Zainudin
4. Ms. Nur Hawanis Hashim
5. Mr. Muhammad Zaquan Mohamad Zamri
6. Ms. Noor Fazira Mhd Sofbri

KELANTAN

Field Supervisor

Dr. Norsyamalina Che Abdul Rahim

Drivers

1. Mr. Muhamad Sahasrizan Samat
2. Mr. Muhamad Izzat Amir Mohd Nasir

Research Assistants

1. Mr. Muhammad 'Izzuddin Che Ismail
2. Mr. Mohamad Azli Che Daud
3. Ms. Wan Anisa Rodzlan Hasani
4. Mr. Muhammad 'Izzuddin Che Ismail
5. Ms. Nurul Farhani Faizol
6. Ms. Siti Hajar Ishak

MELAKA

Field Supervisor

Ms. Eida Nurhadzira Muhammad

Drivers

1. Ms. Siti Zulaikha Yahya
2. Ms. Puteri Nurdhiyana Othman

Research Assistants

1. Ms. Erma Safwan Erison
2. Ms. Nur Aishah Solihin Mohmad Nezan
3. Ms. Siti Normah Abdul Manan
4. Ms. Najihah Md Din
5. Ms. Nur Anis Syafiqqa Zulkefli
6. Ms. Fairuz Mohd Hashim

NEGERI SEMBILAN

Field Supervisor

Mr. Jayvikramjit Singh Manjit Singh

Drivers

1. Mr. Zakaria Mohammad
2. Mr. Gabriel Jatun

Research Assistants

1. Ms. Norsahira Kamarudin
2. Mr. Mohamad Pauzan Razali
3. Ms. Norhayati Kamarudin
4. Ms. Nurul Syuhada Samsuddin
5. Ms. Siti Aisyah Ibrahim
6. Ms. Izzati Wan Azelee

PAHANG

Field Supervisor

Mr. Sheikh Shafizal Sheikh Ilman

Drivers

1. Mr. Muhammad Ruzaini Ahmad Amri
2. Mr. Ihsan Hashim

Research Assistants

1. Ms. Norhakimah Md Din
2. Mr. Harizamharizal Syafrizal
3. Ms. Norhidayah Abdul Majid
4. Ms. Nur Aina Amira Zailani
5. Ms. Geerthana A/P R. Ravichandiran
6. Mr. Muhamad Firdaus Paizol

PULAU PINANG**Field Supervisor**

Ms. Rafidah Ali

Drivers

1. Mr. Muhammad Arif Misra
2. Mr. Muhammad Syauqi Adrus

Research Assistants

1. Mrs. Eng Gaik Sim
2. Mr. Neoh Choo Loa
3. Mr. Mohammad Hasrizal Hassan
4. Mr. Tan Jun Xian
5. Mr. Muhammad Amin Sabri
6. Ms. Nurnabilah Afrina Azami

PERAK**Field Supervisor**

Dr. Halizah Mat Riffin

Drivers

1. Mr. Muhammad Raidillah Che Ab. Rahim
2. Mr. Muhamad Syawal Azim Mohd Hisham

Research Assistants

1. Ms. Azieda Abu Bakar
2. Ms. Zawahir Ngah Said
3. Ms. Erma Natasa Norhan
4. Ms. Amni Zulaika Ahmad Azmi
5. Ms. Haszieyatul Affidah Hasnan
6. Mr. Amirul Amin Mohamed Tarmizi

PERLIS**Field Supervisor**

Dr. Suhaila Abdul Ghaffar

Drivers

1. Mr. Mohammad Amiruddin Kamarunzaman
2. Mr. Mohd Aizam Zahid

Research Assistants

1. Ms. Ainul Mardhiah Pakhrrurrazi
2. Ms. Nur Syuhada Zahid
3. Ms. Fairuz Tasnim Shaffie
4. Ms. Nor Najihah Muslim
5. Ms. Jaizah Jamil
6. Ms. Noor Faralina Izzati Kamarunzaman

SELANGOR**Field Supervisor**

Ms. Nazirah Alias

Drivers

1. Mr. Hezri Izuan Ahmad Termizi
2. Mr. Muhammad Izzat Mat Yusoff

Research Assistants

1. Ms. Nurul Atiqah Mat Yusoff
2. Ms. Rabi'ahatul Assuhadah Mohd Rafa'ai
3. Ms. Fatini Abd Rahman
4. Mr. Muhammad Azrol Mohd Rozi
5. Ms. Noor Aiman Afaf Afiffudden
6. Ms. Nurul Ashikin Nosarodin

TERENGGANU**Field Supervisor**Dr. Fazila Haryati Ahmad
Mr. Mohd Ruhaizie Riyadzi**Drivers**

1. Mr. Muhammad Afif Bani Yami
2. Mr. Muhammad Najmi Alif Muda

Research Assistants

1. Mr. Alif Amirul Ikhwan Hussin
2. Ms. Nur Alis Nadia Azman
3. Ms. Nurul Shafiqah Kusno
4. Ms. Siti Nur Sharmiela Ayob
5. Ms. Madhiah Che Man
6. Ms. Nur Atiqah Hazwani Mohammed

SABAH**Field Supervisor**

Ms. Nur Faraeein Zainal Abidin

Drivers

1. Mr. Steve Glantdenventur E Benjamin
2. Mr. Javixsen James
3. Mr. Mohd Jazlan Harith Abdul Razak

Research Assistants

1. Mr. Joel Sonny Saimin
2. Ms. Haslinda Hasan
3. Mr. Wan Misly Kindon
4. Ms. Nur Maisarah Maksud
5. Mr. Mohd Hafizan Sani
6. Mr. Mohd Aldy Abdul Razak
7. Ms. Marini Juanah Mantigang
8. Ms. Fyrah James
9. Ms. Lovera Karera Kalaka

SARAWAK**Field Supervisor**Dr. Khaw Wan Hei
Mr. Mohd Hairmanshah Mohd Shah**Drivers**

1. Mr. Mohammed Hefalani Mohd Azman
2. Mr. Wilkinson Anak Welling
3. Mr. Afiq Fakrul Ismail

Research Assistants

1. Mr. Daniel Sia Pong Chai
2. Ms. Nurul Afifah Nasir
3. Mr. Mugang Anak Japar
4. Mr. Fabian Anak Mathew
5. Ms. Aelsa Anak Anthony
6. Ms. Christina Sie Fang Yun
7. Ms. Happilyn Anak Li
8. Mr. Mohammad Hasnol Abd Halim
9. Mr. Nazran Bazlan Nawi

KUALA LUMPUR

Field Supervisor

Dr. Nur Hamizah Nasaruddin

Drivers

1. Mr. Muhammad Muazzam Abdul Rahman
2. Mr. Adib Iman Osman

Research Assistants

1. Mr. Amirah Ali
2. Mr. Muhammad Yusri Abdullah
3. Ms. Nur Amirah Alias
4. Mr. Nurulnatasha Jumali
5. Ms. Noor Hasnieza Ahmad
6. Mr. Muhammad Naim Ismail

WP LABUAN

Field Supervisor

Dr. Muhammad Azri Adam Adnan

Driver

1. Mr. Niveno Eldo Sonny Mat

Research Assistants

1. Ms. Mawarsari Said
2. Mr. Jeldy Galoh
3. Ms. Nor Syafina Gorganius
4. Mr. Ignasius Cartilo Taimin
5. Ms. Norfazirah Amlan
6. Ms. Noor Azni Adzmain

WP PUTRAJAYA

Field Supervisor

Ms. Syafinaz Mohd Sallehuddin

Drivers

1. Mr. Mohd Sanusi Aziz
2. Mr. Muhammad Asyraf Jasri

Research Assistants

1. Ms. Aini Farina Mohd Zamri
2. Ms. Nurul Atikah Mohd Rozi
3. Mr. Nurlis Yunarlis
4. Ms. Azizah Nurfauziah Jafri
5. Ms. Rohana Saharudin



KEMENTERIAN KESIHATAN MALAYSIA



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