International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Doing Surveys Among Adolescents an Opinion on Household Vs. School Based Survey

Masitah Ahmad[1], Teresa Sui Mien Yong[2], Komathi Perialathan[3], Nor Haryati Ahmad Sanusi[4], Ain Aqiela Azamuddin[5], Siti Nur Nabilah Mohd Yunus[6], Aimi Nadiah Mohamad Norzlen[7], Zamtira Seman[8], Manimaran Krishnan[9], Mohammad Zabri Johari[10]

[1,2,3,4,7,9,10]Health Education Officer, Institute for Health Behavioural Research, National Institute of Health, Ministry of Health Malaysia
[5,6]Researcher, Institute for Health Behavioural Research, National Institute of Health, Ministry of Health Malaysia
[8]Research Officer, Sector for Biostatistics & Data Repository, National Institute of Health, Ministry of Health Malaysia

Abstract
This analytical opinion piece explores the distinct benefits and obstacles associated with household-based and school-based surveys for gathering data on adolescent health behaviour in the Malaysian context. The paper examines numerous essential factors such as sampling methods, data integrity challenges, logistical barriers, privacy issues, and ethical conflicts by utilizing the writers' personal experiences from conducting the Adolescents' Module during both the household-based Malaysia Health Literacy Survey (MHLS) 2023 and the MyMOHLA-Q 2023 school pilot test. Household-based surveys achieve broad representational sampling yet encounter challenges with participant response rates and logistical obstacles, including accessing individuals in remote locations. In contrast, school-based surveys benefit from increased response rates and controlled settings yet face challenges due to restricted school access and selection bias, which may result in unrepresentative data for students outside the school system. The experience-derived insights serve as a tool for researchers, policymakers, and practitioners to identify suitable data collection methods for effective adolescent behaviour studies.

Keywords: Adolescent health behavior, youth, data collection, household-based surveys, school-based surveys

1. INTRODUCTION

The significance of comprehending adolescent health behaviour in many circumstances has gained more attention within the last ten years. As researchers who have carried out surveys in Malaysian homes and schools, the authors have encountered unique challenges and insights that have influenced their comprehension of these two approaches. The Malaysia Health Literacy Survey 2023: Adolescent (MHLS 2023) and the Malaysian Measurement of Health Literacy among Adolescents Questionnaire (MyMOHLAA-Q) 2023 pilot tests conducted in schools have provided a rich context to compare and contrast the two survey methodologies. This opinion piece presents experiences and reflections, supported

by existing literature, to provide a comprehensive perspective on the circumstances and rationale for the preference of each method, as well as their effective integration within the Malaysian context.

Adolescent health behavior is of central concern to creating effective public health programs and interventions to improve the health of adolescents. Adolescence is characterized by accelerating physical, emotional, and social growth, and this phase's health hazards have lasting implications beyond adolescence. There is evidence that adolescent behaviors such as diet, physical activity, substance use, and mental health treatment have a tendency to persist into adulthood and are accountable for the development of chronic disease in adult life [4,23]. For instance, obesity, diabetes, and cardiovascular disease in adulthood have been linked to unhealthy eating habits acquired during adolescence [11]. In addition, risky behaviors that are recognized to considerably increase morbidity and mortality, such as alcohol use, smoking, and unprotected sexual activities, are extremely prevalent during adolescence [19,6]. Identifying such behaviours early can lead to specific treatments that minimize health risks and encourage healthier lives across the lifespan [12].

In addition to physical health, adolescent health behavior encompasses important mental and emotional health aspects, such as stress, self-esteem, and coping. Mental illness, in the form of depression, anxiety, and suicidal ideation, is also being recognized as a serious concern during adolescence, with studies indicating that 34.6% of mental illnesses have their onset by age 14 [17]. Literature shows that adolescent health behaviours, such as how they manage academic pressure, relationships, and stress, can affect mental health outcomes [24]. The social environment, including family, peers, and society, also plays a vital role in influencing adolescents' health behaviors [1]. Understanding these patterns of behavior is essential for informing prevention efforts addressing the complex interplay of physical and mental health throughout this foundational life stage. With enhanced insight into adolescent health behavior, researchers and policymakers can develop stronger programs and policy more effectively facilitating healthier development pathways and mitigating long-term repercussions of health-related issues.

Adolescents' health behavior survey research is voluminous, with a series of studies documenting the limitations and strengths of both household and school-based survey methods. Household-based surveys are a traditional and universal method of data gathering, utilized in collecting information directly from households or individuals within their homes. The method usually involves researchers visiting or contacting households to collect information through interviews, questionnaires, or observation. Household surveys are used for diverse purposes, from assessing socioeconomic status to quantifying health outcomes or conducting market surveys [3]. Household-based surveys provide researchers with detailed and nuanced data on many aspects of human behavior, social relationships, and living standards, making them indispensable instruments for descriptive and analytical research.

The significance of household-based surveys is that they can provide a rich, contextual image of the population under study. For instance, according to Uaps [22], household-based surveys are most likely appropriate for collecting information on economic status, health literacy, and social well-being because they allow one to delve into individual and household contexts. Household-based surveys also enable the collection of data of different kinds, including demographic data, behavioural patterns, health outcomes, and environmental indicators [15]. They are thus extensively applied in various fields, including social science research, economics, public health, and market research [10]. In addition, household-based surveys commonly use sampling methods to make the data collected representative of the larger population, making it generalizable [15].

The application of household-based surveys in public health research has gained greater significance,

particularly in health literacy and health behaviour studies. For example, the World Health Organization has emphasized the necessity of having accurate household data to gauge health literacy and guide effective public health interventions [14]. These surveys are a direct measure of how health information is being interpreted, accessed, and utilized by individuals and families and thus inform the policies that need to be formulated to improve public health output [6].

On the other hand, school-based surveys, a prevalent means of data collection, are designed to collect information directly from students in the school environment. School-based surveys usually involve administering questionnaires to students or interviewing them during school time and providing a first-hand account of students' attitudes, behavior, and experience with regard to education, health, and social affairs [20]. School-based surveys have been routine in educational research, public health promotion and campaigns, and program evaluation since decades ago, often for measuring students' health behavior, academic performance, and mental well-being [7]. Surveys are central to decision-making and policy formulation in the education and healthcare sectors.

However, such an approach has been impacted by several factors, notably the location (or better still, the country), because it involves the country's administration patterns (policy), development level, and population state. In addition, executing the survey method also depends on time or trends. Hence, to acquire robust research findings, and even more so particularly when conducting a study on adolescent behavior and health, understanding the comparison between household and school-based surveys is imperative.

2. Lesson Learned of Household and School-Based Survey Methods

2.1 Sampling Challenges: Access, Sample Selection and Representativeness

Sampling challenges are a core aspect of household and school-based surveys' planning and conduct, especially when conducting surveys on adolescent health behavior. Adequate sampling ensures that survey results represent the population of interest, allowing researchers to make reliable conclusions and recommendations. Sampling for these two categories of surveys, however, poses distinct challenges that can affect the quality and dependability of data collected.

One of the primary sampling challenges in household surveys is ensuring access to the target population, especially in remote or underserved areas. In the MHLS 2023: Adolescent, researchers encountered challenges in reaching households in rural areas, where logistical constraints such as limited transportation, poor infrastructure, and access restrictions impacted the ability to obtain a representative sample. The reason for the absence of adolescents in this area is that most households in the village are made up of the elderly. Most of the younger generation has migrated to the cities. The rural difficulty is compounded by lower population density, which may compromise the ability to recruit a sufficiently large sample to provide statistical reliability. Apart from that, the absence of adolescents in villages or rural areas might be due to such teenagers attending boarding schools to enable them to be in school, thus became a problem when, in the MHLS 2023: Adolescent, the inclusion criteria applied to such adolescents who live in the living quarters (LQ) for at least 2 weeks prior to data collection were adopted. Also, considering that the study's target population is households, teenagers who live in hostels are excluded from the study population. Even in urban areas, researchers found that specific subpopulations, such as low-income or hard-to-reach households (urban poor), were underrepresented due to a reluctance to engage with outsiders or the perceived stigma associated with participating in surveys. Moreover, household-based surveys are more time-consuming, requiring multiple visits or extended data collection

periods for a sufficient sample size.

While school-based surveys generally benefit from easier access to large, organized groups of students, they are not without their sampling challenges. One of the main issues is the exclusion of students, especially if the students involved are in their exam years. In Malaysia, the school may decide to exclude students in Form 3, age 15, or Form 5, aged 17 years old, to avoid interfering with their academic preparation. Then there are also biases for those adolescents who are not enrolled in formal education, including those who have dropped out of school, are attending alternative educational settings, or are part of disadvantaged populations. This omission can lead to sampling bias and limit the generalizability of results. In the 2023 pilot administration of the MyMOHLAA-Q, researchers recognized that certain demographic groups, such as adolescents from low socioeconomic status backgrounds or rural communities, were underrepresented because they were less likely to be habitual school attendees. This issue points to the inherent limitations of school-based surveys, as they may not capture a comprehensive picture of adolescent health behaviours across all population segments.

2.2 Privacy and Confidentiality:

The most crucial ethical considerations in any research, especially surveys of adolescents, are privacy and confidentiality. Surveys conducted in households and schools on delicate subjects, like health behaviour, need strict security measures to protect participants' privacy. Confidentiality and privacy are necessary in adolescent health behaviour research to protect individual participants and promote honest and accurate reporting. Research participants will refrain from providing sensitive information or socially acceptable answers without a strong privacy framework, which will compromise the study's validity.

The nature of data collection in-home surveys makes ensuring privacy and confidentiality considerably more challenging. Researchers may need to gather data at participants' homes, where family members or other people may violate respondents' privacy. For instance, in the MHLS 2023: Adolescent, the researchers encountered challenges ensuring privacy in households where adolescents shared living spaces with extended family or guardians. Moreover, household surveys often rely on the respondent's honesty, and young participants may have concerns about sharing personal health information with an outsider. Some respondents expressed initial reluctance to disclose health behaviors, particularly those related to mental health or substance use, fearing exposing themself.

The group setting and participation of teachers or school administrators may introduce additional challenges, even though confidentiality and privacy are just as crucial in school surveys. Among the primary benefits of surveys administered in schools is their ability to collect data from large student cohorts, which can increase the sample's representativeness. That said, this social dynamic can also complicate the assurance of privacy. For example, respondents might feel uncomfortable responding to intrusive questions about health behaviors, mental status, or social problems in an environment that includes peers, even when the survey is anonymous. Another factor that can complicate privacy and confidentiality is the involvement of teachers and school administrators in school-based surveys. Although teachers may not directly supervise the survey process or be present when the survey is being conducted, they can still influence students' willingness to participate and respond because they still fear being identified and embarrassed. Consent forms were also sent home with students to ensure that both parents and students were fully informed about the nature of the survey and for ethical and research integrity. Additionally, measures are taken to safeguard the parents' or guardians' and students' privacy. However, it will not be easy to collect data if students cannot participate if their parents have not given their approval at home. There are various reasons why the consent form cannot be filled out. Due to their mischievous

nature, teenagers may not always remember or care enough to bring the consent form home, or they may choose not to answer by not alerting their parents or guardians.

2.3 Response Rates:

The response rates and data integrity achieved from household and school-based surveys are essential elements for researchers, specifically in evaluating the health behaviors of adolescents. Data integrity and response rates are interrelated since high response rates are usually required to attain data that accurately represents the target population. Nevertheless, household and school-based surveys present various challenges and opportunities for data integrity assurance and response rate maximization. It is essential to understand these challenges to enable survey researchers in health and social sciences disciplines, particularly with the intention to obtain valid, reliable, and complete information about adolescent health behaviour.

In household-based surveys, response rates tend to be affected by factors such as location, socio-economic status, and respondents' willingness. According to the MHLS 2023: Adolescent study, among the most significant obstacles to high response rates was the challenge of accessing adolescents who reside in remote or rural residences. The absence of youths in this region is explained by the fact that most families residing in the village are predominantly made up of elderly individuals. Most of the young members of the families have migrated to the urban regions. Families in these regions had a lesser chance of participating, which could create a non-response bias.

Additionally, it is challenging to access high-class residential areas or affluent households because of robust security, mistrust, fear of conmen, robbery or kidnapping and the exact reasons for rural households. Additionally, home surveys are more time-consuming as they require multiple visits or lengthy data collection periods to achieve consent of participation. Based on the MHLS 2023 experience, the availability of adolescents affects the response rate because they have tight schedules, attending school, extracurricular activities, or tuition during the day. Thus, adolescents find it difficult to participate in household surveys.

School-based surveys provide clear benefits in response rates, especially in reaching a large, relatively homogeneous sample of adolescents successfully. For instance, in piloting MyMOHLAA-Q 2023, school-based surveys resulted in very high response rates due to the organized nature of schools, where students come together simultaneously in a single location. This environment minimizes logistical concerns like accessibility and transportation while enabling researchers to collect a representative sample of adolescents, mainly when the survey is administered during school hours. Even while school surveys receive far more responses than home surveys, ensuring the quality of the data is still very difficult. When taking part in surveys, school students are prone to distractions, and their answers may be influenced by social pressure, diminished focus, or a lack of understanding of the subject. Thus, this may result in unreliable, erroneous, or incomplete information, mainly when dealing with complex health-related concerns.

In short, household and school-based surveys have different data quality and response rate problems. While household surveys are prone to logistical difficulties and non-response bias, school-based surveys are likely to have high response rates due to the structured environment of schools. For both methods to yield high-quality data, survey design, data collection methods, and respondent engagement must be carefully considered. Researchers can utilize techniques including open survey design, enumerator training, incentives, and follow-up procedures to improve the quality of household and school-based survey data and response rates. Results will be more reliable and valid as a result. Understanding the

pitfalls and possibilities of each survey technique can help researchers decide which technique to employ based on their research objectives and target group.

2.4 Contextual Factors:

Surveys and results need to deploy contextual elements. Survey tools should be appropriately designed for their target populations' needs and context. Indeed, this includes tailoring the content of the survey to the different social, cultural, and educational experiences of the participants and the potential influence of contextual factors on their ability and willingness to provide truthful responses. It is crucial to ensure that participants in surveys conducted in homes and schools feel secure enough to share their experiences and habits, especially when discussing delicate health-related subjects. Researchers can record family relations and environmental influences on teenage behavior during MHLS 2023 by collecting data in the home setting. In contrast, conducting MyMOHLAA-Q surveys in schools provides insights into peer relationships, school climate, and academic influences on behavior.

Contextual factors also underscore the necessity of sound sampling procedures. Both types of surveys require that the overall population be represented in the sample with specific reference to socio-economic strata, geographical areas, and cultural diversity. This can be accomplished through stratified sampling or oversampling within underrepresented groupings to guarantee that data from all relevant subpopulations are represented. Researchers can more accurately and thoroughly extract data that reflects the realities of teenage health behavior across settings by considering these environmental factors.

Contextual factors are crucial in adolescent health behavior surveys in homes and schools. Conditions such as socioeconomic status, values, family atmosphere, and environment of the learner influence the perception and acceptance by adolescents of healthy behaviour. They must be taken into account by researchers when designing surveys and interpreting the findings because they have a significant impact on the validity and reliability of the results. By recognizing and controlling for the contextual determinants that affect both household and school-based surveys, researchers can better comprehend adolescent health behaviors and more suitably design interventions and policies to meet the needs of this population group.

2.5 Logistical Considerations:

One of the biggest obstacles to conducting health behavior surveys among adolescents regarding the viability and efficacy of data collection is logistical issues. These issues cover various topics, including time management, resource management, fieldwork coordination, respondent access, and data collector training [8]. Depending on how well these components are managed, the study may meet its goals or run into significant problems that compromise the validity and generalizability of its conclusions. Both household and school-based surveys carry particular logistical requirements and challenges, but determining these issues and solving them in advance can enhance the quality of research findings.

2.5.1 Access, Mobility, and Scheduling

Under household-based surveys, logistics are more intense since one is required to reach out to heterogeneous respondents, commonly in disparate and geographically located areas. Travelling to remote or rural homes was the most challenging part of undertaking the MHLS 2023 home survey because it consumed much travel time and resources. The wide geographical coverage of the survey in Malaysia led to enumerators having far distances between residences, especially in rural or thinly populated areas. This was added to by the often-scarce infrastructure and transport in more outlying areas, increasing the cost and time involved in fieldwork. In addition to physical access, planning data collection in household surveys is also tricky. In contrast to MyMOHLAA-Q school-based questionnaires, which are completed

in a controlled environment where students are available during school hours, household questionnaires have to deal with the different schedules of the adolescent and parents/guardians. Due to their attendance in school, extracurricular activities, or private tuition classes, some of the adolescents may not be available or at home during the visit by the enumerators, which can cause delays or necessitate multiple follow-up visits. The same thing happens to the parents or guardians of these teenagers because some go out to work or are not at home. Such scheduling issues are very challenging for families where more than one member is working or residing in temporary living conditions, which can lead to partial data or response rate. Frequent follow-ups and scheduling flexibility are often required to mitigate these burdens, which can add to the logistical load and extend the overall time period of data collection.

In contrast to the logistical complexity of reaching households, school-based surveys often benefit from a more streamlined process. Schools provide a centralized and structured environment where students are available during designated times, making it easier to gather large amounts of data within a short time frame; during the MyMOHLAA-Q 2023, for example, surveying a school setting allowed for a more organized and consistent approach to data collection. Nevertheless, this accessibility also brings practical challenges, including time management and institutional cooperation. Additionally, the breadth and depth of data gathered via school-based surveys will probably be limited by time constraints. Surveys must be administered within the school operation day, usually during class hours, so there is limited flexibility in survey duration and follow-up. In the MyMOHLAA-Q 2023, researchers had to work within the confines of a predetermined school schedule, school activities (co-curricular) and teachers' availability, and survey times were typically restricted to brief windows as short as 30 minutes. When scheduling, the researcher also had to take weekends, public holidays and school breaks into account.

2.5.2 Resource Allocation and Field Staff Training

In both the household and school-based surveys, effective resource planning and field staff training are important components of an effective data collection. Effective resource management ensures that the survey achieves its desired sample size within the given time frame and that quality data is effectively collected across respondent groups. Resource planning was an ongoing balancing act throughout the MHLS 2023 household survey. Enumerators, for example, were required to cover vast distances geographically, often under hard conditions and in some cases on limited budgets that could be used to fund their travel. The researchers, therefore, had to be economical when it came to spending money in order to provide enumerators with adequate support in the field. Additionally, the high volume of personnel needed for a large household survey each gathering data in different areas demanded good planning logistics to ensure smooth working.

The hiring and training of field personnel is another significant logistical difficulty. Enumerators for the MHLS 2023 were required to get training on both the technical components of administering the survey and how to handle contextual and cultural issues that might impact data collecting. For instance, in household-based surveys, enumerators had to negotiate the social dynamics within the household, which might have differed significantly depending on the respondents' background. Enumerators with the proper training learned how to interact with respondents, handle delicate or complex situations, and reduce prejudice or mistakes in data gathering. This necessitated meticulous preparation, financial outlay, and time for pilot studies, which allowed field personnel to hone their approach and resolve any problems that arose in the survey's early phases.

Allocating resources is crucial to the successful implementation of school-based surveys. Even though there may not be as many logistical issues with transportation and site access, conducting extensive

surveys at schools still requires a significant investment of resources, that is, time. Coordinating with school administrators and ensuring teachers and students were ready for the survey took significant time and work for the MyMOHLAA-Q 2023 pilot test. Providing all required resources, including consent forms, survey completion instructions, and policies on handling delicate health-related subjects, was another aspect of this coordination. Researchers also had to ensure adequate personnel to monitor the survey and assist students, ensuring the data collection process was completed accurately and efficiently. Based on the experience during MyMOHLAA-Q, implementing a school-based survey was greatly facilitated and assisted by the Ministry of Education based on government-to-government (G2G). The school helps with logistical preparations, and the teachers act as supervisors/liaison officers during data collection.

Several tactics might be used to overcome the logistical obstacles from surveys conducted in homes and schools. In order to conduct a household survey, researchers need first to invest in a comprehensive planning phase that includes collaborating with school officials well in advance and mapping out the geographic areas for school-based surveys. Delays and misunderstandings during the survey process can be avoided with early and clear communication with institutional stakeholders and respondents. Using flexible scheduling techniques, such as providing respondents with several time slots, can assist in removing obstacles relating to accessibility and scheduling problems in the MHLS 2023 home survey. Working closely with school administrators during the MyMOHLAA-Q 2023 school-based surveys is crucial to ensuring that the surveys are administered at times that cause the least disturbance to the usual school calendar. Field personnel must receive ongoing assistance and feedback for both survey methodologies. Accurate and ethical information can be obtained through regular checks during school-based questionnaires. Regular follow-up and debriefing with the enumerators in the event of household surveys can help identify potential logistical issues. Proper financing of training and facilities is essential to the success of both surveying methods.

2.6 Ethical Considerations:

Ethical considerations are paramount in any research study, mainly when dealing with sensitive populations such as adolescents. In the context of MHLS 2023 and the MyMOHLAA-Q 2023, the ethical challenges associated with household and school-based surveys required careful attention to protect participants' rights, privacy, and well-being. In both survey methodologies, maintaining ethical standards is crucial for safeguarding participants and ensuring the credibility and integrity of the research process. In Malaysia, any health-related research must be registered with the National Medical Research Register (NMRR), and approval must be obtained from the Medical Research & Ethics Committee (MREC). Parental consent is required for minors below the age of 18 years old. Assent is required for respondents between 7 and 18 years old, and the investigators must first obtain permission from the parents or guardians for the minor's participation in the research before soliciting assent from the minor [13].

In household surveys, informed consent is a fundamental ethical requirement. Researchers must ensure that participants are informed about the purpose of the study, what they are signing up for in participating, and the risks to them. In the MHLS 2023, informed consent was highly challenging to obtain. This is because participants were extraordinarily diverse and comprised of adults and youth. To address these concerns, the research team provided clear, understandable information about the survey in a written and verbal format, ensuring respondents were informed adequately before participating. For adolescents, parental consent was also required, and researchers had to ensure parents understood why their child

participated while respecting family autonomy. Privacy and confidentiality are most vulnerable in family surveys when respondents can offer personal, health-related, or socio-economic information. The MHLS 2023 addressed such fears by ensuring that survey responses were anonymized and no personal identifiers were collected on survey instruments. Participants' identities were further protected using coded identifying numbers, making it impossible to link the data acquired to specific people. Building trust with the participants was facilitated by this strategy, especially when dealing with sensitive groups or responders who are hesitant to share personal information. Enumerators were also trained to adhere to ethical codes rigidly, including confidentiality and safeguards of the rights of all participants during data gathering.

The institutional setting and the participation of minors influence the ethical issues in school-based surveys. Making sure that students participate willingly and free from coercion is one of the most important ethical considerations in these situations. The Ministry of Education (MOE) in Malaysia requires that any research conducted in schools undergo a rigorous ethical review process through the Education Research and Analysis System (ERAS), which provides guidelines for protecting students' rights and ensuring ethical standards are upheld. Although approval from ERAS was obtained, a letter of permission was also issued to the school principal to obtain permission to survey students. In the case of the MyMOHLAA-Q 2023 pilot test, researchers worked closely with MOE and the school's admiration to ensure that the study adhered to these ERAS guidelines, which included obtaining institutional approval and parental consent for student participation. Parental permission is particularly essential for school-based surveys, as teens may not understand the potential repercussions of their involvement. When pilot testing the MyMOHLAA-Q 2023, parent and guardian consent forms were administered with precise details about the survey's aim, procedures, and potential risks. The forms also included a provision for parents to opt-out or withdraw the child from involvement at any stage. This process helped ensure that participation was voluntary and that parents were fully aware that their child was participating in the research. In addition, the survey was designed to be as unobtrusive as possible, with questions phrased to minimize student discomfort or embarrassment.

2.7 Data Analysis and Interpretation:

Data analysis and interpretation are essential components of any survey study, mainly when the aim is to explore and understand adolescent behavior and health literacy. The steps in analyzing and interpreting data gathered using household and school-based surveys are guided by the inherent strengths and limitations of each survey method, research design, sampling strategy, and the given goals of the study. Quantitative data analysis was conducted in MHLS 2023 and the MyMOHLAA-Q 2023. Surveys presented challenges and opportunities for data interpretation that required researchers to take the context in which the data were collected thoughtfully. Home surveys yield a lot of contextualized, detailed information that can be utilized to examine various topics of teen health and behavior topics, such as family life, socio-economic issues, and personal health habits. However, the richness of data gathered is an obstacle in examining home survey data. In the MHLS 2023, for example, researchers were tasked with interpreting data from varied respondents with different socio-economic statuses. This included a nuanced interpretation of the relationship between variables like income status, education level, and health literacy. This helped facilitate a deeper understanding of how broader socio-economic determinants influence individual health literacy and behaviors, particularly in rural or disadvantaged environments.

Different from household-based surveys, sociodemographic questions about adolescents in schools are limited to obtaining only generic background information on age, gender, religion, and ethnicity. It will

be challenging to remember or be aware of other background details, especially household income, or to identify information about the locality of the living quarters. Moreover, household surveys often require dealing with data discrepancies or missing responses, which can complicate analysis. In the MHLS 2023, researchers employed imputation for missing data and weighted sampling to ensure that the data represented the broader population. Despite these efforts, maintaining data quality and consistency remained challenging, particularly when respondents were difficult to reach or failed to answer certain questions.

On the other hand, school-based surveys yield different limitations and potential for data analysis. School-based surveys tend to involve larger sample sizes as they collect data from a broad range of students within the school environment. This element is both a limitation and a strength when analyzing the data. A large number of responses helps to increase statistical power, making trends and patterns in adolescent health behavior easier to detect. However, school-based surveys such as the MyMOHLAA-Q 2023 are typically conducted in a somewhat more restricted setting, so data interpretation must consider the unique condition of the school setting. For example, findings from a school-based survey might not entirely reflect the behavior of non-school-attending adolescents, such as those enrolled in alternative education programs, or students who have dropped out. Schools also vary in staff involvement and support, influencing the consistency and quality of data collected. One of the most important challenges of analyzing school-based survey data is ensuring the validity of self-report answers, mainly if the questions cover sensitive topics such as substance use, sexual behaviors, or mental health issues. Adolescents may be reluctant to disclose information in a school setting as they may fear a lack of confidentiality or fear judgment from peers or teachers. This has the potential of leading to underreporting of certain behaviors, thereby distorting the information.

2.8 Resource Allocation:

Resource planning is crucial in designing and conducting household and school-based surveys, particularly large-scale surveys like the MHLS 2023, versus small-scale studies like the MyMOHLAA-Q 2023 pilot test. Effective utilization of financial, human, or technological resources will render the survey possible and successfully obtain credible data.

Household-based surveys tend to be expensive regarding human and financial resources, mainly if the survey is conducted over a vast geographical expanse, such as with the MHLS 2023. Logistics-accessing households in urban and remote rural areas need careful planning and massive investments in field staff, transportation, and data collection equipment. Survey enumerators are an important asset in the implementation of household surveys, with the function of making direct contact with the respondents, describing the survey objective, checking for the accuracy of responses, and observing ethical guidelines, including confidentiality. Since the households' geographical locations and socio-economic status are heterogeneous, survey enumerators must be trained to deal with cultural and linguistic diversity effectively. In MHLS 2023, for instance, this involved hiring and training numerous enumerators, which was found to be resource-demanding yet necessary to ensure data quality and completeness.

The individual resource needs of every survey category have to be well coordinated and assigned to have each type conducted efficiently and effectively. In effect, resource allocation is key to effective data gathering in household surveys and school-based surveys. While household-based surveys involve intensive investments in human resources, logistics, and technical support, school-based surveys take advantage of existing infrastructure but require time, personnel, and materials to be carefully planned.

3. Discussion and Recommendation

Based on our experience conducting household and school-based surveys, several key lessons have been learned regarding the complexities and challenges of this data collection method. It is undoubtedly challenging and fascinating to study the adolescent population. The study needs to emphasize fundamental rights because those under the age of 18 must give their consent, not to mention the health behavior study. Although this study focuses on adolescents, parents/guardians and teachers' involvement plays a role in this population. Since both of these studies have a time frame for the stakeholders, the choice of data collection techniques for adolescent health surveys must be carefully considered in light of the time limitations, length, conciseness, and feasibility. Knowing whether to employ each approach is essential for acquiring accurate and representative data, as household and school-based surveys have unique benefits and drawbacks.

Both household and school-based surveys have distinct advantages and challenges, and understanding when to use each method is crucial for obtaining reliable and representative data. School-based surveys are typically advantageous when targeting a large, homogeneous group of adolescents in a structured setting. They provide the possibility of collecting data efficiently within a school setting, where students are already organized and tedious timetabling and transport can be reduced [2]. Surveys are also likely to miss some groups, such as out-of-school young people, a crucial limitation for population-based studies with broader samples. Moreover, school-based surveys may be influenced by social dynamics within the school setting, such as peer pressure or group conformity, which can affect the validity of responses related to sensitive topics [16]. Additionally, in Malaysia, based on experience, various types of schools such as government schools, private schools, tahfiz/pondok (Islamic religious school), international school or boarding schools will undoubtedly affect the research data, especially related to health behaviors.

On the other hand, household-based surveys are beneficial for capturing a more comprehensive picture of adolescent health behaviors, including out-of-school youth and those living in rural or remote areas [7,18]. Household surveys reduce the possibility of social desirability bias since they provide more privacy, particularly when discussing delicate subjects or risky behaviors like substance abuse or mental health. However, they are often more time-consuming and resource-intensive, requiring significant logistical planning and coordination to ensure that the sample is representative and that participants are reached effectively [9,25]. Household-based surveys may also face challenges related to non-response rates, especially in marginalized communities. They may be influenced by parental consent or reluctance to participate in research activities.

Combining household and school-based surveys can offer a more comprehensive portrait of adolescent practice and health literacy. The researchers can adopt a hybrid research approach with school-based surveys providing data from adolescents in the school system. Household-based surveys include those outside the schooling system or in rural places. The strategy can provide a representative and inclusive sample while containing the drawbacks of both approaches. Researchers can employ household surveys for more detailed, individual-specific data and school-based surveys for general population trends to maximize the benefits of this combination. Additionally, by providing additional context for the data, mixed-methods approaches, such as combining qualitative interviews with quantitative surveys, may improve the results' interpretability and applicability, especially on the health behavior context [21]. In the Malaysian context, where access to education and health outcomes differ between the urban and rural populations, a mixed-methods design would be able to supply the information needed about the extent of health behavior among different socio-economic groups.

Based on our experiences conducting household and school-based data collection during the Malaysia Health Literacy Survey (MHLS) 2023 and MyMOHLAA-Q 2023 pilot study, we provide actionable recommendations for researchers planning health behavior or social science surveys. The research goals, target populations, and logistical considerations should guide the choice between household and school-based methods.

4. Household-Based Data Collection

1. Contextual Understanding: Household-based surveys are also effective when investigating the social and environmental determinants of health behavior in a broader sense, such as family relations, socioeconomic status, or community-level influences. The method provides more information about how home life and family affect adolescents' health behavior and health literacy, especially when learning through informal sources is salient.
2. Longitudinal Studies: Household-based surveys are also ideal for longitudinal studies, where tracking changes is essential to track long-term changes in health behavior. This allows researchers to visit the same homes periodically, providing valuable data on the long-term effects of interventions and changing health behaviors.
3. Capturing Diverse Populations: Household-based surveys are particularly effective at reaching marginalized or underrepresented populations, such as rural communities, low socioeconomic households, or adolescents who are not in school. These populations are usually not captured by school-based surveys, yet their health behaviors must be represented in population-level health trends.

School-Based Data Collection

1. Structured Environments: School-based surveys are most appropriate when assessing the impact of specific health behavior interventions, curricula, or social programs in a structured, controlled environment. The structured environment that schools provide makes comparisons between adolescents exposed to the same educational programs possible, guaranteeing consistency in data collection.
2. Standardized Assessments: A school-based design is optimal if large-scale health behavior research requires standardised information from numerous schools. It ensures that data will be collected similarly from a large, homogeneous sample of students, particularly useful for cross-school comparisons or evaluating widespread interventions.
3. Short-Term Studies: School-based surveys are well-suited for short-term studies targeting immediate behavior change, for instance, assessing health knowledge or attitude change following a specific lesson or intervention. The short time frame and controlled setting enable the ease of receiving real-time feedback on targeted health behaviors or health educational concepts.

By implementing the suggested procedures, researchers can use the advantages of school-based and household-based data collection methods to attain greater insight into health behaviors, social dynamics, and educational effectiveness. The specific objectives of the study should guide the choice of method, the tools available for data collection, and the age criteria of the respondents. For future studies, improvements can be occasionally made to ensure its relevance and applicability by taking into account the changing patterns of health education, subjects related to health that are offered in school, the latest policy by the government and the relevance of the sub-modules towards the Malaysian adolescent's population or any population willing to use the questionnaire.

5. Limitations

A key limitation of this opinion piece was the difference in scale between the nationwide household-based survey conducted for the Malaysia Health Literacy Survey (MHLS) 2023 and the smaller, more localized scope of the MyMOHLAA-Q 2023 pilot test. While the MHLS involved a broader and more diverse adolescents aged 14 to 17 across the country, the MyMOHLAA-Q pilot test focused specifically on adolescents aged 14 and 16 from a limited number of schools, which constrained its ability to fully capture the complexity and variability of adolescent health behaviors across the entire population. This difference in scope also meant that any resulting learning from the pilot test may not be entirely representative or generalizable to a national survey, highlighting the challenges of projecting the result of a pilot study to more extensive and more diverse groups. Additionally, the pilot's smaller scale allowed for more controlled conditions, which may not reflect the logistical and operational difficulties faced in a nationwide survey. Both MHLS 2023 and MyMOHLAA-Q 2023 are quantitative studies that can't reflect the qualitative methods on certain aspects.

6. Concluding Remarks

The writing of this lesson learned is inspired by the recent experience of conducting a survey for the Malaysia Health Morbidity Survey (MHLS 2023) for the Adolescents' Module and MyMOHLAA-Q Validation 2023. Both household and school-based surveys offer valuable insights into adolescent behavior, each with advantages and challenges. When choosing between the two approaches, researchers should carefully consider the research objectives, logistical constraints, ethical considerations, and data quality requirements. Ultimately, combining both methods may provide a more comprehensive understanding of adolescent behavior and inform targeted interventions and policies for this vulnerable population.

Declaration of competing interests

All the authors declare no competing interests.

Acknowledgement

The authors thank the Director-General of Health and Deputy Director-General of Health (Research and Technical Support), Ministry of Health Malaysia, for their permission to publish this article.

Credit authorship contribution statement

Ahmad M is the main author who wrote the first draft and compiled the written sections of this manuscript. Johari MZ, Yong TSM, Perialathan K, Ahmad Sanusi NH, Krishnan M, Seman Z, Mohamad Norzlen AN, Azamuddin AA and Mohd Yunus SNN co-wrote sections of the manuscript. All the authors read, provided feedback, and approved the final manuscript.

Ethical Approval

The authors' opinion and experienced is based on both MyMOHLAA-Q & MHLS 2023 studies that have been approved by the Medical Research Ethics Committee (MREC), National Institute of Health (NIH) Malaysia, Ministry of Health, Malaysia with NMRR ID-22-00659-OCB and NMRR ID-23-00115-TXM.

References

1. Aura, A., Sormunen, M., & Tossavainen, K. (2016). The relation of socio-ecological factors to adolescents' health-related behaviour. Health Education, 116(2), 177–201. https://doi.org/10.1108/he-03-2014-0029
2. Bartlett, R., Wright, T., Olarinde, T., Holmes, T., Beamon, E. R., & Wallace, D. (2017). Schools as Sites for Recruiting Participants and Implementing Research. Journal of community health nursing, 34(2), 80–88. https://doi.org/10.1080/07370016.2017.1304146
3. Colwill, M., & Poullis, A. (2023). Using national census data to facilitate healthcare research. World journal of methodology, 13(5), 414–418. https://doi.org/10.5662/wjm.v13.i5.414
4. Dube, S. R., Felitti, V. J., Dong, M., Giles, W. H., & Anda, R. F. (2003). The impact of adverse childhood experiences on health problems: evidence from four birth cohorts dating back to 1900. Preventive Medicine, 37(3), 268–277. https://doi.org/10.1016/s0091-7435(03)00123-3
5. Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Flint, K. H., Hawkins, J., Harris, W. A., Lowry, R., McManus, T., Chyen, D., Whittle, L., Lim, C., Wechsler, H., & Centers for Disease Control and Prevention (CDC) (2012). Youth risk behavior surveillance - United States, 2011. *Morbidity and mortality weekly report. Surveillance summaries (Washington, D.C.: 2002)*, *61*(4), 1–162. https://doi.org/10.1037/e661322010-001
6. Institute for Health Behavioural Research (IHBR) 2024. Technical Report Malaysia Health Literacy Survey, 2023.
7. Institute for Public Health (IPH) 2022. Technical Report National Health and Morbidity Survey (NHMS) 2022: Adolescent Health Survey, Malaysia.
8. Kabir, Syed Muhammad. (2016). METHODS OF DATA COLLECTION.
9. Kalton, G. (2018). Developments in Survey Research over the Past 60 Years: A Personal Perspective. International Statistical Review. https://doi.org/10.1111/insr.12287
10. Lohr, S. L. (2010). *Sampling: Design and analysis* (2nd ed.). Brooks/Cole.
11. Lytle, L. A. (2009). Examining the Etiology of Childhood Obesity: The IDEA Study. American Journal of Community Psychology, 44(3-4), 338–349. https://doi.org/10.1007/s10464-009-9269-1
12. National Academies of Sciences, Engineering, and Medicine. (2020). Promoting Positive Adolescent Health Behaviors and Outcomes: Thriving in the 21st Century. Washington, DC: The National Academies Press. https://doi. org/10.17226/25552.
13. National Institutes of Health (2021). NIH Guidelines for Conducting Research in Ministry of Health Institutions & Facilities 3rd Edition (2021). National Institutes of Health, Ministry of Health Malaysia.
14. Nutbeam, D. (2000). Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International, 15*(3), 259-267. https://doi.org/10.1093/heapro/15.3.259
15. Oseni, G., Palacios-Lopez, A., Mugera, H.K. and Durazo, J. (2021). Capturing What Matters: Essential Guidelines for Designing Household Surveys. Washington DC: World Bank
16. Ramasamy, Puvani & Krishnan, Shalini & Lai, Tee. (2020). GENERAL RELATIONSHIP BETWEEN CONFORMITY AND PEERS PRESSURE AMONG FORM 3 STUDENTS OF SECONDARY SCHOOL IN JOHOR BAHRU. Muallim Journal of Social Science and Humanities. 16-28. 10.33306/mjssh/51.
17. Scheiner, C., Grashoff, J., Kleindienst, N., & Buerger, A. (2022). Mental disorders at the beginning of adolescence: Prevalence estimates in a sample aged 11-14 years. Public health in practice (Oxford,

England), 4, 100348. https://doi.org/10.1016/j.puhip.2022.100348
18. Shinde, S., Harling, G., Assefa, N., Bärnighausen, T., Bukenya, J., Chukwu, A., Darling, A. M., Manu, A., Millogo, O., Mwanyika-Sando, M., Ncayiyana, J., Nurhussien, L., Patil, R., Tang, K., & Fawzi, W. (2023). Counting adolescents in: the development of an adolescent health indicator framework for population-based settings. EClinicalMedicine, 61, 102067. https://doi.org/10.1016/j.eclinm.2023.102067
19. Smelser, N. J., & Baltes, P. B. (2001). International encyclopedia of the social & behavioral sciences. Elsevier. https://www.sciencedirect.com/referencework/9780080430768/international-encyclopedia-of-the-social-and-behavioral-sciences
20. Strange, V., Forest, S., Oakley, A., & and the Ripple Study Team. (2003). Using research questionnaires with young people in schools: the influence of the social context. International Journal of Social Research Methodology, 6(4), 337–346. https://doi.org/10.1080/1364557021000024749
21. Tilzey, S. E., Stephens, T. N., Patel, S. G., & Bunge, E. L. (2020). Mixed Methods Adolescent Research. The Encyclopedia of Child and Adolescent Development, 1–14. https://doi.org/10.1002/9781119171492.wecad315
22. Uaps, U. (2004). GUIDE TO THE ANALYSIS AND USE OF HOUSEHOLD SURVEY AND CENSUS EDUCATION DATA. https://uis.unesco.org/sites/default/files/documents/guide-to-the-analysis-and-use-of-household-survey-and-census-education-data-en_0.pdf
23. Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. The Lancet, 379(9826), 1641–1652. https://doi.org/10.1016/s0140-6736(12)60149-4
24. WHO. (2024, October 10). Mental Health of Adolescents. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health
25. Williams, D., & Brick, J.M. (2018). Trends in U.S. Face-To-Face Household Survey Nonresponse and Level of Effort. Journal of Survey Statistics and Methodology, 6, 186-211.