ORIGINAL ARTICLE

Knowledge and Acceptance of Sexually Transmitted Diseases Screening Among Teachers, Parents, and Secondary School Students in Selangor, Malaysia

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ABSTRACT

Introduction: The significant rise in sexually transmitted diseases (STDs) among Malaysian youth aged 16 to 24 emphasizes the necessity of evaluating their knowledge and acceptance of STD screening as a critical public health intervention. This study aimed to examine the level of knowledge and acceptance of STD screening and to determine the differences between teachers, parents, and school students. **Materials and methods:** A survey study using convenience and snowballing sampling was conducted on 386 respondents including teachers, parents, and secondary school students in Selangor aged between 13-54 years old. A validated questionnaire was used to collect data on demographic, knowledge, and acceptance of STD screening. **Results:** Teachers demonstrated the highest mean knowledge scores (M=7.14, SD=1.38), followed by school students (M=7.08, SD=2.10) and parents (M=5.72, SD=3.25). Teachers' mean level of acceptance of STD screening was the highest (M=30.83, SD=4.04) followed by parents (M=23.43, SD=2.86) and school students (M=18.07, SD=3.01). A MANOVA analysis showed that the knowledge and acceptance variables were statistically significant at a Bonferroni-adjusted alpha level of .025, $F(2,382) = 13.04$, $p < .001$, and $F(2,382) = 329.69$, $p < .001$ accordingly. **Conclusion:** Teachers should enhance students' sexual health knowledge through diverse methods, while parents should actively engage in sharing STD information. Sex education should be integrated into the national curriculum, and school-based STD screening programs should involve various stakeholders. This approach can reduce teenage STD cases. Future research should expand the sample size, explore diverse communities, and assess the impact of school-based programs on adolescent health outcomes to inform policy and strategies.
Malaysian Journal of Medicine and Health Sciences (2025) 21(5): 33-43. doi:10.47836/mjmhs.21.5.5

Keywords: Attitude, Knowledge, Sexually transmitted diseases, STD screening, Secondary school students

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INTRODUCTION

Sexually transmitted diseases (STDs) pose a growing health concern among young individuals, with a worrisome upward trend in reported cases globally. These diseases, caused by bacteria, viruses, or parasites, necessitate treatment, and are transmitted through sexual contact. Examples include gonorrhea, genital herpes, human papillomavirus, HIV/AIDS, chlamydia, and syphilis (1). Adolescents aged 15-24 make up nearly half of all new STD cases, emphasizing the prevalence among this demographic (2). Recently, STDs have emerged as a significant health issue, ranking among the top ten discomforting diseases in young males and the second most common in young females, particularly in developing nations (3). In Malaysia, there's a persistent rise in STD cases, notably among young adults aged 16 to 24, contributing significantly to the overall numbers (4). A report from the Ministry of Health Malaysia (MOH) revealed that there were 2,864 new HIV infections through sexual activity in Malaysia in 2016, up from 983 in 2009. While the infection data for sexually transmitted diseases, gonorrhea increased sharply, with 9.3 cases of infection per 100,000 Malaysians last year, up from 1.9 cases in 2006. Syphilis also increased significantly, with 6.7 cases of infections per 100,000 Malaysians in 2016 compared to 3.06 in 2006 (5).

Parents and teachers play crucial roles in raising awareness among teenagers, particularly regarding STD screening. Teachers are responsible for reinforcing health education in class, while parents contribute by

explaining the importance of STD screening to their teenage children and monitoring behaviour to prevent premature sexual activity (6). In addition, there is a statement that used to be hotly discussed at the level of the Malaysian Ministry of Education as well as the community related to sex education that should be implemented in schools (7, 8). This perspective faced significant opposition from some Malaysians who failed to recognize its benefits for today's teenagers. Had this been implemented earlier in schools, the current alarming surge in sexually transmitted STD cases among Malaysian teenagers might have been mitigated (9).

Enhancing awareness and fostering acceptance of STD screening among parents, teachers, and students is crucial in implementing preventive strategies aimed at reducing the prevalence of sexually transmitted diseases in Malaysia. The Malaysian Ministry of Health (5) highlights that community discrimination has discouraged HIV-positive young individuals from seeking necessary support. Fear of the law and societal stigma have made many reluctant to come forward or admit their HIV status and that does not include taking HIV tests and treatment and taking advantage of the available social support networks (10). In addition, there is a stigma that is often created by people who lack knowledge related to health education, which says that individuals who conduct STD screening are infected with sexually transmitted diseases (11). This makes many people not show up for STD screening even though it is a necessity. Furthermore, knowledge of STIs and their complications, as well as young people's attitudes toward sexual health, are critical in developing prevention and treatment strategies (12).

In addition, acceptance by parents especially for their teenage children to receive STD screening is seen as a major issue. This is because, acceptance from parents, can help in efforts to facilitate the authorities to carry out the screening without any coercion from any party. Certain obstacles to screening involve insufficient parental backing, concerns about confidentiality, and the discomfort associated with requesting privacy from parents (6). Additionally, a majority of adolescents express reluctance in discussing health matters, especially those related to sexual and reproductive health, with their parents. It's crucial to educate parents about pregnancy and STD prevention, including HIV, to facilitate these discussions. Furthermore, parents must be aware of critical preventive health services. It can be concluded that parents become a very important medium in helping adolescents become healthy and happy adults (6).

The results of previous studies stated that most young people, especially high school students, lack knowledge about STDs except for HIV/AIDS only. This is because the exposure to STDs from school, at home, and other authorities is a small amount and can be said to be less or non-existent except for HIV/AIDS only (13). It is estimated that 79% of the country's higher education students are unaware of sexually transmitted diseases (STDs). As a result, they are unaware that they are at risk of infection and are easily drawn into the practice of free sex (14). In a research involving male participants aged 15 to 24 in five Malaysian states, it was found that only 78.7% of those surveyed were aware of condoms as a preventive measure against STDs (15). Additionally, about 90% of respondents from a particular higher education institution in Malaysia held the belief that STDs could be transmitted through handshakes (16). In addition, the dumping of social applications related to online sex dating such as Omi, Tinder, Grindr, and Growlr was found to be one of the biggest contributors to the surge in new cases of STDs including HIV/AIDS in Malaysia and this application is easy to download and gets the attention of young people, especially school teenagers and students at higher education institutes (17, 18).

The knowledge provided by parents and teachers about STDs helps students understand how to prevent STD transmission and avoid unprotected sexual activity. Many students reported receiving STD information exclusively from their high school, leaving a substantial portion of the student population uninformed about STDs. There are ongoing debates about whether the responsibility for educating youngsters about STDs lies with the school or the family. Despite these discussions, there's still a lack of understanding regarding STD screening and acceptance among teachers, parents, and students. Consequently, this study aimed to assess the level of knowledge and acceptance of STD screening while examining the differences among teachers, parents, and students within schools.

MATERIALS AND METHODS

Population & Research Design

A descriptive research design took place from August 2022 until November 2022 with a population of teachers, parents, and secondary school students from a public secondary school in Selangor state, Malaysia.

Sample Size

The estimated sample size was determined using Krejci and Morgan's sample size table (1970) within a total school student population (S = 288), assuming a 95% confidence level, a 5% margin of error, and a population proportion of P = 0.5. A 10% dropout rate was also accounted resulting in a selected sample of (N = 172) (19). The recruitment of parents was conducted through a snowball sampling method. Initially, a set of parents from each school's student population was identified, leveraging existing networks and personal referrals to expand the pool (N = 172). The recruitment of teachers utilized a convenience sampling method. Specifically, teachers were approached from the same schools as the

student participants to ensure contextual alignment and relevance to the study objectives. Among those invited, (N = 42) teachers agreed to participate, reflecting both the level of accessibility within the schools and the willingness of individuals to contribute to the research. In total, 386 respondents consented to the research study with the inclusion of all students ranging from the age 13-17 years old, teachers, and parents from the respective school. The study excluded individuals from the school's administrative staff and those who did not provide consent for participation.

Instrumentations

A self-administered questionnaire, proven valid and reliable, drew from multiple studies (20, 21). It encompassed three sections: (a) demographics and two other sections, (b) knowledge of STD screening (comprising 10 single-choice items), and (c) acceptance of STD screening (8 items for teachers, 6 items for parents and students, employing a Likert Scale). In section (b), each correct response received a score of one, while incorrect answers were scored zero, resulting in a maximum score of 10 and a minimum of 0. Section (c) involved distinct sets for teachers, parents, and students, graded on a scale from 1 = strongly disagree to 5 = strongly agree. The questionnaire was developed in English and first subjected to face validity assessment to ensure its clarity and relevance. This was followed by content validation conducted by public health physician and health educationist. The Content Validity Index (CVI) achieved was 1.00, reflecting unanimous agreement. For reliability, it was pretested on 30 secondary school students not involved in the study, revealing an internal consistency of 0.71 (section b) and 0.62 (section c) using Cronbach's alpha.

Data Collection Procedures

The Research Ethics Committee of UiTM granted ethical approval under referral number ED/REC/F/10225. A confirmation letter was sent to the principals of the respective school for permission to conduct the research. The questionnaire was distributed and collected from the teachers and students using the Google Form link. The students were also asked to extend the link to their respective parents. The front page of the questionnaire included a concise study overview along with a consent form, ensuring voluntary participation devoid of any pressure or coercion. A period of 3 weeks was given for the data collection. A reminder was sent once during the final week to ensure all of the respondents completed the form. All of the information collected was then kept anonymous and stored confidential by the researcher.

Data Analysis

The collected data were analyzed using Statistical Package for Social Science (SPSS) Version 27. Descriptive statistics were employed to evaluate frequency distribution, mean, and standard deviation for both the knowledge score of STD screening and the level of acceptance of STD screening. To assess discrepancies among teachers, parents, and students regarding knowledge and acceptance of STD screening, Multivariate Analysis of Variance (MANOVA) was utilized. Assurance of meeting underlying assumptions was conducted: the Shapiro-Wilk test confirmed univariate normality, no multivariate outliers were detected, the correlation between dependent variables was within acceptable limits, and Box's M test signified homogeneity of variance-covariance matrices. Statistical significance was predetermined at a probability value of 0.05 or lower.

RESULTS

This research encompassed 386 participants, comprising 172 students, 172 parents, and 42 teachers, with all 386 distributed questionnaires returned, resulting in a 100% response rate. Table I displays the combined demographic characteristics of teachers, parents, and school students. The majority of the teachers were Malay ethnicity (97.6%), aged in the range of 25-34 (42.9%) to 35-44 (31%), female (52.4%), living in the urban area (83.3%) with (100%) tertiary education working in the public sector with a range of income from RM 5K – RM 7.9K (38.1%). The parents in this study were mostly in the range of age between 35-44 years old (48.8%). The majority of the parents were of Malay ethnicity (74.4%) residing mostly in the urban areas (39.5%) with a Diploma certificate as the highest education qualification (52.9%). Most parents are in public and private informal sectors (31%) with a majority of the income range below RM 2K (43%). As for the school students, 13 years old students has the highest number which is (22.0%) followed by 14 years old with (20.3%). 15-16 years old students indicate the same amount which is (19.8%) and lastly 17 years old students with the lowest range which is (19.2%). The number of male students is higher (55.2%) compared to female (44.8%) with Malay ethnicity (92.4%) as the majority mostly residing in urban areas (21.5%) with a range of parental income between RM 2K – RM 4.9K (38.4%).

Table I: Demographic Profiles of Teachers, Parents, and School Students

Profile	Descriptions	Teachers	Parents	School Students
		N(%)	N(%)	N(%)
Age	13	NA	NA	36(22.0)
	14	NA	NA	35(20.3)
	15	NA	NA	34(19.8)
	16	NA	NA	34(19.8)
	17	NA	NA	33(19.2)
	18-24	8(19.0)	2(1.2)	NA
	25-34	18(42.9)	43(25.0)	NA
	35-44	13(31.0)	84(48.8)	NA
	45-54	3(7.1)	43(25.0)	NA
Gender	Male	20(47.6)	96(55.8)	95(55.2)
	Female	22(52.4)	76(44.2)	77(44.8)
Ethnicity	Malay	41(97.6)	128(74.4)	159(92.4)
	Indian	1(2.4)	31(18.0)	8(4.7)
	Chinese	NA	13(7.6)	3(1.7)
	Others	NA	NA	2(1.2)
Housing Area	Urban	35(83.3)	53(30.8)	112(65.1)
	Sub Urban	7(16.7)	68(39.5)	37(21.5)
	Rural	NA	51(29.7)	23(13.4)
Level of Education	Primary	NA	1(0.6)	NA
	Secondary	NA	38(22.1)	NA
	Diploma	NA	91(52.9)	NA
	Bachelor's Degree	42(100)	42(24.4)	NA
Sector of Employment	Public Sector	42(100)	54(31.4)	NA
	Semi-Public	NA	32(18.6)	NA
	Private Formal	NA	32(18.6)	NA
	Private Informal	NA	54(31.4)	NA
Household Income/Parental Household Income	RM 0 – 1.9K	NA	74(43.0)	34(19.8)
	RM 2K – 4.9K	8(19.0)	37(21.5)	66(38.4)
	RM 5K – 7.9K	16(38.1)	32(18.6)	42(24.4)
	RM 8K – 10.9K	15(35.7)	19(11.0)	21(12.2)
	RM 11K and above	3(7.1)	10(5.8)	9(5.2)

Knowledge scores among teachers, parents, and students were comparable, with most scores ranging from 8 to 10 marks. However, teachers displayed the highest average knowledge score (M=7.14, SD=1.38), suggesting a better understanding compared to school students (M=7.08, SD=2.10) and parents (M=5.72, SD=3.25).

Table II: Level of Knowledge on STD Screening among Teachers, Parents, and School Students

Score	N(%)		
	Teachers	Parents	Students
0	NA	4(2.3)	NA
1	NA	13(7.6)	1(0.6)
2	NA	19(11.0)	5(2.9)
3	NA	24(14.0)	3(1.7)
4	1(2.4)	17(9.9)	11(6.4)
5	5(11.9)	10(5.8)	24(14.0)
6	9(21.4)	9(5.2)	18(10.5)
7	6(14.3)	5(2.9)	25(14.5)
8	14(33.3)	9(5.2)	34(19.8)
9	7(16.7)	39(22.7)	31(18.0)
10	NA	23(13.4)	20(11.6)
Total	42(100)	172(100)	172(100)
Mean (SD)	7.14 (1.38)	5.72 (3.25)	7.08 (2.10)

Teachers (50%) and parents (36%) expressed neutrality regarding their own regular STD screenings, indicating a potential area for fostering greater personal commitment to screening practices. Both teachers (42.9%) and parents (33.7%) showed high agreement levels for their children undergoing STD screening, reflecting a moderate level of parental and educational support for screening initiatives. Teachers emphasized the importance of communication with parents about sexual education (45.2% strongly agreed) and their readiness to be a resource for information about STD screening (42.9%). This suggests a willingness among educators to engage in such dialogues. There was strong agreement among all groups (teachers: 50%, students: 41.9%, parents: 23.3%) about the necessity of implementing sex education and STD prevention programs in schools. This broad consensus could pave the way for institutional support for such initiatives. Parents (39.5%) and students (33.1%) showed neutral stances toward mandatory STD screening for teenagers, while teachers demonstrated stronger support (47.6% agreed). A notable proportion of students indicated that parental presence (32.6%) or consent (39.5%) is essential for undergoing screening, highlighting the importance of familial support in encouraging participation. Students expressed willingness to undergo screening if it were free and non-invasive (33.1%), suggesting that these are critical factors influencing their decision. Teachers demonstrated the highest overall acceptance levels of STD screening (M=30.83, SD=4.04), followed by parents (M=23.43, SD=2.86) and students (M=18.07, SD=3.01).

Table III: Level of acceptance of STD screening among teachers, parents, and school students

Items	Scale	N(%)		
		Teachers	Parents	Students
I undergo STD screening regularly	Strongly Agree	2(4.8)	44(25.6)	NA
	Agree	8(19.0)	54(31.4)	NA
	Neutral	21(50.0)	62(36.0)	NA
	Disagree	4(9.5)	6(3.5)	NA
	Strongly Disagree	7(16.7)	6(3.5)	NA
I always talk about STD and STD screening with my children	Strongly Agree	1(2.4)	55(32.0)	NA
	Agree	17(40.5)	63(36.6)	NA
	Neutral	10(23.8)	40(23.3)	NA
	Disagree	7(16.7)	9(5.2)	NA
	Strongly Disagree	7(16.7)	5(2.9)	NA
Sex education in school should be implemented	Strongly Agree	15(35.7)	57(33.1)	40(23.4)
	Agree	20(47.6)	46(26.7)	11(6.4)
	Neutral	7(16.7)	68(39.5)	50(29.2)
	Disagree	NA	1(0.6)	61(35.7)
	Strongly Disagree	NA	NA	9(5.3)
Sex education and STD prevention are important to expose teenagers	Strongly Agree	18(42.9)	69(40.1)	48(27.9)
	Agree	21(50)	40(23.3)	72(41.9)
	Neutral	3(7.1)	62(36.0)	38(22.1)
	Disagree	NA	1(0.6)	8(4.7)
	Strongly Disagree	NA	NA	6(3.5)
I accept If STD screening is conducted on my child	Strongly Agree	16(38.1)	55(32.0)	NA
	Agree	18(42.9)	58(33.7)	NA
	Neutral	6(14.3)	55(32.2)	NA
	Disagree	1(2.4)	NA	NA
	Strongly Disagree	1(2.4)	4(2.3)	NA
STD screening should be mandatory for teenagers starting age of 13	Strongly Agree	11(26.2)	57(33.1)	18(10.5)
	Agree	20(47.6)	53(30.8)	66(38.4)
	Neutral	9(21.4)	57(33.1)	68(39.5)
	Disagree	1(2.4)	1(0.6)	9(5.2)
	Strongly Disagree	1(2.4)	4(2.3)	11(6.4)
Communication with parents about sexual education is important	Strongly Agree	19(45.2)	NA	NA
	Agree	18(42.9)	NA	NA
	Neutral	5(11.9)	NA	NA
	Disagree	NA	NA	NA
	Strongly Disagree	NA	NA	NA
I am ready to be the source of info about STD screening	Strongly Agree	18(42.9)	NA	NA
	Agree	11(26.2)	NA	NA
	Neutral	12(28.6)	NA	NA
	Disagree	1(2.4)	NA	NA
	Strongly Disagree	NA	NA	NA
I will take STD screening if requested by my parents	Strongly Agree	NA	NA	28(16.3)
	Agree	NA	NA	56(32.6)
	Neutral	NA	NA	68(39.5)
	Disagree	NA	NA	14(8.1)
	Strongly Disagree	NA	NA	6(3.5)
I need a parent to be with me during the STD screening	Strongly Agree	NA	NA	31(18)
	Agree	NA	NA	56(32.6)
	Neutral	NA	NA	39(22.7)
	Disagree	NA	NA	40(23.3)
	Strongly Disagree	NA	NA	6(3.5)
If STD screening is free and causes no harm, I will go for it	Strongly Agree	NA	NA	37(21.5)
	Agree	NA	NA	57(33.1)
	Neutral	NA	NA	57(33.1)
	Disagree	NA	NA	11(6.4)
	Strongly Disagree	NA	NA	10(5.8)
Mean (SD)		30.83(4.04)	23.43(2.86)	18.07(3.01)

A one-way MANOVA analysis was conducted to examine the differences in parents, teachers, and school students' level of knowledge and acceptance of STD screening (Table IV). The findings indicated a notable impact of the respondents' category (parents, teachers, and school students) on the combined dependent variables, $F(2, 382) = 339.76$, $p < .001$, partial $\eta 2 = .64$. The analysis of the dependent variables individually showed significant differences for both knowledge and acceptance. Specifically, the knowledge and acceptance variables demonstrated statistical significance at a Bonferroni-adjusted alpha level of .025, $F(2,382) = 13.04$, $p < .001$, and $F(2,382) = 329.69$, $p < .001$ respectively. The teachers' knowledge was the highest followed by school students and parents ($M = 7.14$ vs $M = 7.08$ vs $M = 5.72$) The teachers' level of acceptance

was also the highest than those parents and students (*M* = 30.83 vs *M* = 23.43 vs *M* = 18.07).

Table IV: Multivariate test on the level of knowledge and acceptance of STD screening between teachers, parents, and school students

Multivariate Test						
Roy's Largest Root	F	Sig	Hypothesis *df*	Error *df*	Partial Eta Squared	
	339.76	< .001*	2	382	.640	
Test of Between-Subject Effects						
Source	DV	Type III Sum of Squares	*df*	Mean Square	F	Sig
Respondents	Knowledge	180.709	2	90.35	13.04	< .001**
	Acceptance	6252.74	2	3126.37	329.69	< .001**

* Significant level at $p < .05$
** Significant level at Bonferroni adjusted of $p < .025$

DISCUSSION

The surge in sexually transmitted diseases among young individuals, globally and in Malaysia, has prompted policy initiatives and programs aimed at addressing these concerning trends. One such effort involves enhancing knowledge about and access to screening. This survey aimed to assess the level of understanding and acceptance of STD screening among teachers, parents, and secondary school students in Selangor state. The study achieved a commendable response rate, thanks to the school's cooperation. Predominantly Malay respondents across teachers, parents, and students might reflect the region's ethnic majority. Interestingly, teachers demonstrated the highest knowledge scores, followed by students and then parents concerning STD screening. While parental guidance is often emphasized in adolescent sexual health studies, this research underscores the pivotal role teachers hold in shaping adolescents' understanding, suggesting their importance in implementing school-based sexual health programs. Teachers can be extremely important in putting sexual health programs for adolescents into place at schools, as well as in helping students to socialize (22). In Malaysian context, most teachers attended In-Service Training (LADAP) or special course conducted by the schools with assistance from respective authorities in improving their knowledge and skills especially related to the issues of concern (23). The knowledge transmission on sexual and reproductive health will then influence the teachers' views towards adolescent sexual health education in the school setting. Teachers' attitude and knowledge in STD and STD screening creates a ripple effect which likely influence the transfer of knowledge to the students (12, 22).

However, students from higher secondary levels scored higher marks as compared to those from lower secondary levels. This may be attributed to the fact that lower secondary school students have limited knowledge of STDs (24). Additionally, most children aged 10-13 years old possess basic knowledge of sex and are prepared to learn about STDs by the time they enter high school. The level of knowledge can be influenced by exposure to different lifestyles and environments. For instance, as students advance in their academic years, their curiosity and personal development often lead them to seek out more information about sexual matters (25). This pattern aligns with local research in a university setting, which revealed that first-year students possess less knowledge about sexual health compared to their senior counterparts (26). Additionally, a study in Italy showed that the internet serves as the foremost information source for STDs (38). A study in India showed that apart from their teachers, 51.7% college students obtained their information about STDs from the internet (39). All respondents in this study are classified as digital natives, with the majority residing in urban areas. Therefore, these factors may also contribute to the increase in knowledge levels (9). Concerning parents, their low level of knowledge can be attributed to multifaceted and may include cultural and religious taboos and limited access to accurate information which may contribute to their lack of knowledge (22). This is true in Malaysia as well as in its neighboring countries, Singapore and Vietnam, where there is a concern that teaching sex education to adolescents is considered encouraging young people to have sex sooner (40). Furthermore, the sociodemographic factors including the low level of education could be one of the strongest predictors influencing the level of knowledge possessed by these parents (27).

A high level of acceptance towards STD screening was found among teachers and parents, who choose to undergo screening regularly and agree for their children to do so if necessary. The heightened awareness and emphasis on comprehending STDs and undergoing regular screening among parents and teachers might be influenced by the mandatory HIV screening tests for Muslim couples before marriage in Malaysia (28). Parents and teachers often find it permissible for their children to engage in behaviors suspected of being related to sexual activity, without actual intercourse. This acceptance is primarily aimed at preserving virginity, preventing unwanted pregnancies, and aligning with cultural taboos against premarital sexual activity, rather than solely adhering to religious beliefs (22). In talking about STD and STD screening with the children, parents are the primary source of information on teenagers' sexual health (22). Indeed, many parents acknowledged having conversations about sexual

health, yet the discussions often omitted STDs. Instead, the focus predominantly revolved around topics such as loss of virginity and the risks of pregnancy. Teachers also shared a similar belief, emphasizing that parents tended to avoid addressing topics like STDs, prioritizing socially acceptable discussions instead (22).

In the aspect of implementing sex education in schools, which includes the prevention of STDs, all of the respondents supported the approach. In Malaysia, although sexual and reproductive health topics were incorporated into school subjects like science, health education, and biology, studies indicate that this information was perceived as insufficient (29). A study involving 1706 university students highlighted the lack of STD-related information in school-based sexual education programs (30). In Kenya, the curriculum covers fundamental sexual health education primarily focusing on puberty, while aspects like sexuality and reproduction are addressed in other subjects (31). Therefore, the urgent necessity lies in integrating comprehensive sex education as a dedicated subject within the national curriculum. This approach ensures student safety by equipping them with knowledge to safeguard against various risks, including sexually transmitted diseases, exploitation, abuse, and other related threats (32, 333).

In the context of mandatory STD screening starting at the age of 13 years old, most parents and students responded neutrally rather than supporting the approach except teachers. It is believed that despite the appropriate age for STD screening depends on several factors, in general, it is recommended for sexually active individuals or those who engage in high-risk behaviors. It is also perceived by the parents in this study whereby it is less common for their children to be sexually active as the majority reside and are under the care of family members. These parents recognized the potential for students undergoing STD screening to face stigma, potentially being branded as promiscuous. Being neutral to mandatory STD screening may reflect that the parents do not place a high emphasis on the sexual health of their children. A study in Singapore found that of all the health concerns, sexual health was voted as the least important concern to be addressed in their children. As a result, parents' awareness and readiness to discuss sexual matters with their children needs to be increased (41). Contrary to the teachers, this study suggested that the teachers' responses are predicted by several influential factors such as school responsibility in providing comprehensive health education thus emphasizing the importance of safe sexual practices including regular screening, reducing stigma, and normalizing creating an open and supportive environment and promoting responsible behavior as part of adulthood.

The communication between teachers and parents and the readiness of teachers to be the source of information related to STD screening is fully supported by the teachers in this study. This effort resulted in creating an awareness associated with the issues of STDs faced by the school students towards the parents. Most educators believed that the parents shifted the burden of educating sexual education to the teachers. Moreover, research has underscored the significance of collaboration among teachers, schools, parents, and communities in enhancing the effectiveness of sexual education initiatives (34). Despite the expectation for parents to be a primary source of information about STDs, studies indicate their lower reliance on this role, placing greater importance on teachers in providing this crucial information (22).

It was interesting to note that most students would adhere to the instructions given by their parents on STD screening. However, this is also in line with the standard medical examination or practice for anyone under the age of 18 to be presented with a legal guardian or parental consent before receiving any screening or medical care and procedures. This also supports the need for their parents to be with them during the screening (35). Overall, most students fully support the idea of STD screening if it is harmless and free. Offering free STD screenings aligns with the idea of fostering a culture of health and well-being within the school environment which implies a message that the institution values the overall health of its students (36).

Overall, it is crucial for the teacher, as a primary knowledge conduit, to take the initial steps within the school environment. Teachers can incorporate specific pedagogical approaches, such as role-playing scenarios, multimedia presentations, and student-led discussions, to engage students effectively in comprehending STD-related information during classroom sessions. Moreover, schools should provide professional development programs to equip teachers with the skills and resources necessary to address sensitive topics like STDs. Simultaneously, attention should be directed towards parents, a vital group given their proximity to the student demographic. Schools can organize structured programs, such as monthly workshops or webinars, where parents can learn about adolescent health, STD prevention, and the importance of regular screenings. Additionally, establishing feedback loops where parents can voice concerns and interact with health experts during these sessions would enhance engagement. Such initiatives foster a stronger connection between parents and the school, resonating with the sentiment expressed in questionnaire section C, which underscores the importance of teacher-school-parent communication regarding STD screening protocols for students.

A noteworthy observation from the survey is the absence of a dedicated facility for STD screenings. Addressing this gap, schools can collaborate strategically with the Malaysian Ministry of Health or nearby clinics to introduce

mobile health vans or on-campus screening initiatives. Schools could pilot such programs in urban areas before expanding to rural schools, streamlining access for parents and students. This proactive measure eliminates the complexities of locating suitable clinics, making the process more accessible and efficient. To enhance impact, the Malaysian Ministry of Education could mandate annual health days during which secondary school students participate in mandatory STD and Thalassemia screenings, supplemented by educational workshops. A Memorandum of Understanding (MOU) between the Ministry of Education and the Ministry of Health could formalize these efforts and ensure consistent delivery (37). Additionally, the Malaysian Ministry of Health could implement adolescent-specific clinic interventions. These could include extending clinic operating hours to after-school times for added accessibility and privacy or creating digital platforms for students to book appointments anonymously and access educational resources. A comprehensive approach would involve integrating monitoring and evaluation systems, such as standardized tracking of students' awareness levels before and after screenings, to assess the effectiveness of these initiatives. Counsellors and school-based health staff can further support these measures by addressing students' ongoing concerns and providing tailored guidance.

This study faced several limitations that may have influenced its findings. One key limitation was the relatively small sample size, which focused solely on a single school. This restricted the generalizability of the results. Future research should aim to collect data from a larger sample group, potentially including multiple schools in Selangor, to achieve more comprehensive and representative outcomes. Another significant challenge was the limited cooperation from participants, particularly teachers and parents. This lack of engagement may have resulted in a biased sample, thereby skewing the data and reducing the representativeness of the findings. Addressing this issue in future studies will require strategies to encourage greater participation and collaboration. Language barriers posed a critical challenge, particularly for non-English-speaking parents who struggled to understand survey questions presented solely in English. This likely led to misunderstandings, lower response rates, and compromised the quality and reliability of the collected data. Additionally, the educational backgrounds of some participants, especially parents with only secondary-level education, may have affected their ability to fully comprehend the survey questions. This issue was particularly pronounced in the context of complex health-related topics, where limited understanding could lead to incomplete or inaccurate responses, further skewing the results.

To address these limitations, several solutions can be considered. First, future surveys should be developed and distributed in multiple languages relevant to the community to ensure broader comprehension among participants. Using simplified language and providing clear explanations in survey questions can make them more accessible to individuals with varying educational backgrounds. Organizing workshops or information sessions where researchers explain the survey's purpose and importance can also foster trust and understanding, allowing participants to ask questions and clarify doubts. This approach could significantly improve response rates. Incentives for participation, such as small gifts or entry into a prize draw, can encourage more active involvement. Partnering with schools to promote the study and emphasize its significance may enhance cooperation from teachers and parents, making the data collection process more inclusive and effective. For future research, incorporating qualitative methods, such as interviews or focus groups, could provide more in-depth insights. These methods are particularly valuable for participants who may struggle with surveys, as they allow researchers to explore experiences and perspectives in greater detail. Such approaches can yield richer data and help identify barriers to engagement with sensitive topics like STD screening and education.

CONCLUSION

This study underscores the significant differences in knowledge and acceptance of STD screening among teachers, parents, and secondary school students. Teachers, who exhibited the highest levels of knowledge and acceptance, are well-positioned to play a crucial role in enhancing students' sexual health education through innovative and informed teaching strategies. Conversely, the lower levels of knowledge and acceptance among parents and students highlight the urgent need for targeted initiatives to engage these groups more effectively. The findings emphasize the importance of integrating comprehensive sex education into the national curriculum, fostering collaboration among teachers, parents, and schools to equip students with essential knowledge about STDs and the significance of screening. Establishing school-based STD screening programs, supported by partnerships with relevant stakeholders, offers a practical and impactful approach to addressing adolescent sexual health concerns and curbing the rise in teenage STD cases. Parental involvement and education are particularly critical in reducing stigma and encouraging STD screening. Parents, as primary sources of information, can foster open and informed discussions about sensitive topics like STDs, helping to dispel misconceptions and promote screening as a preventive and responsible practice. By equipping parents with accurate knowledge through targeted educational initiatives, cultural taboos and barriers to discussing sexual health can be addressed. Encouraging parental participation in school-led sexual health programs strengthens their role as informed advocates, fostering trust, reducing barriers, and creating a supportive environment for

adolescents to access screening and care. This study also highlights the necessity of collaboration between teachers, schools, parents, and healthcare stakeholders to address gaps in sexual health education and services. Teachers, particularly those with higher levels of knowledge, can serve as critical sources of information for students, while parents must be empowered with the right tools and understanding to engage in meaningful conversations about STDs. By integrating STD screening initiatives within schools and ensuring that these efforts are supported by broader community and healthcare partnerships, a more comprehensive, accessible, and stigma-free approach to adolescent sexual health can be realized.

ACKNOWLEDGEMENT

The authors extend their appreciation to the schoolteachers, students, and parents for their collaboration and dedication to participating in this research. Additionally, gratitude is expressed to the Ministry of Education for granting permission to publish this article.

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