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Sexual and reproductive health knowledge among primary school students in Malaysia

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Abstract:

BACKGROUND: There is limited research on sexual and reproductive health (SRH) knowledge level among very young adolescents aged between 10 and 14 years. Policy makers and educators are unable to address very young adolescents' SRH needs without proper understanding of their SRH knowledge. Thus, the objective of this study is to explore very young adolescents' SRH knowledge level and the influences of demographic variables on the respondents' SRH knowledge level in Malaysian primary schools.

MATERIALS AND METHODS: This cross-sectional study involved 617 primary five students who were recruited through multistage sampling method from the state of Johor, Malaysia. A self-administered questionnaire (Cronbach's $\alpha = 0.81$) which comprised of 38 items related to puberty, HIV/AIDS and sexually transmitted diseases, prevention of child sexual abuse and reproductive systems and reproduction was used. Multivariate logistic regression analysis was applied to examine the association between demographic variables and student's SRH knowledge.

RESULTS: Based on the results, 28.5% of the respondents had unsatisfactory level of SRH knowledge. Among the four dimensions, the respondents had more knowledge on prevention of child sexual abuse but displayed poorer knowledge on HIV/AIDS and sexually transmitted diseases topic. The findings indicated female (odd ratio [OR] = 1.464) and Indian respondents (OR = 3.208) are more likely to exhibit poor SRH knowledge which suggested demographic factors exert some extent of influence on primary school children's SRH knowledge.

CONCLUSION: The findings provide useful insights for the policy makers and educators seeking to improve the comprehensiveness of culturally accepted sexuality education which are essential in promoting young adolescents' well-being.

Keywords:

Child, knowledge, Malaysia, schools, sex education

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Introduction

Adolescent's sexual and reproductive health (SRH) have been a central focus of public health as the issue contributes significantly to the global burden of sexual health.^[1] Neglecting the sexual health needs of adolescents can have detrimental impacts on the social and economic development of the country.^[2] Thus, UNESCO advocates the implementation of sexuality education to equip children and young people

with knowledge, skills, attitudes, and values which are imperative to empower them in making healthy choices and protecting themselves from potential sexual exploitation.^[3]

It is worth mentioning that much work has been done to promote the SRH of adolescents through various strategies, interventions, and partnerships between the institutions. Nevertheless, there is a critical lack of empirical work to address the SRH needs of very young adolescents aged between 10 and 14 years. Woog and

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Kågesten posited that most of the studies had put the emphasis on the needs of older adolescents between 15 and 19 years or merge the needs of these two age groups as one without considering their disparate needs and characteristics.^[4] At the early adolescence, young adolescents undergo a range of social, physiological and cognitive changes as well as changes related to SRH that critically associated with their well-being in later life stages.^[4] Henceforth, introduction of timely educational programs at the early adolescence play an important role in building the foundation for positive SRH outcomes. Sexuality education implemented in schools enables reaching out to significant number of young adolescents. Introducing sexuality education at this early life stage when the young people's attitudes and behaviors are being shaped not only result in short-term benefits such as prevention of engaging in risky sexual behaviors and teenage pregnancy but also provide long-term benefits which could eventually promote their well-being over their lives.

Knowledge-Attitude-Behavior model suggested that knowledge is a precursor in behavioral changes in which the accumulation of knowledge initiates the generation of beliefs and formation of attitudes before all these eventually cascade into changes in health-related behaviors.^[5] The extent of which very young adolescents are knowledgeable about basic SRH issues is one of the several major factors that help them to make informed decisions about contraception, pregnancy, and prevention of HIV and other sexually transmitted diseases. Past studies had generally indicated that adolescents and young adults are not properly equipped with SRH knowledge.^[6,7] Based on a review conducted by Guttmacher Institute in 2017, the very young adolescents of four countries in Sub-Saharan Africa have typically heard of HIV, but they still showed insufficiency of in-depth knowledge of the topic. The report also indicated that the young adolescents have low awareness on pregnancy prevention as well as knowledge about pregnancy.^[4] These situations call for further research to address the SRH needs of very young adolescents.

In Malaysia, the elements of sexuality education are integrated across subjects such as sciences, biology, moral studies, Islamic studies and with a more detailed focus of the reproductive and social health topics in Health Education among national schools. A review conducted to examine the knowledge on SRH among Malaysian adolescents showed that the young Malaysians are lacking in knowledge related to sexuality and have low awareness of reproductive health.^[7] Rahman *et al.* who evaluated the SRH knowledge among 1034 secondary school students in Kelantan reported that the adolescents had limited knowledge and misconceptions about pregnancy and contraceptive

methods other than abstinence.^[8] A recent study conducted in Pahang revealed that the SRH knowledge among secondary school students are at moderate level but still, they displayed inadequate knowledge about sexually transmitted diseases and confused by the myths about sexual intercourse.^[9] According to past studies in Malaysia, demographic determinants emerged as significant factors of young adults and adolescents' SRH knowledge^[8-11] which might indicate the disparity in the quality and delivery of sexuality education in schools. Although there are several studies had examined the SRH knowledge among young people and older adolescents in Malaysia context, but there is a lack of empirical evidence to indicate the level of SRH knowledge among primary school students.

Nevertheless, it is significant to investigate the understanding of sexuality education among students who are going through a transition from primary schools to secondary schools and move on to their adolescence. During the onset of puberty and sexual maturation, the upper primary school students are undergoing social changes. In some countries, young girls who are experiencing pubertal changes are expected to shoulder the responsibilities of women while they are not ready physically and psychologically. Young girls are facing increased vulnerability to early marriage and entry into sexual life at this stage which exposed them to greater risks of negative SRH outcomes and sexual exploitation.^[12] Thus, instilling the knowledge at earlier ages is imperative in shaping very young adolescent's attitudes and developing behaviors that associated with positive SRH outcomes which ultimately affect their well-being in later life. On the other hand, examination of primary school students' SRH knowledge informs the efficiency of curriculum in promoting SRH knowledge which are essential in revising and improving the current practice in teaching the topic. This study therefore aims to examine primary school student's SRH knowledge in the state of Johor, Malaysia as well as identify the demographic variables that could associate with their SRH knowledge.

Materials and Methods

Study design and setting

This study utilized a cross-sectional survey design to investigate primary school students' SRH knowledge. Data collection took place between December 2019 and March 2020 in Johor state, Malaysia. Johor is the southernmost state of Peninsular Malaysia which comprised of 10 districts. There are a total of 907 primary schools in Johor state which include 609 Malay-medium national primary schools, 216 Chinese vernacular national primary schools, 70 Tamil vernacular national primary schools, 8 religious-based primary schools,

and 4 special education schools. In order to study the influence of demographic determinants on students' SRH knowledge, Malay-, Chinese-, and Tamil-vernacular national primary schools were identified as the research sites in this study.

Study participants and sampling

The research population are the primary five students who are aged around 11 years old and undergoing the transition from middle childhood to early adolescence. A sample of 617 participants were involved in this research. The eligible criteria are students who are currently study in primary five and enrolled in a national primary school. A multistage stratified sampling method was used to recruit the participants. At the first stage, the researcher randomly selected three districts out of 11 districts in Johor state. At the second stage, the researcher categorized the schools in the selected districts based on the types of the national schools, namely Malay-medium national schools, Chinese vernacular national schools and Tamil vernacular national schools. Disproportionate stratified sampling method were used to select the schools involved in the study because the sample size of Tamil vernacular national primary schools is relatively smaller as compared to national primary schools and Chinese vernacular national primary schools. The data obtained could not yield sufficient number of cases for statistical analysis if proportionate stratified sampling method is applied.^[13] Then, 2 schools were randomly selected from Malay-medium national schools, Chinese vernacular national schools, and Tamil vernacular national schools respective to the selected district.

Data collection tool and technique

Data were collected using a questionnaire comprised of 38 items which was prepared in four languages, which are English, Bahasa Malaysia, Mandarin and Tamil. The researcher had adapted and developed the questionnaire based on past literatures, Reproductive Health of Adolescents Module and the physical and health education textbooks use in Malaysian primary schools. The instrument examines students' knowledge on (a) puberty (e.g., *Puberty is the transition period that happens when a child becoming sexually mature and able to reproduce*), (b) HIV/AIDS and sexually transmitted diseases (e.g., *AIDS can be spread by having sex with someone who has AIDS*), (c) child sexual abuse prevention (e.g. *You should inform your parents or the person you trust if a grown up touches your private parts.*), and (d) reproductive systems and reproduction (e.g., *Testes is the male reproductive organ that produces millions of sperms.*). Each section entails items that measure students' knowledge and understandings towards SRH topics that had been taught in school. The questionnaire was administered by the teachers who are teaching health education and clear instructions were given to the students in completing the

questionnaire. The respondents are required to answer each item with "yes," "no," or "not sure," each correct response receives 1 score, zero score will be given to wrong response or the response, "not sure." The correct responses were combined to yield a total score ranging from 0 to 38.

The content of the questionnaire was validated by three experts from sexuality education, health education and educational psychology. The multi-rater κ_{free} was obtained by using the Online Kappa Calculator available at (<http://justusrandolph.net/kappa/>) which showed that there was a good agreement between the experts' evaluation, $\kappa_{\text{free}} = 0.77$ (95% confidence interval [CI], 0.72–0.83). The psychometric properties of the instrument were examined by using Rasch Measurement Model.^[14] The instrument demonstrated satisfactory unidimensionality, and the items exhibited a wide range of difficulty level (ranging from -2.53 to 3.25). The RMM outputs showed good item's reliability (item reliability = 0.97) with high item separation index (5.52). However, the person reliability (person reliability = 0.79) and the person separation index (1.94) were slightly below the recommended value. The reliability and internal consistency of the instrument also estimated through the Cronbach's Alpha and reported a value of 0.81. Overall, the results show that the developed instrument can be used with confidence to assess SRH knowledge among primary school students in Malaysia.

Ethical consideration

The researcher had applied for approval from the Educational Planning and Research Division (reference number: KPM.600-3/2/3-eras (5910)) prior to data collection. Researcher also sought for permission from the school principals before entering the sites, the purpose and significance of the study as well as the procedure in data collection were explained explicitly to the principals. Informed consent form was prepared based on the guidelines suggested by Nijhawan which include the following information: The purpose of the research, the procedures to be followed during data collection, description of discomforts (if any) and benefits, confidentiality of the records, anonymity of the respondents, and the right of participation or withdrawal.^[15] As this study involves children below 18 years old, parental permission for inclusion of their children in this study is required. The informed consent forms were sent to parents of the participants and gain their approval prior to the distribution of questionnaire.

Data analysis

Data are analyzed using the Statistical Package of IBM SPSS Statistics Version 26. Descriptive analysis was used to describe the level of SRH knowledge among the primary five students and demographic profiles of

the respondents. To examine the associations between the demographic variables and outcome variables, multivariate logistic regressions were carried out. The strength of the association was declared at $P < 0.05$.

Results

A total of 935 questionnaires were distributed and 617 sets of valid questionnaires with parent consents were returned with a response rate of 66%. Majority of the respondents were female students (54.9%), Chinese (64.7%), and adherents of Buddhism (55.4%).

Sexual and reproductive health knowledge level of the respondents

The SRH knowledge among young adolescents who are attended primary schools in Johor, Malaysia based on four domains are illustrated in Table 1.

Items that describe the pubertal changes in the puberty domain appeared to be easier to the students, more than 50% of the respondents were aware about the definition of puberty (PUB1), the rate of puberty is different for each individual (PUB2 and PUB3) and some physical changes that occur when experiencing puberty (PUB4, PUB5, PUB6, and PUB7). In contrast, most of the students were unable to respond to items regarding to menstruation cycle, except for the items that defined menstruation (PUB 7) and length of menstruation (PUB 11). More than 80% of the students were not aware that "A girl is possible to become pregnant before the first period."

The students faced greater challenges in answering items related to HIV/AIDS and sexually-transmitted diseases. According to their responses, only 15.1% of them can react accurately to the statement "There's a high chance of getting AIDS by kissing someone on the mouth who has AIDS." Only 32.7% of the respondents correctly answered the item "The most common sexually transmitted diseases are gonorrhea and syphilis." which indicated that students had less awareness towards sexually-transmitted diseases other than HIV/AIDS. Although students showed insufficient knowledge on prevention of sexually-transmitted diseases (HIV7), however, majority of the students (approximately 60%) can identify the transmission method of HIV/AIDS and sexually-transmitted diseases.

Based on the descriptive analysis, majority of the students responded correctly to the items in prevention of child sexual abuse. Nevertheless, the statistics showed that the children are more likely to answer correctly to those items related on how to react to child sexual abuse (CSA2, CSA3, CSA7, and CSA11), but they are having difficulties when asking them to distinguish the

good touch and bad touch (CSA 5, CSA 6, CSA 8, CSA 9, and CSA 10).

The last domain of the questionnaire involves items related to reproductive systems and reproduction. The students were more capable in answering the items that describe reproductive system as approximately 60% of the students responded correctly to the items about the structures of male and female reproductive systems. However, they have insufficient knowledge about pregnancy and development of fetus with an exception for the item "Pregnancy occurs when a sperm fertilizes ovum" which was answered correctly by 75.5% of the students.

Demographic factors associated with sexual and reproductive health knowledge level of respondents

To estimate the association between demographic variables and SRH knowledge level among the primary school students, multivariate logistic analysis was performed. In order to have a clear picture about primary school student's capability in answering the items in the questionnaire, Rasch measurement model was used to compute a logit measure to represent their knowledge level. Based on the measurement, the students who scored below the mean of item measures were categorized as having poor SRH knowledge whereby students who scored equal or above the mean of item measures were grouped under good SRH knowledge category.

The initial plan of analysis included three demographic variables as SRH knowledge predictors, namely gender (categorical variable: Male, female), ethnicity (categorical variable: Malay, Chinese, Indian, Others), and religion (categorical variable: Muslim, Buddhist, Christian, Hindu, Others). Nevertheless, religion factor was excluded from the analysis as high multicollinearity with a correlation of 0.791 was detected between religion and ethnicity which violates the assumption of multivariate logistic regression analysis.^[16] Thus, only two variables were included for later analysis. For categorical variables, the first item listed in parenthesis was taken as the reference group in the regression analysis. A $P < 0.25$ was taken to indicate statistical significance. Univariate analysis was done to identify significant plausible variables before the multivariate logistic regression analysis was performed [Table 2].

The results of the univariate analysis which indicated that both gender and ethnicity are potential predictors with a $P < 0.25$. Gender and ethnicity were then included in the multivariate logistic regression model [Table 3].

The final model as shown in Table 3 demonstrates that gender is a significant predictor of poor level

Table 1: Respondents' sexual and reproductive health knowledge and percentage of answered the items correctly

| Dimension | Item | Description | Responding correctly (%) |
|--|----------|---|--------------------------|
| Puberty | PUB1 | Puberty is the transition period that happens when a child becoming sexually mature and able to reproduce | 60.9 |
| | PUB2(R) | All individuals have the same rate of puberty changes | 56.6 |
| | PUB3 | Girls usually experience puberty earlier than boys | 72.0 |
| | PUB4 | During puberty, hormone stimulates the growth of facial hair and hair around genitals among boys | 61.8 |
| | PUB5 | A wet dream is the body's natural way of releasing the sperm build up in the testes | 58.3 |
| | PUB6(R) | It is not normal for boys to have wet dreams | 70.3 |
| | PUB7 | Menstrual cycle is a physiological and natural process that happens only on girls | 84.8 |
| | PUB8 | Menstruation begins usually at about 12 years of age | 49.4 |
| | PUB9 | Menstrual cycle marks that a girl is capable to become pregnant | 56.7 |
| | PUB10 | A girl is possible to become pregnant before the first period | 15.9 |
| | PUB11 | The length of periods last 3 to 7 days but can vary for others | 62.1 |
| | PUB12(R) | All girls feel depressed during menstruation | 21.6 |
| HIV/AIDS and sexually - transmitted diseases | HIV1(R) | There's a high chance of getting AIDS by kissing someone on the mouth who has AIDS | 15.1 |
| | HIV2 | AIDS can be spread by sharing a needle with a drug user who has AIDS | 64.3 |
| | HIV3 | AIDS can be spread by having sex with someone who has AIDS | 65.6 |
| | HIV4 | Promiscuity can increase the chance of getting AIDS | 59.0 |
| | HIV5 | Sexually - transmitted diseases are infections caused by bacteria or viruses which are spread by body contact and by sexual intercourse | 65.2 |
| | HIV6 | The most common sexually - transmitted diseases are gonorrhea and syphilis | 32.7 |
| | HIV7 | Abstinence is an effective method to prevent sexually - transmitted diseases | 44.2 |
| Prevention of CSA | CSA1 | The private parts are the body parts covered by underwear | 92.1 |
| | CSA2 | You should not to let all grown up touch your private parts | 84.6 |
| | CSA3 | You should inform your parents or the person you trust if a grown up touches your private parts | 90.6 |
| | CSA5 | It is ok for the doctors and nurses to look at your private part if you hurt your private parts | 66.3 |
| | CSA6 | Most kids like to get a kiss from their parents before they go to bed at night. For them, that would be a good touch | 61.1 |
| | CSA7 | You should say "no" and move away if someone touches you in a way you don't like | 95.5 |
| | CSA8 | You can trust your feelings whether a touch is good or bad | 59.5 |
| | CSA9 | It's ok to have a hug from a grown - up you like | 26.7 |
| | CSA10 | A pat on the shoulder from a teacher you like after you've done a good job at school is a good touch | 65.5 |
| | CSA11 | Boys also need to avoid someone touching their private parts | 85.1 |
| Reproductive systems and reproduction | SYS1 | The male reproductive system consists of penis, testes and scrotum | 68.4 |
| | SYS2 | Testes is the male reproductive organ that produces millions of sperms | 66.5 |
| | SYS3 | The female reproductive system consists of ovaries, fallopian tubes, uterus, and vagina | 78.6 |
| | SYS4(R) | Ovaries produce few ova each month | 31.6 |
| | SYS5 | Pregnancy occurs when a sperm fertilizes ovum | 75.5 |
| | SYS6 | Fertilization occurs in fallopian tubes | 43.4 |
| | SYS7(R) | A fetus develops in the cervix of woman | 17.8 |

R=Reverse item, CSA=Child sexual abuse

of SRH knowledge whereby the female respondents are more likely to exhibit poor SRJ knowledge by a factor of 1.464 (95% CI 1.014–2.114). Consistent with the result of univariate analysis, Indian ethnicity was

reported as a predictor of poor SRH knowledge, Indian students were found to have odds of about 3 times higher than their Malay counterparts to have poor SRH knowledge.

Table 2: Level of sexual and reproductive health knowledge and univariate analysis showing association of demographic variables and sexual and reproductive health knowledge of respondents

| Variables | Good SRH knowledge (n=441) (code=0) | Poor SRH knowledge (n=176) (code=1) | P | Unadjusted OR (95% CI) |
|-----------|-------------------------------------|-------------------------------------|-----------------|------------------------|
| Gender | | | | |
| Male | 211 | 67 | | 1 (reference) |
| Female | 230 | 109 | 0.039 | 1.458 (1.019-2.086) |
| Ethnicity | | | | |
| Malay | 107 | 40 | | 1 (reference) |
| Chinese | 302 | 97 | 0.488 | 0.859 (0.559-1.320) |
| Indian | 31 | 36 | <0.01 | 3.106 (1.701-5.672) |
| Others | 1 | 3 | Not included | Not included |

Bold values indicate significance at $P < 0.05$. SRH=Sexual and reproductive health knowledge, OR=Odds ratio, CI=Confidence interval

Table 3: Multivariate logistic regression showing adjusted odds ratio between demographic variables and low sexual and reproductive health knowledge

| Variables | Adjusted OR | 95% CI | P |
|-----------|---------------|-------------|-----------------|
| Gender | | | |
| Male | 1 (reference) | | |
| Female | 1.464 | 1.014–2.114 | 0.042 |
| Ethnicity | | | |
| Malay | 1 (reference) | | |
| Chinese | 0.888 | 0.577–1.368 | 0.591 |
| Indian | 3.208 | 1.750–5.879 | <0.01 |

Bold values indicate significance at $P < 0.05$. OR=Odds ratio, CI=Confidence interval

Discussion

The elements of sexuality education have been incorporated into the curriculum of Malaysian primary schools for decades, but the SRH knowledge level of primary school students were seldom reported. Prior research have attributed the insufficiency of research studies in this area to difficulty in measurement as the topic is highly prejudiced and often embarrassing.^[17] Thus, this cross-sectional study was attempted to bridge the research gap. Based on the result, majority of the respondents were reported to have good knowledge of SRH which the respondents scored equal or above the median of the SRH knowledge scores. The findings were consistent with recent studies that evaluated the reproductive health knowledge among adolescents in Pahang and East Malaysia indicated that their SRH knowledge were at average level.^[9,18] On contrary, most of the previous findings reported that adolescents and young adults in Malaysia reported low level of knowledge on topics related to sexuality, pregnancy, reproductive health and so forth.^[8,11,19] Yet, these studies were conducted in the early 2010s, thus, it might indicate that the younger generation could have exposed to a more comprehensive sexuality education

and information from media which contributed to better SRH knowledge.

The results of this study showed that most of the students had moderate knowledge on puberty. Although most of the respondents were aware of the definition of puberty and some of the changes happen during puberty but majority of the students did not know “a girl is possible to become pregnant before the first period” and believed that “all girls feel depressed during menstruation.” Meanwhile, there were mixed results among studies that examined adolescents’ knowledge about puberty. Female secondary school students were reported to have high knowledge about puberty in a recent Iranian study.^[20] In contrast, a review had provided empirical evidence that female adolescents exhibited poor pubertal and menstruation knowledge.^[21] Lack of puberty knowledge could lead to development of unfavorable attitude toward pubertal changes as well as negative emotions such as anxiety and low self-esteem.^[22] Thus, it is significant to prepare the young adolescents with the knowledge and coping strategies related to puberty, so that they can undergo the changes physically and emotionally prepared.

The current curriculum used in the primary schools had introduced sexually-transmitted diseases superficially. Based on the previous study, HIV / AIDS is the most heard sexually-transmitted diseases among the adolescents.^[10] Around two-thirds of the participants able to recognize the transmission method of sexually-transmitted diseases and HIV / AIDS in current study. Similar to the results obtained from Anwar *et al.*,^[10] the students in this study had difficulty in identifying sexually-transmitted diseases other than HIV / AIDS. Moreover, majority of the students were unable to respond correctly to the item “Abstinence is an effective method to prevent sexually-transmitted diseases.” The findings of this study indicated that the young adolescents are still lacking knowledge in prevention of sexually-transmitted diseases which could lead to deleterious effects to their SRH. Nevertheless, adoption of empirically-informed measure can potentially increase young people’ awareness and thus, prevent most of the mortality due to the diseases as well as promote adolescent’s overall health.^[23]

In Malaysia, the literature about young adolescents’ knowledge on child sexual abuse is still scarce. The results drawn from current study suggested that the students were able to provide appropriate responses to the items that describe how they should react when encounter inappropriate harassment by “say no,” “run from the perpetrators” or “inform parents or trusted person.” Nevertheless, the findings also indicated that the students showed confusion in differentiating good

touch or bad touch on body parts other than private parts. For example, only around a quarter of the students felt that "it's okay to have a hug from a grown-up you like." A study conducted in Indonesia also revealed similar finding, the students are more knowledgeable in identifying inappropriate touch, but they were relatively weak in identifying appropriate touch.^[24] Hence, it may indicate that the students are oversensitive and overprotective when involving personal touch. Wulandari *et al.* elucidated that the students might felt touch from different sex as inappropriate due to their religious values and contextual culture.^[24]

The participants generally showed good understanding about the reproductive systems, however, and they have lower knowledge in reproduction and development of fetus. Wong also supported that young Malaysians had relatively poor reproduction and pregnancy knowledge.^[11] Without accurate knowledge related to reproductive health, young people could engage in unsafe sexual practices, which can result in increased risk of sexually-transmitted diseases or unwanted pregnancy.

In this study, gender was identified as a significant predictor of students' SRH knowledge. The result is similar with what has been found in previous studies which indicated that there is a significant difference in SRH knowledge based on gender.^[25-29] In line with the studies mentioned, male students are more knowledgeable than female students about SRH. Past studies described that men enjoy greater degree of social freedom as compared to women, and they are socially approved to discuss sexuality matters more openly whereas women are subject to social restrictions and discouraged from discussing sex-related issues.^[28,30] A collaborative report published by UNFPA, UNESCO, and WHO summarized that the socio-cultural norms and gender norms have a profound influence on adolescent's SRH.^[31] These norms can significantly limit adolescent's access to information and services. At the same time, many cultural contexts still emphasized on female virginity until marriage, so girls and young women are expected to remain sexually-inexperienced and naïve before marriage. Thus, girls and young women are confronted with stigma and traditional norms that restrict their access to SRH information and services.

Moreover, the current study also reported that Indian students have lower SRH knowledge as compared to students from other ethnicities. Up to date, there is no study in Malaysia explore the mechanism of how ethnicity could contribute to primary schoolers' SRH knowledge. Despite of the limited study focused on the perspectives of Indian community in Malaysia context, past studies conducted in India highlighted that conservative culture had restricted the public discussion

on sexual matters and considered sexuality as a very sensitive subject. Introduction of school-based sexuality education had led to major controversy in India during 2007, the opponents contended that sexuality education can corrupts the youths and offends "Indian values."^[32]

The current study did not include religion factor as a predictor of primary schoolers' SRH knowledge as multicollinearity issue was detected between ethnicity and religion. Therefore, in order to fulfill the assumption of multiple logistic regression, religion factor was omitted from the analysis. However, prior study showed that reproductive health knowledge and attitudes were associated with religious values and cultural norms differences.^[11] Based on the same study, the Malays who majority subscribed as Islam adherents had reported the lowest reproductive and contraceptive knowledge as compared to Chinese. Anwar also added that knowledge on sexually transmitted infections among adolescents in Malaysia was significantly associated with religion, Christians are being more knowledgeable about sexually-transmitted infections than their counterparts who subscribed to other religion.^[10] Thus, in-depth research underlined the influence of religion toward SRH issues are recommended to provide clearer picture about the phenomenon.

Limitation and recommendation

This study has several limitations. First, the conclusion of this study is drawn from primary five students who are resided in Johor state only. Although sampling strategy had been applied to avoid potential bias, nevertheless the results may not fully reveal the determinants that contribute to students' SRH in Malaysia. Therefore, further research is needed to examine the SRH knowledge among adolescents from other age groups in Malaysia in order to provide more information such as the influence of age factor on respondents' SRH knowledge. Next, this study had used cross-sectional study design to explore the relationships between the variables which are not capable to draw the causal relationships between the variables. Furthermore, current study only considered the roles of demographic variables on students' SRH knowledge which only partially explained the factors contributed to young adolescents' SRH knowledge. It is recommended that future study can expand the study scope and include the influences of the family, school, neighborhood, and local community towards students' SRH outcomes.

Conclusion

The results of the study demonstrated that most of the primary five students have moderate level of SRH knowledge. Demographic variables were found to have some extent of association with respondents' SRH

knowledge whereby female and Indian respondents are more likely to report lower SRH knowledge. The current study provided useful information for the policy makers and educators in designing interventions that could improve young adolescent's SRH knowledge which could have positively affected their sexual health and well-being in the future. Moreover, this study also informs the needs of women empowerment in SRH aspects. Equipping the young generation with appropriate SRH knowledge could create a foundational change in their attitude and shaping positive behaviors that related to prevention of risky sexual behaviors and sexual exploitation. At the same time, government, ministry of education and health educators are encouraged to design a more culturally sensitive curriculum and adopt practical methods for dissemination the knowledge to Malaysia students from different cultural background.

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Conflicts of interest

There are no conflicts of interest.

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