

Factors related to sexual knowledge among Malaysian adolescents

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Abstract

This influence of gender, race, age and personal belief on adolescent's sexual knowledge was examined. The respondents for the study were 860 school-going adolescents aged 13 to 18 from urbanization city in Peninsular Malaysia. Data were collected by using self-administered questionnaire. A cultural sensitive sexual knowledge scale was developed and employed to measure respondent's sexual knowledge. Descriptive, bivariate and multiple statistical tests were conducted to examine the relationships between gender, race, age and personal belief with adolescents' sexual knowledge. Findings of the present study showed that: 1) No significant mean difference in sexual knowledge between boys and girls. 2) There was a statistically significant difference in the mean of sexual knowledge among the three races ($F(2,766) = 14.84, p \leq .001$). 3) Respondents with higher score in sexual knowledge tend to be older ($r = .21, p \leq .05$), have lower score on extent of living a life according to the religious belief ($r = -.07, p \leq .05$), have lower self-perceived importance of religion in life ($r = -.11, p \leq .01$), have higher self-perceived sexual openness ($r = -.31, p \leq .01$) and have more positive attitude toward sex related sources ($r = .35, p \leq .01$). Findings of this study will help to further improve the understanding of adolescents' sexual knowledge and to give inputs to programs on adolescent development specifically in sexuality and reproduction health.

Keywords: adolescents, sexual knowledge, personal beliefs, age, gender, race

Introduction

Adolescence is a period for experiencing tremendous challenges in all aspects of development, especially sexuality development. Almost all of the challenges during this period are associated with puberty. These include getting comfortable with the changes of the shape of body, adjustment of thought and feeling around these changes and coping with others' responses to their maturing body (Achibal *et al.*, 2006). Furthermore, during this transition from childhood to adulthood, adolescents need to develop capacity for self-regulation and taking responsibility for their behaviour, making wise choice on their life's decision and developed capacity to maintain intimate relationship for adulthood (Zimmer-Gembeck and Collins, 2006). Some researchers (Arnett, 1999; Hall, 1904) describe adolescence as a 'storm and stress' periods because many of the adolescents are involved in risky behaviour and challenge the boundaries of the social standard in order to attain a balance of social expectation and personal value. Although the development of adolescent is frequently problematic, most adolescents traverse healthy pathways especially when they receive

accurate education and information concerning their development and appropriate ways of expressing self, intimacy and relating with both genders.

Accurate sexual knowledge is important for healthy sexuality development. Sexual knowledge serve as a foundation to prepare adolescents to understand their sexuality development, that later will influence their emotional and psychological well being (Lou and Chen, 2009). Researches indicated that adolescents with high levels of sexual knowledge are less likely to involve in risky sexual behaviour (Jemmott and Jemmott, 1990; Ryan, *et al.*, 2007) and effective comprehensive sex education have reduce sexual risky behaviour (Bearinger, Sieving, *et al.*, 2007; Montessoro and Blixen, 1996; Sanderson, 2000).

Adolescents' responses to their sexuality development are deeply affected by social and cultural context in which they live. Before attending any formal sex education, adolescents are exposed to the normative belief, value and behaviour on sexuality (Shtarkshall, *et al.*, 2007). The sexual socialization takes place since an individual was born. For example, how parents respond to infant maturation will influence infant awareness on sexuality. Sexual socialization also takes place outside home as child or adolescents participate in community activities such as religion activities and consume mass media.

Generally, discussion on sexuality in Malaysia is view as inappropriate. This cultural value governs by perception of religion teaching; seldom encourage discussion on sexual related topic. Sexuality does not only focus on sexual behaviour but also covers reproduction health, sexual attitude, sexual health care and relationship which are consistent with cultural, moral and religion value (Robinson, *et al.*, 2002). However, people choose not to discuss sexual development in detail. Consistently, most of the parents will not discuss sex related topics with their child (Low, *et al.*, 2007; Mohammadi, *et al.*, 2006). Furthermore, sex education is not a comprehensive subject in school, and it focuses on the topic related to anatomy, reproduction, contraception and sexually transmitted disease which are integrated in science subjects for lower secondary level students. As a result, this nonverbal underlying message may communicate to adolescents that sexuality is a sinful subject and inappropriate topic to discuss.

Even though this topic is perceive as taboo to discuss, adolescents are expose to many other sources of information related to sexuality. For example, with the advancement and development of technology, mass media gradually become one of the important sources on sex related information for adolescents (Davis, *et al.*, 1998; Nonoyama, *et al.*, 2005). In addition, the rapid growth of the pornography facilitates adolescents' exposure to sexually explicit materials either intentionally or accidentally (Flood, 2007). This side of world portray that sex is a pleasure without any responsibility. This sexual value and belief contradict with local cultural norm. Adolescents who are curious on sexual topic may adopt the value and rely on this kind of sources to fulfil their curiosity and avoid the embarrassment of discussing the topic with adult. Yet, information from these sources may not be accurate and may mislead adolescents' understanding concerning an appropriate sexuality and reproduction health. There are limited sources on accurate sexual knowledge to support a healthy sexual development among Malaysia adolescents. Thus, it is necessary to investigate the level of sexual knowledge among Malaysia adolescents.

Various factors influence adolescents' sexual knowledge such as age, gender, race, religiosity, personal belief and attitude toward sex related sources. This exploratory study may give inputs to programs on adolescent development specifically in sexuality and reproduction health. For example, sex has been found to have a significant role in sexual knowledge. Adolescents' girls

have higher score than boys in sexual knowledge (Gould and Mazzeo, 1982; Handelsman, *et al.*, 1987; Lou and Chen, 2009; Thornburg, 1981). This is because girls tend to seek information from more reliable sources such as their parents (Gould and Mazzeo, 1982; Thornburg, 1981) while boys have higher tendency to seek out sexually explicit material through internet (Flood, 2007). Researches also indicated that age have positive relationship with sexual knowledge. Older adolescents had higher score in sexual knowledge compare to younger adolescents because of more mature cognitive development and life experiences (Lou and Chen, 2009).

Majority of the studies concerning sexual knowledge focused on the influence of sources of knowledge on adolescent's sexual knowledge (Handelsman, *et al.*, 1987; Somers and Gleason, 2001; Thornburg, 1981). Studies concerning the influence of personal belief shaped by sexual socialization on sexual knowledge are very limited. Thus, the present study will examine the various factors related to sexual knowledge. More specifically the objectives of this study are:

1. To determine the level of sexual knowledge among adolescents in Malaysia.
2. To determine differences in sexual knowledge by gender and race.
3. To investigate the association of age, personal belief and attitude toward sex related source with sexual knowledge.
4. To determine unique predictors for sexual knowledge.

This study employed the epistemological approach to understand factors related to sexual knowledge among Malaysia adolescents. Personal epistemological belief is a system of belief about the nature of knowledge and that may influence individual comprehension and cognition in working on a set of information (Hofer and Pintrich, 1997). According to Perry's model this personal belief serve as a scheme in making meaning on their knowledge they learned. Perry adopted Piaget's concept on developmental schemes in which the scheme is developed through the interaction with the environment by either assimilating to existing cognitive frameworks or accommodating the framework itself. People with more positive personal belief toward the knowledge were motivated to learn and comprehend the information (Pintrich and Groot, 1990).

As discussed earlier, perception of religion teaching will shape personal belief. When the society does not accept adolescent sexuality widely, adolescents may see exploring sexuality as a sinful action. According to the epistemological belief approach, if adolescents hold a negative personal belief in sexual knowledge, most probably they will not be motivated to find out the accurate information related to healthy sexual development. In the other hand, adolescents who hold a more positive attitude in sex related sources may be able to obtain more accurate sex related information.

Evidence from various sources suggested that self-perception will influence motivation in learning (Barnett *et al.*, 1996; Eccles and Midgley, 1990). Self-perception is cognitive evaluation on personal attribution. Adolescents who perceive they have more liberal attitude toward sex may have more positive personal belief and higher motivation to learn about sexuality. The study hypothesized that adolescents with more liberal self-perception will have higher tendency to gain more accurate sexual knowledge. In contrast, many people may perceive discussion about sexuality as prohibited by religion. Hence, if adolescents perceived that they are highly religious, they may develop more negative personal belief toward sexuality. Therefore, they may not be able to comprehend sex-related information well. Eventually, they may have poor knowledge in sexuality.

Methods

Respondents and data collection

The study was conducted in urbanization area in Peninsular Malaysia which include Northern (Penang Island), Central (Klang Valley), and Southern (Johor Bahru) regions. Due to the sensitiveness of the topic of the study, a non-probability sampling method was employed to obtain respondents. The respondents included 860 adolescents from ages 13 to 18. 75 respondents (8.7%) were excluded from the analysis of study due to the reason of incomplete questionnaire and invalid data. The findings are drawn based on 387 boys (49%) and 398 girls (51%). There were 183 respondents (23.3%) between the ages of 13 to 14 years, 304 respondents (38.7%) were between 15 and 16 years old, and 298 respondents (38%) were between 17 to 18 years old. The mean age of the respondents was 15 years 7 month ($SD=1.54$). There were 337 Malay (43%), 303 Chinese (39%) and 145 Indian (19%) respondents. Data were collected by using structured, self-administrated bilingual (Malay and English) questionnaire.

Measures

Sexual Knowledge: Sexual knowledge was measured by a sexual knowledge scale developed based on the cultural setting of Malaysia (Siti Nor et al., 2009). Sexual knowledge scale consist of six subscales concerning knowledge regarding: (1) function of sexual reproduction organs, measured by ten items (e.g. breast is included in female sexual reproduction system), (2) puberty, measured by five items (e.g. sexual hormone release cause teenager to be attracted to opposite sex), (3) pregnancy measured by five items (e.g. pregnancy is the name given to the period from the time of fertilization until the birth of the baby), (4) contraception, measured by four items (e.g. shower after sexual intercourse is likely to prevent pregnancy), (5) sexually transmitted disease and infection, measured by five items (e.g. frequently changing sexual partner will increase the risk of getting sexually transmitted infection) and (6) abortion, measured by four items (e.g. in general, abortion is illegal in Malaysia). For each item, score +1 is given for correct answer and score 0 is given for wrong answer and not sure answer. Total score range from 0-34. High score on the items indicates greater accuracy of sexual knowledge. The items provided an option of 'not sure' in order to eliminate guessing effect. The intention of the scale is to measure the level of adolescents' sexual knowledge. All the items were developed based on science and physical health education textbook specifically from lower secondary school syllabus. The scale in current study obtained a high internal reliability with Cronbach's alpha equals to .83.

Personal belief: Personal belief refers to religiosity and self-perceived sexual openness. Religiosity was measured based on three separate single items; (1) Self-perceived religiosity (SR), measured from 0 to 10 with high score indicating high self-perceived religiosity. (2) Extent of living a life according to religious belief (LRB), measured from 0=never, 1=seldom, 2=sometimes, 3=often, 4=most of the time, and 5= Always. High score indicated high self-perceived of living a life according to religion belief. (3) Self-rated important of religion in life (SIR), measured on a scale from 0=not important at all to 4= very important. High score indicated high importance of religion in life. Self-perceived sexual openness (SSO) is a single item which asked respondent to rate their view about sex on a scale from 0=conservative to 10=liberal.

Attitude toward sex related sources: Attitude toward sex related sources (ATS) was measured by four items (e.g. teenagers should feel comfortable to discuss sexual issue with their parents) adapted from various related instruments (Fullard *et al.*, 2005; Siti Nor, *et al.*, 2009). The items were scored using a 5-point Likert scale, ranging from 1=strongly disagree to 5=strongly agree. Total scale score ranges from 4-20. The scale obtained a moderate internal reliability (Cronbach's $\alpha=0.60$). High score indicated a positive attitude to sex related sources where the attitude is appropriate to healthy sexual development.

Data analysis

Descriptive statistics were used to describe the background information and respondents' scores on the main variables. Bivariate and multivariate statistical tests were conducted to examine the relationships between gender, race, age and personal belief with adolescents' sexual knowledge.

The exploratory data analysis indicated that sexual knowledge score is approximately normally distributed. The skewness value is equal to -0.46 and it is within the cut-off point $+2$ (George and Mallery, 2003). Table 1 displays the distribution of respondents by score in sexual knowledge ($M=16.15$, $S.D. = 6.15$, range 0-32). The dispersion of the sexual knowledge among respondents is relatively big. This shows that the knowledge gap among respondents is quite wide. 365 respondents (47.6%) obtained sexual knowledge score below group mean and 402 respondents (52.4%) obtained score above group mean. More than half of the respondents (53.7%) answered 14 to 22 items correctly. There were 37 respondents (4.7%) who did not get any of the items correctly. Only 7 respondents (0.9%) obtained score above 28. None of the respondents was able to answer all items correctly.

Table 1: Distribution of Respondents by Score in Sexual Knowledge ($N=767$)

Number of items answer correctly	<i>n</i>	%
Below 6	58	7.6
7-13	180	23.5
14-20	335	43.7
21-27	187	24.4
Above 28	7	0.9

Table 2 presents the mean and standard deviation for all independent variables such as attitude toward sex related sources (ATS), self-perceived religiosity (SR), extent of living a life according to religious belief (LRB), self-rated importance of religion in life (SIR) and self-perceived sexual openness (SSO).

Table 2: The mean and standard deviation for all independent variables ($N=761$)

	M	SD	Minimum	Maximum
Self-perceived religiosity	6.37	2.25	0	10
Extent of living a life according to religious belief	3.16	1.41	0	5
Self-rated importance of religion in life	2.99	1.11	0	4
Self-perceived sexual openness	5.16	2.29	1	10
Attitude toward sex related sources	13.02	3.12	4	20

Sexual knowledge by gender

An independent sample t-test was conducted to compare the score of sexual knowledge between female and male adolescents. Although females appeared to have better sexual knowledge compared to males. The mean score of sexual knowledge for female adolescents was 16.39 ($SD=5.88$) and for male adolescents was 15.90 ($SD=6.41$), with the $t(765) = 1.106$ and $p=.27$. Thus, the difference in sexual knowledge between female and male adolescents was not significant.

Sexual knowledge by race

A one-way between groups ANOVA was performed to examine the difference in sexual knowledge by race (Malay, Chinese and Indian). The mean score of the sexual knowledge of the three main races are shown in Table 3. The analysis revealed that there is a statistically significant difference in the mean of sexual knowledge scores among the three races ($F(2,766) = 14.84, p<.001$). The eta-squared valued obtained indicated a small effect size ($\eta^2=.04$) and implies that the mean differences between the three races is not very large.

Table 3: Sexual Knowledge Score by Races ($N=767$)

	<i>n</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum
Malay	331	16.06	5.737	0	29
Chinese	296	17.30	6.351	0	32
Indian	140	13.93	6.064	0	25

Follow-up test was conducted by using Bonferroni post hoc multiple comparisons to evaluate the pair wise differences among the mean. Table 4 indicated that all pairs were found to have statistically significant difference. The sexual knowledge gap is significant between three races of respondents.

Table 4: Bonferroni Post Hoc Pair wise Differences in Mean Changes ($N=767$)

(I) Race	(J) Race	Mean Difference (I-J)	Sig.
Malay	Indian	2.13	.001
Chinese	Malay	1.24	.032
Indian	Chinese	-3.37	.000

The relationship between independent variables and sexual knowledge

Table 5 displays the results of bivariate correlation analysis for all variables. The result revealed that respondents with higher score in sexual knowledge tend to be older ($r=.21, p\leq.05$), have lower extent of living a life according to the religious belief ($r=-.07, p\leq.05$), have lower self-perceived importance of religion in life ($r=-.11, p\leq.01$), higher rate of self-perceived sexual openness ($r=.31, p\leq.01$) and have more positive attitude toward sex related sources ($r=.35, p\leq.01$). No significant relationship was found between self-perceived religiosity and sexual knowledge.

Table 5: Inter-correlations between Variables in the Study (N=743)

Variables	r value					
	2	3	4	5	6	7
1. Sexual knowledge	.21**	-.05	-.07*	.11**	.31**	.35**
2. Age	-	.03	.08*	.04	.13**	.06*
3. Self-perceived religiosity (SR)		-	.52**	.44**	-.07*	-.07*
4. Extent of living a life according to religious belief (LRB)			-	.70**	-.04	.18**
5. Self-rated importance of religion in life (SIR)				-	-.07*	.17**
6. Self-perceived sexual openness (SSO)					-	.27**
7. Attitude toward sex related sources (ATS)						-

Note: * - $p \leq .05$; ** - $p \leq .01$.

Predictors of sexual knowledge

All the independent variables (age, attitude toward sex related sources (ATS), extent of living a life according to religion belief (LRB), self-rated importance of religion in life (SIR) and self-perceived sexual openness (SSO) which have significant correlations with sexual knowledge were included in the standard multiple regression model. Backward variable elimination method was chosen because it helps to decide on the most useful predictor for sexual knowledge. In Step 1, the regression analysis showed that all the variables entered in the equation contribute about 20% in explaining sexual knowledge among respondents, $R^2 = .20$, adjusted $R^2 = .20$, $F(5, 745) = 37.30$, $p < .01$ (see Table 6.). However, t -statistic indicated that, extent of living a life according to religion belief (LRB) with $t(744) = -.30$, $p > .05$ and self-rated importance of religion in life (SIR) with $t(744) = -.94$, $p > .05$ appeared to have no significant contribution in predicting sexual knowledge. Thus, these two variables were excluded for a better prediction model. Age, self-perceived sexual openness (SSO), and attitude toward sex related sources (ATS) emerged as the significant predictors of sexual knowledge, $R^2 = .20$, adjusted $R^2 = .20$, $F(5, 745) = 61.2$, $p \leq .01$. Based on the backward methods analysis, the model identified is:

$$\text{Sexual knowledge} = -3.59 + .63\text{age} + .56\text{SSO} + .55\text{ATS}$$

Discussion

The finding demonstrated that sexual knowledge among adolescents is relatively low. Given the reason that the items were derived from lower secondary school science subject and physical health education subject, about 76% of respondents are between the ages of 15 to 18 years. This group of students has been attending the related subjects in school. It reveals that respondents might have difficulties in comprehending the information taught at school. Secondly, respondents may forget the sexual knowledge they learned before. The low score in sexual knowledge may imply that in general the respondents in the study need continual exposure to related curriculum in order for them to retain accurate sexual knowledge. As Doyle (2008) suggested, school is a place to promote sexual health concept, which not only include general sexual knowledge but also self-responsibility in own sexual health. Sexuality is an on-going process that guides sexual health development. Thus, curriculum related to this issue should not only be limited to lower secondary level students. Adolescents should be educated and guided continuously in order to attain a healthy sexual development (Doyle, 2008; Lou and Chen, 2009).

Table 6: Summary of Regression Coefficients for Variables Predicting Sexual Knowledge (N=746)

Variable	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Collinearity Statistics	
	<i>B</i>	<i>SE B</i>	β		Tolerance	VIF
Step 1						
Age	.64	.13	.16	4.9**	.98	1.03
LRB	-.06	.20	-.01	-.30	.51	1.98
SIR	-.24	.26	-.04	-.94	.50	2.01
SSO	.55	.09	.21	6.13**	.92	1.09
ATS	.53	.07	.27	8**	.90	1.17
(Constant)	-2.66	2.24				
<i>F</i>	37.30**					
<i>R</i> ²	.20					
Adjusted <i>R</i> ²	.20					
Step 2						
Age	.64	.13	.16	4.89**	.98	1.02
SIR	-.29	.18	-.05	-1.6	.97	1.03
SSO	.55	.09	.21	6.13**	.92	1.09
ATS	.53	.07	.28	8**	.90	1.17
(Constant)	-2.65	2.24				
<i>F</i>	46.66**					
<i>R</i> ²	.20					
Adjusted <i>R</i> ²	.20					
Step 3						
Age	.63	.13	.16	4.80**	.98	1.02
SSO	.56	.09	.21	6.19**	.92	1.09
ATS	.55	.07	.29	8.36**	.93	1.08
(Constant)	-3.59	2.16				
<i>F</i>	61.22**					
<i>R</i> ²	.20					
Adjusted <i>R</i> ²	.20					

Note: ** - $p < .01$; ATS=Attitude toward sex related sources; SR=self-perceived religiosity; LRB=Extent of living a life according to religious belief, SIR=Self-rated importance of religion in life; SSO=Self-perceived sexual openness.

In addition, the mean difference in sexual knowledge between girls and boys did not reach the .05 significance level. Therefore, both male and female respondents have similar level of sexual knowledge. The result of the present study is inconsistent with the findings by Thornburg (1981) and Gould and Mazzeo (1982) who found significant differences between male and female in sexual knowledge. Both of the study found that in general females have higher level of sexual knowledge. However, both of the studies give different explanations for gender differences in sexual knowledge. According to Thornburg (1981) females tend to depend on mothers for sex-related information while males tend to rely on information from peers. However, Gould and Mazzeo (1982) found females rely more on peer for information compared to males. One possible explanation given by Gonzalez-Espada (2009) is the difference between male and female could be due to gender bias in the development and selection of items measuring sexual knowledge.

Data from this study revealed that there were significant mean differences in sexual knowledge between respondents from three major races (Malay, Chinese, and Indian). Chinese adolescents had significantly higher mean sexual knowledge scores than Malay and Indian adolescents. Malay adolescents' sexual knowledge scores were significantly higher than Indian adolescents. Although race only explain 4% of sexual knowledge, these findings have an essential implication in sex education in Malaysia setting. Sex education curriculum may need to consider that each race might have a unique perspective and beliefs concerning adolescents' sexuality. Thus the design of sex education curriculum needs to take into account these differences.

Older adolescents were found to have more accurate sexual knowledge. The finding is consistent with previous study (Gould and Mazzeo, 1982). As indicated by Piaget's cognitive development model, sexual knowledge will accumulate with the interaction of the environment, and therefore older adolescents might have better resources and cognitive ability to comprehend sexual knowledge compared to younger adolescents.

More importantly, the finding also revealed that personal beliefs including self-perceived extent of living a life according to the religious belief, importance of religion in life, self-perceived sexual openness and attitude toward sex related sources were significantly related to sexual knowledge. The findings supported the assumption that epistemological beliefs have an effect on sexual knowledge.

Moreover, a multiple regression analysis demonstrated that age, self-perceived sexual openness and attitude toward sex related sources emerged as significant predictors of sexual knowledge. Findings of this study will help to further enhance the understanding of adolescents' sexual knowledge and to give inputs to programs on adolescent development specifically in sexuality and reproduction health.

Although self-perception of extent of living a life according to the religious belief and level of importance of religion in life does not seem to be significant contributing factors in sexual knowledge, the bivariate analysis indicated that religious belief is significantly related with sexual knowledge. Thus, religious leaders need to be sensitive in communicating sex related issues to adolescents. Adolescents always question the social standard, yet they need moral guidance in shaping their values. Hence, religion may have an indirect effect in shaping attitude toward healthy sexual development among adolescents.

When considering the differences and similarities of current study with previous findings, it is important to bear in mind the limitations of the study. First, the topic of interest was conducted in a social context where sex topic is a private topic, thus respondents may tend to reveal social expected responses. Secondly, non-probability sampling method was employed in this investigation, thus the findings must be interpreted with more caution and with limited generalization. Thirdly, the extent of personal beliefs in current study was measured by several single items; it may not fully spell out the construct of personal belief which may be predictors of sexual knowledge. Future researches may serve to clarify the issues by utilizing a standard measurement for personal beliefs.

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