Knowledge of safe sex and sexually transmitted infections among high school students, Vientiane Prefecture, Lao PDR

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ABSTRACT

Background: Adolescent knowledge of safe sex and sexually transmitted infections (STIs) can reduce the risk of STIs as well as unplanned pregnancies.

Objective: To describe the knowledge of safe sex and STIs and to identify related factors among high school students in Vientiane Prefecture, Lao PDR.

Method: This was an analytical cross-sectional study conducted at one high school from January to February 2019. A self-administered questionnaire was used to collect information from respondents. The questionnaires were completed by 337 respondents who were selected by stratified random sampling. The data collected were entered into and analysed using EpiData and Stata 13.0 software. Descriptive and inferential statistics were applied to determine the factors associated with knowledge of safe sex and STIs.

Results: The results showed that nearly half of the participants (49.5%) had a good knowledge of safe sex and 51.9% of the respondents had a good knowledge of STIs. Significant positive associations were shown between knowledge of safe sex by students living with other people, those who had studied family planning and had religious beliefs reflecting acceptance to using birth control. Other factors positively associated with knowledge of STIs were students being in Grade 10, and who had studied STIs including HIV/AIDS.

Conclusion: In this study, approximately half of the participants were aware of safe sex and had knowledge of STIs. There is a need to have comprehensive sexual education, particularly emphasising family planning, STIs, and HIV/AIDS for all grades in school.

Background

Knowledge of safe sex and STIs is vitally important for adolescents who need to be imbued with a comprehensive awareness of how to avoid unsafe sex, STIs, and teenage pregnancies [1]. During the adolescent period, teenagers are at a high risk from a number of negative health consequences associated with early and unsafe sexual activities, including STIs and unintended pregnancies [2].

Previous studies have demonstrated that many adolescents are involved in sexual activities that elevate their risk of having reproductive morbidity, including unwanted pregnancies, abortions, and STIs because of a lack of basic knowledge about reproductive biology and preventive methods [3]. Regarding the knowledge of STIs, 93% of the adolescents in a study from Vietnam did not know any symptoms of STIs, 50% could not identify any cause of STIs and 76% did not know that STIs could be prevented [4]. Adolescents have been reported by WHO to not know how to avoid a pregnancy or access contraceptives, including emergency contraception [5].

Globally, each year estimated 333 million new cases of curable STIs occur, with the highest rates among 20–24 year olds, followed by 15–19 year olds [6]. Besides that, more than one million STIs are acquired every day. Each year, it is estimated there are 357 million new STIs [7]. Moreover, estimated 23 million girls aged 15–19 years have unintended pregnancies in developing regions [8].

Lao PDR is a lower-middle-income country situated in southeast Asia. The country has a high adolescent fertility rate with 10.9% of Lao adolescents giving birth by the age of 15–18 and 4.7% of the adolescents having a live birth before the age of 15 [9]. A study in Vientiane reported 33.4% of the participants aged 15–19 years had engaged in premarital sexual intercourse and 62.7% of the adolescents had their first sexual experience before the age of 15. In the six months prior to the survey, 48.5% of the adolescents reported not using condoms during sexual intercourse [10]. In addition, 2.9% of the male and 0.5% of the female adolescents had multiple sexual partners [9]. This is of

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concern as previous research from the period 2010–2012 showed the incidence of HIV among 15 to 24-year-olds equated to 16.7% (2010), 18.8% (2011), and 15.9% (2012) of all new cases in each respective year [11]. It was also reported that while legally restricted, 23.2% of 15–24 year old women had an abortion [12].

Based on the Sustainable Development Goals (SDGs), adolescents’ sexual and reproductive health is a priority on the global agenda within the UN aim to enable low- and middle-income countries to reach the SDGs [13]. Thus, the global health agenda reiterates the need for adolescents to have higher levels of knowledge about sexual health, be more able to make informed decisions about their sexual health and more likely to have protected sex, while avoiding STIs and unplanned pregnancies [14].

In recent years, several researchers have concentrated on knowledge of safe sex and STIs, but without focusing on factors that affected levels of knowledge of safe sex and STIs among adolescents [15]. There are few studies that have gathered data from in-school adolescents in Lao PDR on sexual knowledge and its determinants. The aim of this study was to describe the knowledge of safe sex and STIs and associated factors among high school students in Vientiane City. Understanding adolescents’ knowledge of safe sex and STIs can help design appropriate educational programmes that support adolescents’ sexual decision-making [7, 15–17] and findings from such research are important in planning preventive and treatment strategies.

**Methods**

**Study design and setting**

This study had an analytical cross-sectional design and used a structured questionnaire. The study was conducted at one high school in Vientiane city from January to February 2019. At the time of the study, the number of students studying in grades 10 to 12 was about 1,507 and of those, 896 were female. The age range was 14 to 20 years.

**Sample size and sampling**

The target population of the study was students studying in grades 10–12. The formula of estimating a proportion with specified relative precision formula was applied in order to sample size determination. The expected proportion was the prevalence of having good knowledge of safe sex and STIs among high school students. Due to lack of evidence about this proportion from previous studies, 50% was used as an estimate, with a 5% significance level, a margin of error of 5% and an expected non-response rate of 10%. This gave an overall sample size of 337. Of the total 1,507 potential participants in the school, 21% were in grade 10, 38% in grade 11, and 41% in grade 12. The sample was stratified by these proportions to target 71 participants in grade 10, 128 in grade 11 and 138 in grade 12.

**Measurements**

A self-administered structured questionnaire was used to collect information about knowledge of safe sex and STIs, socio-demographic characteristics and other variables such as characteristics of school, family, peers, and religious factors.

The independent variable included socio-demographic factors such as age, gender, ethnicity, grade, and family structure. The questions about communication with family and peers sought answers using categories ‘Never’, ‘Rarely’, ‘Sometimes’, and ‘Often’ during their lifetime [16,17]. The question related to schooling gave information about students attending school, educational topics, time allocated to study and providing adequate sexual education in school [17,18]. The questionnaire for the sources of knowledge for safe sex and STIs was divided into two parts covering safe sex and STIs, and each part contained seven questions using multiple choice answers to categorise answers with yes (marked as 1) or no (marked as 0). These questions touched topics such as where students got information about family planning and where they got information about STIs from the mass media [18]. The question about the participant’s religious factors included religious belief, the importance of religion, attendance at religious services and their religion’s level of acceptance for sexual intercourse before marriage and the use of birth control [18].

The dependent variable to knowledge of safe sex was measured by 11 positive questions and 2 negative questions [17–20] and the tools for the questionnaire about a knowledge of STIs consisted of 33 items regarding an understanding of the types, causes, routes, symptoms of STIs and types of prevention for STIs [17,18,21,22], with three answer choices (Yes, No, Don’t know or Unsure) for each question. They were given one point for correct answers and zero points for ‘Don’t Know’ or ‘Unsure’ and incorrect answers. This gave a total score for knowledge of safe sex and STI questions with a normal distribution, so the mean was used as an indicator to categorise levels of knowledge, good knowledge > mean and poor knowledge ≤ mean [1,23,24].

The outcome variables of this study for both levels of knowledge for safe sex and STIs were classified into two categories (low knowledge and good knowledge) and the mean was used as an indicator to categorise knowledge levels. Hence, good knowledge ≥ mean and poor knowledge < mean [1,23,24].
Data collection

The questions were initially prepared in English and then translated into Lao, after which they were piloted with 30 respondents in a non-study school before data collection. The value of Kuder-Richardson 20 (KR-20) was utilised to test the reliability of achievement test with dichotomous choices. The coefficient of KR20 for the knowledge of safe sex and STIs was 0.77 and 0.93, respectively. During data collection, the investigators explained to the respondents the research objectives and methods and obtained informed consent before they completed the self-administered questionnaire. All questionnaires were checked for completeness and consistency during the fieldwork.

Data analysis

This study used EpiData to enter the data and Stata 13.0 for analysis. Descriptive statistics were used for frequencies and percentages of the independent and outcome variables. Tests of significance using univariate and multivariate logistic regression were performed to calculate odds ratios which were used to test associations between independent and outcome variables, with 95% confidence intervals for estimating the precision of the odds ratios, with 95% confidence intervals of adjusted odds ratios excluding unity reflecting significant associations.

Ethical approval and consent to participate

Ethical clearance was obtained from the University of Health Sciences in Vientiane, Lao PDR (Approval Number: 103/18, Date 12/12/2018) and the Hanoi University of Public Health (Approval Number: 018-464/DD.YTCC Date 12/12/2018). Participation was voluntary and informed consent was obtained from the participants and parental consent was also obtained. Participants had the right to withdraw at any time and the information collected from the respondents was kept strictly confidential. To protect the confidentiality of participants, the names of respondents were not included in questionnaires, and information collected from respondents was stored confidentially. The research objectives, method conditions, and potential risks were explained to all respondents before the questionnaires were completed.

Results

In total, 337 students from grades 10 to 12 participated in this study. Participants were aged 14–20 years and the mean age was 16 (SD = 1.09), 66.5% of the participants were female. Most of the participants were ethnic Lao (83.9%) and 76.8% of the participants lived with their parents. Three-quarters of the participants came from families with no more than five people (Table 1). The main source of knowledge about family planning cited was Facebook (84.5%), followed by films or television (78.9%). The two most common sources of information for STIs including HIV/AIDS were also from films or television (85.1%) and Facebook (84.8%).

Knowledge of participants about safe sex and STIs

Participant knowledge about safe sex is shown in Table 2. The majority of participants knew correct and consistent condom use resulted in safer sex. Less than a quarter of participants answered correctly however about falling pregnant during the regular menstrual cycle.

Most participants correctly identified HIV/AIDS as an STI and just over a third knew that viruses caused STIs. The majority knew that sexual intercourse and shared needle use were routes for the transmission of STIs. Just over one-third of participants knew a discharge from the penis or vulva was a sign or symptom of infection. A few

| Table 1. Socio-demographic and other characteristics of participants. |
|---------------------------------------------------------------|
| Variables                                      | Number (n = 337) | Percentage (%) |
| Age (Years) Mean and SD = 16.47 ± 1.088, Median = 16, Min = 14, Max = 20 |
| 14–16 years old                                  | 172              | 51.0           |
| 17–20 years old                                  | 162              | 48.9           |
| Sex                                            |                  |                |
| Female                                         | 224              | 66.4           |
| Male                                           | 113              | 33.5           |
| Ethnicity                                      |                  |                |
| Lao                                            | 283              | 83.9           |
| Hmong                                          | 20               | 5.9            |
| Khamu                                          | 2                | 0.5            |
| Tai                                            | 29               | 8.6            |
| Other                                          | 3                | 0.8            |
| Grade of study                                  |                  |                |
| Grade 10                                       | 71               | 21.0           |
| Grade 11                                       | 128              | 27.9           |
| Grade 12                                       | 138              | 40.9           |
| Living with                                    |                  |                |
| Parents                                        | 259              | 76.8           |
| Single mother                                   | 27               | 8.0            |
| Single father                                   | 8                | 2.3            |
| Single mother and step father                   | 4                | 1.1            |
| Single father and step mother                   | 2                | 0.5            |
| Brother/Sister                                  | 4                | 1.1            |
| Cousin                                         | 18               | 5.3            |
| Housemate in dormitory/rented house             | 15               | 4.4            |
| People in family. Mean and SD = 4.95 ± 1.55, Median = 5, Min = 2, Max = 13 |
| 2–5                                           | 254              | 75.3           |
| >5                                            | 83               | 24.6           |
participants regarded weakness as a sign or symptom of an STI. Regarding the prevention of STIs, most participants knew it was good to get tested before marriage or starting a new relationship. Finally, a large majority was aware that the consistent use of condoms was a safe way of preventing STIs (Table 3).

Regarding the 13 questions on knowledge of safe sex, a score was generated with a mean of 7.49, SD ± 2.4. Knowledge of safe sex was categorised into two groups on each side of the mean (Table 4).

Referring to the 33 questions about knowledge of STIs, a score was generated with a mean of 17.30, SD ± 5.1. Knowledge of STIs was categorised into two groups on each side of the mean (Table 4).

**Multivariable analysis**

The multivariable logistic regression model is presented in Table 5. Variables with a p-value of <0.005 in the univariate analyses were entered into the multivariate analysis, namely age, sex, grade, living arrangement, following a religion accepting the use of birth control, studies of family planning methods and STIs. The significant factors associated with knowledge of safe sex were students living with people other than their parents (AOR = 2.5, 95% CI 1.1 to 5.3), who had studied family planning (AOR = 1.7, 95% CI 1.0 to 2.9) and following a religion that accepted the use of birth control (AOR = 1.7, 95% CI 1.0 to 2.9). Significant factors associated with knowledge of STIs were that higher grade students were less knowledgeable (Grade 12 AOR = 0.3, 95% CI 0.1 to 0.6 and Grade 11 AOR = 0.4, 95% CI 0.2 to 0.8), while those who had studied family planning (AOR = 1.8, 95% CI 1.0 to 3.1) and STIs including HIV/AIDS (AOR = 5.1, 95% CI 1.9–13.5) were more knowledgeable.

**Discussion**

Adolescents with higher levels of knowledge about sexual health are more likely to have protected sex, reducing the risk of STIs and unplanned pregnancies [1,2,25–27]. Most students in this study had good knowledge about safe sex, particularly that the correct
and consistent use of condoms can reduce the risk of most STIs including HIV and unintended pregnancies. A study in Lao PDR found that adolescents considered condoms to be generally the safest method of preventing unplanned pregnancy and STIs [28]. Condoms have been widely promoted in education and social marketing campaigns in Lao PDR and are likely to contribute to students’ knowledge of condoms. Positively, almost all participants knew to get an STI/HIV test before starting a new sexual relationship. Nevertheless, similar to other studies in the region, in Vietnam [23] and Indonesia [1], while students had some knowledge about STIs, misconceptions about causation and symptoms were evident.

While respondents in grades 11 and 12 reported significantly less knowledge about STIs than those in grade 10, this may reflect improvements over time in education and information programmes about STIs. Knowledge as to when pregnancy is most likely to occur in a woman’s menstrual cycle was also generally poor.

The study showed factors associated with higher knowledge of safe sex were living with people other than parents, studying family planning and belonging to a religion that accepted the use of birth control. While parents may be an important source of information on sexual and reproductive health at some stages of adolescence, living more independently may reflect other opportunities for gaining knowledge and experience in these matters [29–41].

Studying family planning was generally associated with improved use of contraceptives. School is often seen as an important source for building sexual health knowledge [16,42–44]. Some research has found curriculum-based sex education to be moderately associated with a decrease in adolescents’ risky sexual behaviours (e.g. unprotected sex) [16,42]. Despite sexual education and family planning being included in the school curriculum in higher secondary school, in the present study, knowledge about family planning and STIs, including HIV was mainly derived from Facebook and films or television. The reason for this is not known but it may relate to the teaching methods, teacher competency or trust in sexual information provided by teachers [45].
Religion can be an important factor affecting knowledge about safe sex [18,46–48]. In this study, being of a religion that accepted using of birth control was associated with knowledge of safe sex.

**Limitations**

One of the limitations is the sample was drawn from one school and cannot therefore be considered as representative of all the schools in Lao PDR. Additionally, due to the nature of the cross-sectional study design, causes and effects could not be explored extensively. Furthermore, the study was based on self-reporting and could subject to social desirability bias. In addition, it is possible there might have been some issues regarding the tone of language in the questionnaire which may have caused confusion for some respondents and they had no immediate support to clarify certain questions.

**Conclusion**

Overall, adolescents included in this study had a generally low knowledge of safe sex and STIs. There is a need for comprehensive sexual education particularly in relation to content knowledge about family planning and STIs and HIV/AIDS. There is also a need for future research studies in other schools, particularly those in rural areas which, in the context of a rapidly developing country such as Lao PDR, may provide a stark contrast to urban areas. In addition, qualitative research combined with quantitative research may provide a more nuanced perspective.

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**Author contributions**

KI developed the research proposal, designed the instrument, collected data in the field sites analysed the data and wrote the draft manuscript. LH, LA, and VS contributed to the statistical analysis and interpretation of results. Finally, LA and VS made contributions to manuscript revision. All authors read and approved the final manuscript.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

**Ethics and consent**

This study was approved by the National Ethics Committee for Health Research, Ministry of Health, Lao PDR, and reviewed by the International Review Board of the Hanoi University of Public Health. All students included in the sample agreed to participate in the survey and signed the informed consent form.

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**Paper context**

Adolescents are considered a key population for understanding knowledge related to unsafe sex. This study indicated that while adolescents have a general awareness of safe sex and sexually transmitted infections, several misconceptions were evident. Improving access to knowledge of safe sex and prevention of STIs is important in adolescence for preventing the negative consequences associated with early childbearing and STIs, including HIV/AIDS, among adolescents.

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**References**

[1] Hendrana ARA, Mutyara K, Rowawi R. Knowledge and attitude of senior high school students in Jatinangor towards sexually transmitted infections in 2013. Althea Med J. 2015;2:568–574.

[2] Kotchick BA, Shaffer A, Miller KS, et al. Adolescent sexual risk behavior: a multi-system perspective. Clin Psychol Rev. 2001;21:493–519.

[3] Titiloye MA, Ajuwon AI. Knowledge and quality of adolescents reproductive health communication between parents and their adolescents children in Ibadan, Nigeria. J Public Health Afr. 2017;8. DOI:10.4081/jpha.2017.688

[4] Lan PT, Lundborg CS, Mogren I, et al. Lack of knowledge about sexually transmitted infections among women in North rural Vietnam. BMC Infect Dis. 2009;9:85.

[5] WHO. Preventing early pregnancy through appropriate legal, social and economic measures 2018. Available from: http://www.who.int/reproductive_health/topics/adolescence/laws/en/

[6] WHO. Sexually Transmitted Infections among adolescents. The need for adequate health services 2018. Available from: http://www.who.int/maternal_child_adolescent/documents/9241562889/en/

[7] WHO. Sexually transmitted infections (STIs) 2016. Available from: http://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis)

[8] WHO. Adolescent pregnancy 2018. Available from: http://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy
[9] MOH & Lao Statistics Bureau MU, UNFPA. Lao social indicators survey II 2017 (LSIS). 2018.

[10] Sychareun V, Phengsavanh A, Hansana V, et al. Predictors of premarital sexual activity among unmarried youth in Vientiane, Lao PDR: the role of parent–youth interactions and peer influence. Glob Public Health. 2013;8:958–975.

[11] Progress GAR. Lao PDR country progress report. 2014.

[12] WHO. Health of Adolescents in Lao People's Democratic Republic. 2008.

[13] EWEC. Technical Guidance for Prioritizing Adolescent Health by Every Woman Every Child. 2017.

[14] Visalli G, Picerno J, Vita G, et al. Knowledge of sexually transmitted infections among younger subjects of the city of Messina (Sicily). J Prev Med Hyg. 2014;55:17.

[15] Nguyen TT. Knowledge of contraception and sexually transmitted diseases (STDs) among 18–24 years old Vietnamese university students. 2017. p. 36.

[16] Holman AJ. How adolescents perceive their parents’ communication about sex: toward reducing adolescent sexual risk. University of Nebraska – Lincoln; 2014.

[17] UNFPA. Comprehensive sexuality education in Lao PDR. Assessment of the implementation of the teacher guidebook 2017.

[18] Petrick H. Social and cultural factors that influence the knowledge, attitudes, and safe sexual practices of rural Nicaraguan teenagers. Department of Integrative Physiology, University of Colorado at Boulder; 2016.

[19] Acharya DR, Thomas M, Cann R. Validation of a questionnaire to measure sexual health knowledge and understanding (Sexual Health Questionnaire) in Nepalese secondary school: a psychometric process. J Educ Health Promot. 2016;5:18.

[20] Chukwu EO, Iornengen EM, Faise TM, et al. Knowledge and practice of safe sex among students of College of Medical Sciences, University of Maiduguri, Borno State, Nigeria. J Res Nurs Midwifery. 2017;6:16–24.

[21] Svensson L, Waer S. Knowledge of and attitudes to sexually transmitted diseases among Thai university students. Uppsala University; 2013.

[22] Isachsen K, Svenkerud BA. Knowledge of sexually transmitted infections among women attending primary health care clinics in Moshi, Tanzania 2011.

[23] Sjöqvist A, Göthlin S. Knowledge, attitudes and beliefs about sexually transmitted diseases among Vietnamese students at a vocational school in Ho Chi Minh City. 2011.

[24] Megersa N, Ahmed S, Gutema B, et al. Knowledge, attitude and preventive practices towards sexually transmitted infection among preparatory school students of Arsi Negelle town. J AIDS Clin Res. 2017;8. DOI:10.4172/2155-6113.1000748

[25] Munakampe MN, Zulu JM, Michelo C. Contraception and abortion knowledge, attitudes and practices among adolescents from low and middle-income countries: a systematic review. BMC Health Serv Res. 2018 Nov 29;18:909.

[26] Somba MJ, Mbouni M, Obure J, et al. Sexual behaviour, contraceptive knowledge and use among female under-graduates’ students of Muhimbili and Dar es Salaam Universities, Tanzania: a cross-sectional study, BMC Womens Health. 2014;14:94–94. PubMed PMID: 25099502; eng. DOI:10.1186/1472-6874-14-94

[27] Bearinger LH, Sieving RE, Ferguson J, et al. Global perspectives on the sexual and reproductive health of adolescents: patterns, prevention and potential. Lancet. 2007;369:1220–1231.

[28] Vongxy A, Albers F, Thongmixay S, et al. Sexual and reproductive health literacy of school adolescents in Lao PDR. PloS One. 2019;14:e0209675.

[29] Kaale G, Muhanga M. Sexual health knowledge among secondary school students in Morogoro, Tanzania: half full or full empty. Int J Health. 2017;5:120–125.

[30] Seloiwle E, Ditole H, St Lawrence J, et al. Parent and youth communication patterns on HIV and AIDS, STIs and sexual matters: opportunities and challenges. J Child Adolesc Behav. 2015.

[31] Afifi TD, Joseph A, Aldeis D. Why can’t we just talk about it? An observational study of parents’ and adolescents’ conversations about sex. J Adolesc Res. 2008;23:689–721.

[32] Salazar LP, Santelli JS, Crosby RA, et al. Sexually transmitted disease transmission and pregnancy among adolescents. In: DiClemente RJ, Santelli JS, Crosby RA, editors. Adolescent health: understanding and preventing behaviors. San Francisco: Jossey-Bass; 2009. p. 275–302.

[33] Rogers A. Parent–adolescent sexual communication and adolescents’ sexual behaviors: a conceptual model and systematic review. Adolesc Res Rev. 2017;2:293–313.

[34] Hattakitpanichakul K, Phuphaibul R, Phumonsakul S, et al. Effectiveness of the dual approach program to promote sexual abstinence in Thai early female adolescents and improve parent-daughter sexual communication. J Health Res. 2019;33:280–292.

[35] Mmari K, Kalamar AM, Brahmbhatt H, et al. The influence of the family on adolescent sexual experience: a comparison between Baltimore and Johannesburg. PloS One. 2016;11:e0166032–e0166032. PubMed PMID: 27820853; eng.

[36] Wu LL, Thomson E. Race differences in family experience and early sexual initiation: dynamic models of family structure and family change. J Marriage Fam. 2001;63:682–696.

[37] Booth-Butterfield M, Sideling R. The influence of family communication on the college-aged child: openness, attitudes and actions about sex and alcohol. Commum Q. 1998;46:295–308.

[38] Guillamo-Ramos V, Bouris A, Jaccard J, et al. A parent-based intervention to reduce sexual risk behavior in early adolescence: building alliances between physicians, social workers, and parents. J Adolesc Health. 2011;48:159–163.

[39] Guzmán BL, Schlehofer-Sutton MM, Villanueva CM, et al. Let’s talk about sex: how comfortable discussions about sex impact teen sexual behavior. J Health Commun. 2003;8:583–598.

[40] Huebner AJ, Howell LW. Examining the relationship between adolescent sexual risk-taking and perceptions of monitoring, communication, and parenting styles. J Adolesc Health. 2003;33:71–78.

[41] McHale SM, Updegraff KA, Whiteman SD. Sibling relationships and influences in childhood and adolescence. J Marriage Fam. 2012;74:913–930. PubMed PMID: 24653527; eng.

[42] Kirby D, Laris B. Effective curriculum-based sex and STD/HIV education programs for adolescents. Child Dev Perspect. 2009;3:21–29.

[43] Sekirime WK, Tamale J, Lule JC, et al. Knowledge, attitude and practice about sexually transmitted
diseases among university students in Kampala. Afr Health Sci. 2001;1:16.

[44] Somba MJ, Mbonile M, Obure J, et al. Sexual behaviour, contraceptive knowledge and use among female undergraduates’ students of Muhimbili and Dar es Salaam Universities, Tanzania: a cross-sectional study. BMC Women’s Health. 2014;14:94.

[45] Musa OO. Factors influencing implementation of reproductive health education in public secondary schools in Urri district, Migori Country. University of Nairobi; 2013.

[46] Newport F. Americans, including Catholics, say birth control is morally OK. Gallup Politics. 2012.

[47] Ruiz Austria CS. The church, the state and women’s bodies in the context of religious fundamentalism in the Philippines. Reprod Health Matters. 2004;12:96–103.

[48] Hill N, Siwatu M, Robinson A. My religion picked my birth control: the influence of religion on contraceptive use. J Relig Health. 2014;53:825–833.