

# Contraceptive Knowledge and Contraceptive Attitudes among University Students in Korea

Myoung-Hee Kim\*

Department of Nursing, Semyung University, 65 Semyung-Ro, Jecheon, Chungcheongbuk-do, 27136, Republic of Korea; mh1352@semyung.ac.kr

## Abstract

**Objectives:** Sexual health is a very important public health matter for young people. The purpose of this study was to examine contraceptive knowledge and contraceptive attitudes among university students in Korea. **Methods/Statistical analysis:** As a cross-sectional study, a questionnaire survey was conducted in S university and an investigation carried out by a structured survey of 223 college students. Data was collected in July 1 to 15, 2015. SPSS program 19.0 (SPSS Inc., Chicago, IL, USA) was used to analyze the data. **Findings:** The results are as follows: The mean of correct answers on contraceptive knowledge was 7.50 (SD=3.37) for 15 items. The mean score of contraceptive attitudes was 3.74 (SD=0.34) on a five-point scale. Contraceptive knowledge had a positive correlation with contraceptive attitudes ( $r=0.23$ ,  $p=0.001$ ). That is, as the subjects have better contraceptive knowledge, they also have positive contraceptive attitudes. **Improvements/Applications:** We advise that promotion of contraceptive-related knowledge be targeted towards university students. Contraceptive education should be sustained and reinforced among the university students in Korea.

**Keywords:** Attitudes, Contraception, Knowledge, Students, University

## 1. Introduction

Sexual health is a very important public health matter for young people. Young people may be exposed to a higher risk of unintended pregnancy and sexually transmitted infections (STIs) due to their lack of knowledge regarding sexuality<sup>1-4</sup>. In Korea, college students are more likely to have possibilities to date and become involved in sexual activities as they are freed from the burden of studying for college entrance examinations. In modern society, college students have more open-minded attitudes toward sexual activities and the rate of sexual activities tends to increase; however, their knowledge about sex is relatively poor and as a result, many sex-related issues occur<sup>5</sup>. Research by in <sup>6</sup> states that 80% to 90% of college students are sexually experienced and many practice behaviors are placed them at risk for sexually transmitted infections and unintentional pregnancies. According to a 2005 report from the Ministry of Health and Welfare exploring abortion rates among women aged 15–44 <sup>7</sup>, the abortion rate (per

every 1000 women) was 28.6% for married women, 31.6% for single women, with a mean score of 29.8%. By age, the abortion rate was 42.1% for women aged 20–24 years, 40.0% for women aged 25–29, and 38.1% for women aged 30–34 years. This indicates that the abortion rate was substantially higher among the college age group of women compared to women in other age groups. One reason for such a high rate of unintended pregnancy among this group of women may be related to lack of contraceptive use. Korean women are less likely to carry out contraceptive methods. There is no accurate statistical data regarding contraceptive use among unmarried Korean college students, but according to one study investigating contraceptive use among married Korean women<sup>8</sup>, only 2.7% in 2009 and 2.3% in 2012 of women took contraceptive pills and 25.0% in 2009 and 23.7% in 2012 of women used condoms. The age at first marriage has risen for both genders in Korea during the last decade, the age at first marriage was 31.9 years for men and years 29.1 for women<sup>8</sup>. Premarital sex and high-risk sexual behaviors

\*Author for correspondence

not only increases the possibility of negative consequences that may endanger health (e.g., HIV/AIDS or other sexually transmitted infections), but also result in higher rates of unplanned pregnancy<sup>9-11</sup>. Many women with unwanted pregnancies decide to end them by abortion. Therefore, increased levels of effective contraceptive use would go a long way toward reducing an unwanted pregnancy. Most unmarried young people like college students cannot access reproductive health services nor exercise their reproductive rights for social and cultural reasons. For effective contraceptive use among college students, comprehensive sex education, whether in a school setting or health care setting, should entail teaching that provides both balanced and factual information on both abstinence and birth control. This type of teaching should be a key part of educating adolescents with the necessary skills to attain healthy sexuality throughout their lives. Many university student health centers have very important information and education posted on their websites, and they also discuss privacy concerns<sup>12</sup>. Establishing appropriate countermeasures related to pregnancy and contraception for college students will become more concrete by looking into their sexual issues and examining the extent to which they are sexually involved, how actively they use contraceptive devices, and how knowledgeable they are about contraception and sexual behaviors. Studies on the various factors related to contraceptive knowledge and attitudes can contribute to providing practical and concrete materials that in turn can encourage college students to practice safe sex. This study aims to develop basic educational materials on contraception for college students. Therefore, this study aims to suggest basic materials to guide university students with appropriate contraceptive education by investigating their contraceptive knowledge and contraceptive attitudes.

## 2. Methods

### 2.1 Setting and Sample

This study is targeted to investigate contraceptive knowledge and contraceptive attitudes among university students and examine the correlations between the variables. One university which is located in J city was selected and a survey was conducted on 223 university students. Data was collected in July 1 to 15, 2015. Before conducting the study, the researcher visited the lecturer of the class to explain the study purpose and with

survey permission and cooperation; a survey schedule for collecting data was set up. As agreed with a lecturer of the class, the researcher visited study subjects as scheduled and explained to them the study's purpose, confidentiality, contents of the questionnaire, and answering methods. This study was conducted after receiving study agreements from the study subjects. A total of 230 questionnaires were distributed, but only 223 of the subjects agreed and completed the questionnaire.

### 2.2 Survey Instruments

#### 2.2.1 Measuring Instrument for Contraceptive Knowledge

The contraceptive knowledge instrument developed by in<sup>13</sup> was used to measure subjects' contraceptive knowledge. This instrument is composed of a total of 15 questions and 1 point was given for each correct answer and 0 points were given for each wrong answer and "I don't know the answer" response. The higher points indicated that subjects have more contraceptive knowledge. Cronbach's alpha for the present study was 0.78.

#### 2.2.2 Measuring Instrument for Contraceptive Attitudes

This study used a contraceptive attitudes instrument developed by in<sup>13</sup> to measure the subjects' contraceptive attitudes. The instrument is composed of a total of 10 questions. The instrument is a 5 point scale and when answered "strongly agree", "agree", "neutral", "disagree", and "strongly disagree", 5 points, 4 points, 3 points, 2 points, and 1 point were given respectively. Negative questions were calculated by converting reversely and the higher points indicate that the subjects have more positive and desirable contraceptive attitudes for reproductive health. Cronbach's alpha for the present study was 0.72.

### 2.3 Statistical Analysis

SPSS program 19.0 (SPSS Inc., Chicago, IL, USA) was used to analyze the data. General characteristics, contraceptive knowledge and contraceptive attitudes were identified with descriptive statistics such as frequency, percentage, average and standard deviation. In addition, test for mean differences of contraceptive knowledge and contraceptive attitudes in relation to general characteristics were analyzed using the t-test and ANOVA with Scheffe post hoc test. The Pearson correlation coefficient test was

used to examine the relationship between contraceptive knowledge and contraceptive attitudes. A value of  $p < 0.05$  was considered statistically significant.

### 3. Results

#### 3.1 General Characteristics of Subjects

In Table 1 presents the socio-demographic characteristics of the study participants. The mean age of the respondents was 22.76 (range 19 to 29). One hundred and eleven respondents (49.8%) were male and 112 respondents (50.2%) were female. The first year students were 14.8%, the second years were 30.0%, the third years were

30.9%, and the fourth years were 24.2%. The distribution of students' majors indicated that 38.1% were medicine and nursing, 28.7% humanities and social science, 21.5% engineering and 11.7% arts and gymnastics. 41.3% of the subjects had a girlfriend or a boyfriend. 31.8% of the respondents reported having a religious affiliation. The respondents who reported currently having either a boyfriend or a girlfriend were 41.3%, while those who had never been in a romantic relationship 39.9%, and who had one in the past, but do not have anyone at current time were 18.8%. The respondents who answered that they can have sex with their boyfriend or girlfriend were 39.5%. A total of 107 students (48.0%) indicated that they had experienced sexual intercourse. Of these students, 47.7%

**Table 1.** General characteristics of study participants (N=223)

Variables	n (%)	Variables	n (%)
Age (years)		Sex	
≤21	94 (42.2)	Male	111 (49.8)
22-24	65 (29.1)	Female	112 (50.2)
≥25	64 (28.7)	Allowable level of having physical activities with their boyfriend/ girlfriend	
Min.~Max/ Mean (SD)	19~29/ 22.76 (2.22)	Holding hands, hugging	32 (14.3)
Grade		Kissing	103 (46.2)
Freshman	33 (14.8)	Sex	88 (39.5)
Sophomore	67 (30.0)	Ever had sexual intercourse	
Junior	69 (30.9)	Yes	107 (48.0)
Senior	54 (24.2)	No	114 (51.1)
Major		No response	2 (0.9)
Medicine & Nursing	85 (38.1)	Age when having sex (n=99)	
Humanities & Social science	64 (28.7)	Min.~Max/ Mean (SD)	15~24/ 20.17(1.59)
Engineering	48 (21.5)	Practicing contraception (n=107)	
Arts & gymnastics	26 (11.7)	Always using	51 (47.7)
Religion		Often using	24 (22.4)
Have	71 (31.8)	Sometimes using	25 (23.4)
None	151 (67.7)	Never using	7 (6.5)
No response	1 (0.4)	Ever been pregnant (n=107)	
Living situation		Yes	1 (0.9)
On campus in dormitory	77 (34.5)	No	106 (99.1)
Off campus by self	102 (45.7)	Ever had an artificial abortion (n=107)	
Off campus with family	44 (19.7)	Yes	1 (0.9)
Boyfriend/ Girlfriend		No	106 (99.1)
Yes	92 (41.3)	Ever had contraceptive education (n=107)	
No	89 (39.9)	Yes	93 (86.9)
Had in the past, but at current time	42 (18.8)	No	14 (13.1)

(n = 51) reported always using a method of contraception, 22.4% (n = 24) reported usually using a method of contraception, 23.4% (n = 25) indicated they were hardly using contraception, and 6.5% (n = 7) indicated they were not using contraception. The mean age at first sexual experience was 20.17 (SD = 1.59, range 15 to 24). Among the 107 ever having had sexual intercourse, 0.9% (n = 1) indicated they have had an artificial abortion. 86.9% of the subjects indicated that they have received sex education.

### 3.2 Contraceptive Knowledge and Contraceptive Attitudes of Subjects

The knowledge of students towards contraception is shown in Table 2. The study results indicated that the average of the subjects' contraceptive knowledge was 7.50 points out of the total 15 points, with the minimum at 0 point and the maximum at 15 points. Overall, the subjects' contraceptive knowledge was moderate or poor and the items below 30% that the subjects answered were 'Vaginal tablets(Suppositories) are oral medications' (29.1%), 'An ovum has the ability to become fertilized for 24 hours after ovulation' (27.4%) and 'I am informed about the mucus observation method' (11.7%). The attitude of students towards contraception is shown in Table 3. This study

found that the subjects' contraceptive attitudes were positive as shown by its average at 3.74. Among the questions regarding contraceptive attitudes, the items that showed below the average of 3 (neutral) points were as follows; 'It is better for men to practice contraception' (mean 2.16), and 'It is better for women to practice contraception' (mean 2.72). Therefore, it is necessary to provide proper education to students that can change their mistaken contraceptive attitudes and it is important to educate students to understand that practicing contraception is a mutual responsibility, not solely their partner's responsibility.

### 3.3 Contraceptive Knowledge according to General Characteristics of the Subjects

Subjects' contraceptive knowledge and attitudes according to their general characteristics was displayed in Table 4. Significant differences in the contraceptive knowledge of university students were reported according to their age (F = 3.34, p = 0.037), sex (t = -2.97, p = 0.003), major (F = 4.73, p = 0.003), and previous experience of contraceptive education (t=2.84, p=0.005). Specifically, when students were younger than 21 years old (8.01, SD = 3.04), there was a higher contraceptive knowledge score than there was for students who were older than 25 years old (6.62, SD

**Table 2.** Contraceptive knowledge of participants (N=223)

Items	Percentage of correct answer n (%)
It is not a good idea to use a condom because it reduces pleasure while having intercourse.	200 (89.7)
Having coitus interruptus never causes pregnancy.	186 (83.4)
Having intercourse during one's period never causes pregnancy.	165 (74.0)
Based on the date I get my period, I can determine my ovulation.	164 (73.5)
Having intrauterine devices (IUD) never causes pregnancy.	118 (52.9)
A sperm lives for only one day in the uterine cavity.	109 (48.9)
You should take an emergency contraceptive pill within 72 hours after sexual intercourse.	103 (46.2)
Body temperature increases a bit during an ovulatory phase.	101 (45.3)
Observing one's natural cycle has the best contraceptive effect among non-permanent contraceptive methods.	98 (43.9)
The contraceptive effect will continue with not taking one day of the oral pill.	98 (43.9)
Taking contraceptive drugs causes weight gain.	94 (42.2)
After you have a vasectomy, your sexual capacity decreases.	85 (38.1)
Vaginal tablets(Suppositories) are an oral medications.	65 (29.1)
An ovum has the ability to become fertilized for 24 hours after ovulation.	61 (27.4)
I am informed about the mucus observation method.	26 (11.7)
Total contraceptive knowledge : Min.~Max./ Mean (SD)	0~15/ 7.50 (3.37)

**Table 3.** Contraceptive attitudes of participants (N=223)

Items	Mean (SD)
Practicing contraception is a mutual responsibility for a couple	4.72 (0.59)
It is appropriate to practice safe sex with contraception when having intercourse before marriage.	4.56 (0.68)
It is very important to choose an appropriate contraception method for myself.	4.48 (0.67)
An artificial abortion is harmful for women	4.44 (0.71)
It is wise for me to practice contraception for safe sex instead of my partner when having intercourse.	3.80 (1.08)
Using a condom is considered to cause sexual insensitivity.	3.76 (0.97)
Practicing contraception is harmful for health	3.73 (1.11)
An artificial abortion can be the right decision if an unplanned pregnancy occurs.	3.05 (1.10)
It is better for women to practice contraception.	2.72 (1.10)
It is better for men to practice contraception	2.16 (1.04)
Total contraceptive attitudes : Min.~Max./ Mean (SD)	2.70~4.80/ 3.74 (0.34)

**Table 4.** Contraceptive knowledge and contraceptive attitudes according to general characteristics of the subjects (N=223)

Variables	Contraceptive knowledge		Contraceptive attitudes	
	Mean (SD)	t/F/r p (Scheffe)	Mean (SD)	t/F/r p (Scheffe)
Age (years)		3.34 0.037 (a, b)		0.70 0.496
≤21 <sup>a</sup>	8.01 (3.04)		3.73 (0.32)	
22-24	7.63 (3.39)		3.78 (0.34)	
≥25 <sup>b</sup>	6.62 (3.67)		3.71 (0.35)	
Sex		-2.97 0.003		-0.32 0.746
Male	6.83 (3.36)		3.73 (0.35)	
Female	8.16 (3.26)		3.75 (0.33)	
Grade		2.44 0.065		0.40 0.747
Freshman	7.66 (3.29)		3.75 (0.28)	
Sophomore	8.08 (2.94)		3.73 (0.32)	
Junior	7.65 (3.44)		3.77 (0.37)	
Senior	6.48 (3.68)		3.70 (0.35)	
Major		4.73 0.003 (a, b)		4.73 0.003 (a, b)
Medicine & Nursing <sup>a</sup>	8.54 (3.27)		3.77 (0.34)	
Humanities & Social sciences <sup>b</sup>	6.65 (3.09)		3.71 (0.31)	
Engineering	6.97 (3.73)		3.73 (0.38)	
Arts & gymnastics	7.15 (2.90)		3.71 (0.32)	
Religion		-0.07 0.940		-0.29 0.769
Have	7.49 (3.28)		3.73 (0.31)	
None	7.52 (3.42)		3.74 (0.35)	



Living situation		0.80 0.450		0.47 0.730
On campus in dormitory	7.70 (3.53)		3.67 (0.30)	
Off campus by self	7.59 (3.36)		3.75 (0.34)	
Off campus with family	6.93 (3.10)		3.83 (0.36)	
Boyfriend/Girlfriend		0.54 0.581		2.81 0.062
Yes	7.59 (3.23)		3.80 (0.33)	
No	7.23 (3.35)		3.68 (0.32)	
Had in the past, but at current time	7.85 (3.73)		3.73 (0.38)	
Allowable level of having physical activities with their boyfriend/girlfriend		0.29 0.748		2.15 0.118
Holding hands, hugging	7.90 (3.88)		3.62 (0.33)	
Kissing	7.48 (3.35)		3.76 (0.32)	
Sex	7.37 (3.22)		3.76 (0.35)	
Ever had sexual intercourse (n=221)		-0.32 0.746		-0.29 0.772
Yes	7.48 (3.21)		3.74 (0.33)	
No	7.63 (3.45)		3.75 (0.34)	
Ever had contraceptive education (n=107)		2.84 0.005		0.47 0.636
Yes	7.73 (3.27)		3.75 (0.33)	
No	5.72 (3.76)		3.71 (0.37)	

= 3.67). The mean score at contraceptive knowledge was 6.83 (SD = 3.36) for male students and 8.16 (SD= 3.26) for female students; the difference was statistically significant ( $t = -2.97, p = 0.003$ ). Students majoring in medicine and nursing revealed a higher contraceptive knowledge score (8.54, SD = 3.27) than those majoring in humanities and social sciences (6.65, SD=3.09). Students with previous experience of contraceptive education revealed a higher contraceptive knowledge score (7.73, SD = 3.27) than those without the experience (5.72, SD = 3.76). There was significant statistical difference in contraceptive attitudes according to the selected major of the students ( $F = 4.73, p = 0.003$ ). Specifically, students majoring the medicine & nursing revealed a higher positive contraceptive attitude score (3.77, SD = 0.34) than those majoring the humanities and social sciences (3.71, SD = 0.31).

### 3.4 Relationship between Contraceptive Knowledge and Contraceptive Attitudes

The relationship between knowledge and attitudes of students towards contraception is shown in Table 5. There was a statistically significant association between

**Table 5.** Association between contraceptive knowledge and contraceptive attitudes (N=223)

Variable	Contraceptive knowledge $r$ ( $p$ )
Contraceptive attitudes	0.23 (0.001)

knowledge and attitudes towards contraception ( $r = 0.23, p = 0.001$ ). That is, as the subjects have better contraceptive knowledge, they also have positive contraceptive attitudes. Those with adequate knowledge generally showed favorable attitudes with regards to contraception.

## 4. Discussion and Conclusions

In our study, we found that 48.0% of participants reported ever having sexual intercourse. But knowledge of contraception by university students is low. This finding is similar to some earlier studies<sup>14,15</sup> of sexual behaviour among college students. Also, this finding is consistent with other studies of sexual knowledge and contraception conducted in high school student populations<sup>16,17</sup>. This study found that a larger proportion of college students reported low level knowledge of contraception despite being sexually

active. This means that sexual education and education on contraception given at home and schools is very superficial and not concrete<sup>18</sup>. In Korea, students receive sexual education during middle and high school, but not in college. There is no systematic connection regarding sexual education between middle/high school and college. Moreover, it is very foreseeable to say that students have a low level of knowledge on sexuality and contraception because the sexual education class content given in middle and high school is very broad and students receive the education for only a few hours. Therefore, it is necessary to provide more concrete and systematic sexual education in college because the sexual education received in middle and high school is not very useful. In fact, a lot of Korean college students expressed their desire to learn about contraceptive methods<sup>19</sup> and knowledge on contraception was the main factor that decreases teenage pregnancy<sup>20</sup>. If college students have a lack of knowledge on sexuality, especially on how to prevent pregnancy, they will be more exposed to unplanned sexual activities. The most important sources of information on contraception among university students were informal networks such as friends, the internet, magazines, and family members. Informal sources were associated with misinformation, while medical and informational sources were associated with better knowledge<sup>20</sup>. We strongly recommend that strategies to promote contraception use be focused on spreading accurate information through information, education and communication by medical personnel<sup>21</sup>. In this study, students generally showed positive attitudes regarding contraception. The results of this study showed that the students generally have receptive and positive attitudes regarding contraception. It is necessary to educate college students with correct information on contraception so that they can choose the most appropriate contraceptive method if needed. This study indicated that knowledge of contraception and attitudes toward contraception were correlated and this is similar to the findings in a previous study. It is considered that supporting systematic sexual education and sexual consultation by public health professionals in colleges will help college students gain useful knowledge on their own sexual issues and develop appropriate sexual attitudes. Furthermore, providing useful sexual education and sexual consultation to college students will contribute to minimizing the number of unplanned pregnancies. This study used convenience sampling in examining subjects, so acknowledges the importance not to generalize the study results to the

whole Korean college student population at this time. Therefore, it is necessary to have repetitive sampling studies in order to better understand the issue and develop programs to educate female students about contraception and other sex-related issues.

## 5. Acknowledgement

This paper was supported by the Semyung University Research Grant of 2015.

## 6. References

1. Yilmaz HB, Kavlak O, Atan SU. Sexual activity, knowledge and contraceptive usage by gender among university students in Turkey. *The European Journal of Contraception and Reproductive Health Care*. 2010 Dec; 15(6):433–40.
2. Widman L, Welsh DP, McNulty JK, Little KC. Sexual communication and contraceptive use in adolescent dating couples. *Journal of Adolescent Health*. 2006 Dec; 39(6):893–9.
3. Delva W, Vuillaume F, Vansteelandt S, Claeys P, Verstraelen H, Temmerman M. Sexual behaviour and contraceptive use among youth in the Balkans. *The European Journal of Contraception and Reproductive Health Care*. 2007 Dec; 12(4):309–16.
4. Capuano S, Simeone S, Scaravilli G, Raimondo D, Balbi C. Sexual behaviour among Italian adolescents: Knowledge and use of contraceptives. *The European Journal of Contraception and Reproductive Health Care*. 2009 Aug; 14(4):285–9.
5. Hur MH, Ahn HY, Kwak EA, Kim KM, Park JY, Lee JR. A study on sexual behavior, and correlation between knowledge of contraception and attitude of contraception among university students. *Journal of Korean Academy of Nursing*. 2007 Apr; 37(3):267–75.
6. Eisenberg ME, Neumark-Sztainer D, Lust KD. Weight-related issues and high-risk sexual behaviors among college students. *Journal of American College Health*. 2005 Sep–Oct; 54(2):95–101.
7. Kim HJ. Investigation on the actual condition of artificial abortion and establishment of action plan, Seoul: Ministry of health and welfare; 2005 Sep. Report No. R0408081.
8. The 2012 national survey on fertility, family health and welfare in Korea [Internet]. [cited 2016 Apr 18]. Available from: [https://www.kihasa.re.kr/english/publications/eng\\_research/view.do?ano=717&menuId=68&tid=34&bid=30](https://www.kihasa.re.kr/english/publications/eng_research/view.do?ano=717&menuId=68&tid=34&bid=30).
9. Cooper ML. Alcohol use and risky sexual behavior among college students and youth: Evaluating the evidence. *Journal of Studies on Alcohol*. 2002 Mar; (14):101–17.

10. Abma JC, Sonenstein FL. Sexual activity and contraceptive practices among teenagers in the United States, 1988 and 1995. *Vital and health statistics, Series 23*. 2001 Apr; 21:1–79.
11. Sex knowledge, attitudes, and high-risk sexual behaviors among unmarried youth in Hong Kong [Internet]. [cited 2013 Jul 29]. Available from: <http://bmcpublihealth.biomedcentral.com/articles/10.1186/1471-2458-13-691>.
12. Huber LR, Ersek JR. Contraceptive use among sexually active university students. *Journal of Women's Health*. 2009 Jul; 18(7):1063–70.
13. Kim SC. Effectiveness of video-based intervention on contraception for adolescents, [Master's Thesis]. Seoul: Ewha Womans University; 2003.
14. Choi JH, Kim KE, Shin MA. Contraceptive knowledge, contraceptive attitude, and contraceptive use among college students: Function of gender, age, and residence. *Korean Journal of Human Ecology*. 2010; 19(3):511–22.
15. Kim MO, Choi JH. A study on sexual behavior, sexual knowledge, and sexual assertiveness among Korean college students. *Indian Journal of Science and Technology*. 2016 Aug; 9(29):1–8.
16. Kim MH. Sexual knowledge, sexual attitudes, and contraceptive knowledge among male high school students in Korea. *Advanced Science and Technology Letters*. 2015; 104:1–4.
17. Mo HS, Oh HE, Cho E. A study on the relationship between risk behaviors, sexual knowledge, sexual attitudes, and sexual experience in male high school students. *Korean Journal of Women Health Nursing*. 2006 Sep; 12(3):210–20.
18. Min SH, Yun SY. The analysis of spiritual well-being and sexual attitude of female high school students. *Indian Journal of Science and Technology*. 2016 Jul; 9(25):1–6.
19. Lee HS. A study on knowledge, attitude, experience in sex and the needs of sex education of one women's college. *The Journal of Korean Academic Society of Nursing Education*. 2002; 8(1):131–44.
20. Wang RH, Wang HH, Hsu MT. Factors associated with adolescent pregnancy- A sample of Taiwanese female adolescents. *Public Health Nursing*. 2003 Jan–Feb; 20(1):33–41.
21. Kongnyuy EJ, Ngassa P, Fomulu N, Wiysonge CS, Kouam L, Doh AS. A survey of knowledge, attitudes and practice of emergency contraception among university students in Cameroon. *Boston Medical Center Emergency Medicine*. 2007 Jul; 7(1):1–7.