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Sexual Health Knowledge, Perceived Social  
Support, and Safe Sex Behavior Among  
International Students in Korea

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Sexual Health Knowledge, Perceived Social Support,  
and Safe Sex Behavior Among International Students  
in Korea

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Seol Ju Esther Moon

## TABLE OF CONTENTS

<b>Abstract .....</b>	<b>iii</b>
<b>I. Introduction .....</b>	<b>1</b>
1. Background .....	1
2. Purpose.....	3
3. Terms and Definitions .....	3
<b>II. Literature Review .....</b>	<b>6</b>
1. Trends of sexual health problems among international students .....	6
2. Factors influencing safe sex behavior of international students .....	8
<b>III. Method.....</b>	<b>12</b>
1. Design .....	12
2. Sample.....	12
3. Measures .....	13
4. Data Collection .....	16
5. Data Analysis .....	17
<b>IV. Results .....</b>	<b>18</b>
<b>V. Discussion .....</b>	<b>38</b>
1. Representativeness and sex-related characteristics of study participants .....	38
2. Sexual health knowledge, social support, and safe sex behavior.....	39
3. Factors influencing safe sex behavior.....	42
4. Significance.....	44
5. Limitations .....	44
<b>VI. Conclusion and Suggestions.....</b>	<b>46</b>
1. Conclusion .....	46
2. Suggestions .....	48
<b>References .....</b>	<b>49</b>
<b>Appendix.....</b>	<b>63</b>
<b>Korean Abstract .....</b>	<b>80</b>

## LIST OF TABLES

Table 1 Socio-demographics of study participants .....	21
Table 2. Sex-related characteristics of study participants .....	23
Table 3. Sexual health knowledge of study participants .....	25
Table 4. Perceived social support of the study participants .....	26
Table 5. Perceived social support by items .....	27
Table 6. Safe sex behavior subscales .....	28
Table 7. Safe sex behavior items .....	29
Table 8. Safe sex behavior of study participants with previous sexual experience by socio-demographics .....	31
Table 9. Safe sex behavior of study participants with previous sexual experience by sex-related characteristics .....	33
Table 10. Correlation between sexual health knowledge, social support, and safe sex behavior .....	35
Table 11. Factors influencing safe sex behavior .....	37

## LIST OF APPENDIX

Appendix 1. IRB Approval .....	63
Appendix 2. Study description and consent .....	65
Appendix 3. Online survey questionnaires .....	69

## **Abstract**

### **Sexual Health Knowledge, Perceived Social Support, and Safe Sex Behavior Among International Students in Korea**

This is a descriptive correlational study with aims to examine the relationship between sexual health knowledge, perceived social support, and safe sex behavior among international students in Korea. An online survey of this study was completed by undergraduate and graduate Asian international students in the Seoul metropolitan area between April 12<sup>th</sup> and 28<sup>th</sup>, 2017. The questionnaires in the survey were provided in both English and Korean including instruments of the short form of Center for Epidemiologic Studies Depression Scale Revised (CESD-R-10) by Andresen et al. (1994), sexual health knowledge questionnaire developed by Ho (2009); the Multidimensional Scale of Perceived Social Support (MPSS) modified by Zhang (2012); and the Safe Sex Behavior Questionnaire (SSBQ) developed by DiIorio et al., (1992). The data collected from 245 students were analyzed using SPSS 23.0.

Of the 245 participants, about 20% were each from China, Vietnam, Mongolia, Indonesia, and Malaysia. Most of the participants were female (69.4%), religious (61.2%), living in Seoul (78.0%), and had been in Korea between two to four years (35.9%). In terms of health behavior, 71.8% reported to moderately exercise at least once a week, 9.0% currently smoked cigarettes, and 44.1% consumed alcohol. Based on the results of the CES-D-R-10 scores, 63.7% of the participants were found to be depressed. In regards to sex-related characteristics, about half of the total sample (48.6%) have experienced sexual intercourse. Only 41.6% had an official sex education in the past and 61.6% wished to participate in a sex education program. The sex education topic most requested was

“prevention and treatment of STIs/HIV” and highest sexual concern was found in “lack of accurate sexual knowledge”.

The average score of sexual health knowledge was  $4.41 \pm 2.34$  and  $39.31 \pm 6.41$  ( $3.57 \pm 0.58$ ) for perceived social support. The subscales of the perceived social support were  $15.23 \pm 3.22$  ( $3.81 \pm 0.80$ ) for family support,  $15.24 \pm 3.17$  ( $3.88 \pm 0.83$ ) for friends support, and  $8.84 \pm 2.31$  ( $2.95 \pm 0.77$ ) for school support. Among the participants with experience with sexual intercourse ( $n=119$ ), the average safe sex behavior score was  $65.18 \pm 8.32$  and the subscale scores were  $19.33 \pm 3.98$  for condom use,  $13.45 \pm 3.02$  for partner communications about safe sex, and  $32.41 \pm 4.31$  for avoidance of risky behaviors.

In terms of relationships, strong positive correlations were found between perceived social support and safe sex behavior ( $r=.234$ ,  $p=.010$ ), and between perceived friend support and safe sex behavior ( $r=.326$ ,  $p<.001$ ). However, no significant relationship was found between sexual health knowledge and safe sex behavior. Factors influencing safe sex behavior were identified as gender ( $\beta=.221$ ,  $p=.019$ ) and perceived social support ( $\beta=2.197$ ,  $p=.032$ ).

Based on these findings, gender and perceived social support significantly influence safe sex behavior among international students. They have low sexual health knowledge, low perceived school support, high concerns in lack of accurate sexual knowledge, and high demand for sex education. Hence, a tailored sexual health interventions are needed focusing on sexual health to increase healthy sexual awareness to promote safe sex behavior. Incorporating involvement of friends and peers is also important to ensure effectiveness of the interventions for international students in Korea.

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Keywords: Safe Sex Behavior, Social Support, Sexual Health Knowledge, International Students, Young Adults

# I. Introduction

## 1. Background

In the last decade, Korea became not only more attractive in business and cultural affairs but also became one of the main international destinations for higher education (UNESCO, 2014). The number of international students in Korea has increased tremendously. Starting as low as 12,314 students in the early 2000's, there has been an eightfold increase into 104,262 international students in 2016 (Korean Ministry of Education, 2016). The Seoul metropolitan area alone holds 57.1% of all international student population in the country, and owing to the geographic location of Korea, most of these international students are from the South-East Asia and Western Pacific countries (Statistics Korea, 2016). In some of these countries, the prevalence and incidences of communicable diseases such as curable sexually transmitted infections (STI) are considerably higher than any other continental regions in the world (Newman et al., 2015). However, sexual and reproductive health services are not delivered in a structured way under the government or school policy.

International studies have indicated that young adults especially those in university and those who are traveling are at a high risk of acquiring STIs due to unsafe sex behaviors (Burchard, Laurence, & Stocks, 2011; Poljski, Quiazon, & Tran, 2014; Rosenthal, Russell, & Thomson, 2008; Vivancos, Abubakar, & Hunter, 2009; Kuete et al., 2016). Safe sex behaviors are practices that reduce risk of unintended pregnancy and STIs such as avoiding use of alcohol and drugs in sexual encounters, avoiding anal sex, and communicating with partners about condom use and sexual history (DiIorio et al., 1992). With nearly one million new infections with curable STIs each day, young adults aged between 15-24 years acquire a half of all new STIs (Newman et al., 2015) which include university students and international students. Young adults are also suggested to be more susceptible to STIs with

higher risks for a combination of biological, behavioral, and cultural reasons (Centers for Disease Control and Prevention [CDCP], 2014). Korea Centers of Disease Control and Prevention (KCDCP) also reports highest human immunodeficiency virus (HIV) rates in early 20's to 30's where 13.2% of all cases were found in foreigners (2016).

Sexual behavior is complex partly because it is influenced by a wide array of personal, social, cultural, and other contextual determinants in a population. Some of the identified factors from previous studies are gender, religion, risky health behaviors, culture, previous sexual experience, knowledge, and social support. (Johnson & Johnson, 2013; Oberle, Nagurney, & Jones, 2016; Musiime & Mugisha, 2015; Glick & Golden, 2014;). Nonetheless, relevant factors have not been studied on international populations and some variables such as religion and sexual behavior were found have inconsistent relationships across studies (Shaw & El-Bassel, 2014; Gold, 2010). Therefore, closer examination in understanding the safe sex behavior of international students is needed including context-specific factors.

According to CDCP, failure to take part in safe sex practices may lead to negative consequences of HIV/STI infection, unplanned pregnancy, abortion, social stigma, low self-esteem, and many more physical and mental health problems (Babatsikos & Lamaro, 2012; Healy & Bond, 2006; Fielder & Carey, 2010; CDCP, 2014; Pflieger, Cook, Niccolai, & Connell, 2013). Such negative outcomes not only prevent international students to live a healthy life but also jeopardize their important goals of studying abroad. Despite these negative consequences, engaging in unsafe sex behaviors are commonly found in university settings and research on the sexual behaviors of international students in Korea are insufficient. This may indicate that students' sexual health needs are unknown despite their high reporting of sexual health problems (Lee & Han, 2011). Therefore, the purpose of this study is to examine the relationship between sexual health knowledge, social support, and safe sex behavior among undergraduate and graduate international students in Seoul metropolitan area.

## 2. Purpose

The purpose of this study is to examine the relationship between sexual health knowledge, perceived social support, and safe sex behavior among international undergraduate and graduate students in Seoul metropolitan area. Specific aims are as follows:

- 1) Examine the sexual health knowledge, perceived social support, and safe sex behavior of the study population
- 2) Compare the differences in safe sex behavior by general characteristics of the study population
- 3) Examine the correlations between sexual health knowledge, perceived social support, and safe sex behavior of the study population
- 4) Identify factors influencing safe sex behavior of the study population

## 3. Terms and Definitions

### 1) International Students

- Theoretical definition  
International students are persons admitted by a country other than their own, usually under special permits or visa, for the specific purpose of following a particular course of study in an accredited institution of the receiving country (Organization for Economic Co-operation and Development [OECD], 2003).
- Operational Definition  
In this study, international students are undergraduate or graduate students aged

between 19 and 35 from abroad who have been living in South Korea for more than six months.

## 2) Sexual Health Knowledge

- Theoretical Definition  
Sexual health knowledge refers to understanding of sexuality, reproductive and sexual health care problems and services available, autonomy over choice of partner and decision regarding family planning (World Health Organization [WHO], 2006)
- Operational Definition  
This study used a sexual health knowledge questionnaire developed by Ho (2009). The possible highest score is 10 and higher scores indicates higher knowledge on sexual health.

## 3) Perceived Social Support

- Theoretical Definition  
Perceived social support is the extent to which an individual believes that his/her needs for support, information, and feedback are fulfilled (Procidano & Heller, 1983).
- Operational Definition  
This study used the modified version of the Multidimensional Scale of Perceived Social Support (MSPSS) by Zhang (2012) which was developed specifically for international students. The highest possible score is 55 and higher scores indicate higher perceived social support.

#### 4) Safe Sex Behavior

- Theoretical Definition

Safe sex behavior is defined by avoiding use of alcohol and drugs in sexual encounters, avoiding anal sex, and communicating with sexual partners about condom use and sexual history (DiIorio et al., 1992).

- Operational Definition

This study used the Safe Sex Behavior Questionnaire (SSBQ) to measure the frequency of use of recommended practices that reduced one's risk of exposure to, and transmission of, HIV (DiIorio et al., 1992). The possible score ranges from 24 to 96 and higher scores indicate safer sex behavior.

## II. Literature Review

### 1. Trends of sexual health problems and behavior among international students

Students from around the globe may have diverse perspectives on relationships and sexual behavior based on their cultural background and knowledge. Although most university environments support students to follow their own beliefs and respect their decisions in a relationships, some international student may lack knowledge and awareness about their sexual and reproductive health (Burchard et al., 2011; Poljski et al., 2014). Compared to other countries, many studies have been conducted in Australia on sexual health among internationals students (Burchard et al., 2011; Poljski et al., 2014; Rosenthal et al., 2008; Song, Richters, Crawford, & Kippax, 2005). Escalating concerns on the high rates of unplanned pregnancy and abortion of the international students in Australia has raised an alarm and led to the multiple researches (Barbatsikos et al., 2012; Healy et al., 2006). Compared to Australian-born students, international students were found to have less sexual intercourse and fewer sexual partners but lower knowledge of the risks of HIV (Song et al., 2005). However, Rosenthal's study (2008) found unprotected sexual activities among international students and in a qualitative study conducted by Burchard et al., (2011), international students reported to have insufficient sexual health education when they arrive in the country and some became more sexually active without adequate access to health services and information. With rising attention to such sexual issues among international students, studies from other countries have revealed significant findings related to their sexual behavior.

An university survey in the United Kingdom compared risk-taking behaviors of domestic and international students, and reported that international students were more likely to engage in unsafe sex behaviors, such as sex with commercial sex workers, unprotected intercourse, and sex with two or more partners (Vivancos et al., 2009). The study further

suggested the high possibility of vicarious STI importation into the hosting country through international students (Vivancos et al., 2009). Similar, a recent study done by Kuete et al. (2016) in China compared local Chinese students and international students revealing a significant variance between the two groups. Compared to the local Chinese students, most of the international students in the study were from Asia and were more likely to have more than one sexual partner with inconsistent condom use and were less knowledgeable on sexual health (Kuete et al., 2016). Likewise, sexual health issues and behavior of international students are becoming an increased concern for many universities around the world.

In Korea, studies on sexual health behaviors of international population have not been extensively studied. In a survey study by N. Lee et al. (2011) examining the physical and psychological health of 112 international students in Korea, students had high rates for physical and psychological problems. Interestingly, of all the categorized physical health problems, highest complaints were reported on sexual health related problems by 45.5% of the students, followed by 40.2% in dental health, and 35.7% in fatigue of the eye (N. Lee et al., 2011). However, examinations on sexual behaviors of international students were excluded and no further suggestions were made regarding the sexual health issues of the students. In a studying examining the Mongolian population in Korea, S. Lee and her colleagues (2011) have highlighted the lack of basic treatment and equipment in dealing with infectious disease in Korea and a great need for sexual health education, program development, and continuous research of the international populations from various countries (Lee, Kim, Kim, & Kim, 2011). Therefore, with scant amount of research done on the international population outside Korea and currently none in Korea, this study has significance in including students from various countries to examine their sexual behaviors and influencing factors.

## **2. Factors influencing safe sex behavior of international students**

Although studies on factors that influence sexual behaviors of international students have not been conducted in Korea, few international studies have examined the influencing factors of international students. As young adults and global travelers, sexual behaviors of international students should be closely examined within certain context in terms of demographics, social, cultural, and other contextual determinants (Musiime & Mugisha, 2015).

### **1) Socio-demographics and sex-related characteristics**

In terms of socio-demographics and sex-related characteristics, age, gender, ethnicity, marital status, religion, residential area, length of stay, state of depression, sexual orientation, sexual experience, previous sexual health education, and other risky health behaviors were found to have a strong association with safe sex behavior (Berg et al., 2014; Rosenthal et al., 2008; Fischer et al., 2015; Chanakira, O'Cathain, Goyder, & Freeman, 2014; Burchard et al., 2011; Oster, 2015; Bowers, Segrin, & Joyce, 2016; Nemoto, Iwamoto, Morris, Yokota, & Wada, 2007; The Allan Guttmacher Institute, 2002). Rosenthal et al. (2008) found that older regular university students and international and students with partners used condoms less frequently. Female students compared to male students, students who are in a committed relationship, and students who are religious were found to be more likely to engage in safe sex (Chanakira, et al., 2014; Oberle et al., 2016). International travelling and the length of stay have also been reported to increase the risk of getting involved in new partnerships and casual sex (Egan, 2001; Bellis, Hughes, Thomson, & Bennett, 2004; Fischer et al., 2015; Crougths, Van Gompel, De Boer, & Van Den Ende, 2008). As major factors on safe sex behavior, depression among university students has been found to have a significant association with unsafe sex behavior (Bowers et al, 2016; Bersamin et al., 2014; Grello, Welsh, & Harper, 2006; Owen, Fincham, & Moore, 2011). Specifically, depression have been found to be linked to lower use of condom and higher numbers of sexual partners (Oster, 2015; Kaly, Heesacker, & Frost,

2002; Scott-Sheldon, Carey, & Carey, 2010). Other healthy risk taking behaviors such as drinking were also found to be associated with unprotected sex and be more sexually active than planned among university students (The Allan Guttmacher Institute, 2002). In another study, 75% and 26.1% of Asian international students in US had sex with casual partners under the influence of alcohol and drugs, respectively (Nemoto et al., 2007). Experiences with previous sexual health education is also important as insufficient sexual health education received among international students before they arrive in the country has found to be linked with increased sexual activity and risk for STIs (Burchard et al., 2011).

## **2) Sexual Health Knowledge**

Another important factor that correlates with sexual behavior is sexual knowledge. Many national studies reported a significant relationship between sexual knowledge and behavior in regular university students. Woo (2011) found that students with low sexual knowledge tended to have open attitudes and had more sexual experiences. Park and Kang (2013) found similar results among university students that those who reported lower knowledge on sexual health had more open sexual attitudes and were more likely to be addicted to cybersex. In a study on various sexual behaviors, there was a strong correlation between high sexual knowledge with activities related to pornography, masturbation, and oral sex, while obscene conversations, homosexual intercourse, anal sex, pregnancy/abortion experience were reported with low sexual knowledge (Shin et al., 2011). However, some researchers have found no direct relationship between sexual knowledge and safe sex behaviors (Lou & Chen, 2009), and some have speculated contrasting result of higher knowledge about HIV/ acquired immune deficiency syndrome (AIDS) serving as a protective factor for engaging in risky sexual behaviors (Lammers, van Wijnbergen, & Willebrands, 2013). In an USA study of international students, higher HIV knowledge was positively related with positive attitudes toward condom use in general, and toward condom use with casual partners (Nemoto et al., 2007). However, most international students in

Finland agreed that their knowledge level of HIV and AIDS did affect their risky sexual behaviors, while others felt it was matter of choice, personal attitude, and practice (Suominen, Karanja-Pernu, Kylmä, Houtsonen, & Välimäki, 2011). Likewise, uncovering of which direction sexual knowledge influences sexual behavior varied among studies of national and international students.

Many young adults and students, especially those who are from developing countries may not have accurate knowledge on sex and sexual health (Rajapaksa-Hewageegana, Piercy, Salway, & Samarage, 2015; Wong, 2012). For example, S. Lee and her colleagues (2011) reported that health knowledge on the transmission of AIDS and STIs were very low among the Mongolian population in Korea while STI rates were increasing. Students in other Asian developing countries such as China, Malaysia, and Mongolia, which make up the most population among international students in Korea have been found to have high incidence and prevalence rates of STIs, low understanding of sexual health, and low safe sex behavior scores (Ganbaatar, 2016; Zhang, Pan, Cui, Law, Farrar, & Ba-Thein, 2013; Soleymani, Rahman, Lekhraj, Zulkefli, & Matinnia, 2015; Osorio, Lopez-del Burgo, Ruiz-Canela, Carlos, & de Irala, 2015). However, some have speculated a contrasting result that higher knowledge about HIV/AIDs serve as a protective factor for engaging in unsafe sex behaviors (Lammers et al., 2013). Thus, these inconsistent findings indicate a need for further examination on the relationship between sexual health knowledge and safe sex behavior.

Examining factors influencing safe sex behavior is an essential stage of developing effective programs to not only reduce risky behaviors but also to prevent harmful outcomes. Despite an abundant amount of literature on sexual behaviors among local university, such behaviors and associated factors of international students have not been studied in Korea. Thus, with intentions to contribute in the clarification of these inconsistent findings and to overcome the limitations of generalizing the international population, this study aims to examine factors influencing safe sex behavior among international students from Asian

developing countries in Korea.

### **3) Perceived Social Support**

Relationships between perceived social support and sexual behavior have been reported in numerous studies of young adults. In a study of young women, low levels of social support were each associated with unsafe sex behaviors and STIs emphasizing the importance of screening social support as regular health maintenance to avoid future consequences of unsafe sex behaviors (Mazzaferro, Murray, Ness, Bass, Tyus, & Cook, 2006). However, the relationship between social support and sexual behavior has also been examined more specifically in terms of the sources of social support. In a study which examined the relationship between perceived social support and unsafe sex behaviors of adolescents, strong perceived social support from family predicted safer sex behaviors related to vaginal and anal sexual risks for males, whereas among females, social support from friends were identified to predict safer sex behaviors related to anal and oral sexual risk for females (Ramiro, Teva, Bermudez, & Buela-Casal, 2013). In a study of homosexual young men, social support from family and friends was found to have a strong association with recent encountering of non-concordant unprotected anal intercourse (Glick et al., 2014). A similar study by Fergus, Lewis, Darbes, and Kral (2009) also supported the positive role of social support with safe sex behavior among gay couples. Furthermore, social support specific to HIV was found to have a positive relationship with safe sex behaviors at each time point as well as longitudinally (Darbes & Lewis, 2005). In addition to examining social support by subscales, the relationship with safe sex behavior has been examined by the quality and quantity of social support. The study by Johnson et al. (2013) showed an interesting result of a positive relationship between safe sex behavior and quality of social support whereas the quantity of social support exacerbated the relationship.

### **III. Method**

#### **1. Design**

This is a descriptive correlational study with aims to examine the relationship between sexual health knowledge, perceived social support, and safe sex behavior among international students in Seoul metropolitan area.

#### **2. Sample**

The non-proportional quota sampling strategy was used to collect equal numbers of students from five countries. To prevent sampling bias of students from one country outweighing the others, 20% of the participants from each country were included in the sample.

Undergraduate and graduate international students from Asian developing countries who are enrolled in a college or university in Seoul metropolitan area were recruited. The age-range of 19 to 35 was determined due to the fact that 19 is the average age of first year undergraduate students in Korea, and because high infection rates of HIV/STIs have been reported among young adults who are in their early 20's to 30's (KCDCP, 2016). International students from the South East Asia and Western Pacific region, specifically from China, Vietnam, Mongolia, Indonesia, and Malaysia were selected as these countries are identified to have high STI prevalence and incidence rates (Newman et al., 2015) and make up the largest international student population in Korea (Statistics Korea, 2016).

Inclusion criteria to this study are as follows:

- International students between the age of 19 and 35
- International students from China, Vietnam, Mongolia, Indonesia, or Malaysia

- International students enrolled in an undergraduate or graduate education program in Seoul metropolitan area
- International students who have been living in Korea for 6 months or more
- International students who are able to read and understand Korean or English

Cohen's sampling calculation method was used with G\*Power 3.1. A total of 200 participants were needed with an effect size of 0.15, significance level of 0.05, and power of 0.8. In consideration to the estimated incompleteness rate of 30%, the online survey was closed after receiving responses from 260 students. Fifteen participants were removed from data analysis due to inconsistent responses and answers with questionable validity. A total of 245 complete survey responses were entered for data analysis.

### **3. Measures**

The study questionnaire was composed of total 75 questions: 30 questions on general characteristics, 10 questions on sexual health knowledge, 11 questions on perceived social support, and 24 questions on safe sex behavior. All questions of the survey were provided in both English and Korean.

#### **1) General characteristics**

##### **a. Socio-demographics**

A total of 11 questions on socio-demographics were developed based on the characteristics of the study population through literature review including gender, age, nationality, religion, length of stay, city, enrolled education program, marital status, physical activity, use of tobacco, use of alcohol, and state of depression.

For measuring of depression, the short form of the Center for Epidemiological Studies-Depression scale (Andresen et al., 1994; Radloff, 1977) and the Korean translated version (Cho, & Kim., 1993; Chon et al., 2001) was used to determine the study population's depression status. This self-report scale consists of 10 items which measure the common symptoms of depression, such as "I was bothered by things that don't usually bother me," "I felt depressed," and "my sleep was restless." Participants were instructed to indicate how often they have felt this way during the past week using a 4-point Likert scale ranging from 1 (never) to 4 (always). According to the scale, the possible score range is 0-30 and any total score equal to or above 10 was considered depressed. The internal consistency reliability of this scale was  $\alpha=.86$  and in this study, the Cronbach's alpha was .78.

b. Sex-related characteristics

A total of nine questions were asked about participants' sexual orientation, experience of sexual intercourse, usual sex location, topics of sex education needed, previous experience with sex education, satisfaction of the sex education received, future participation interest in sex education, sexual concerns, and sources of sex-related information. The questions were developed based on the similar studies through literature review. Questions regarding sexual experience, previous participation in an official sex education program, an openness to future education program was offered as 'yes' or 'no' questions while areas of sexual concerns, topics of sexual education needed, and sources of sex-related information were developed in a format of multiple choice questions allowing more than one choice of answers.

## 2) Sexual Health Knowledge

From Ho (2009)'s sexual knowledge questionnaire (33 items) which is divided into four categories—reproductive health (7 items), pregnancy and delivery (8 items), sexual health (10 items), and sexual behavior (8 items), 10 items on sexual health were selected for this study. Participants were asked a series of 10 'yes', 'no', or 'I don't know' questions. Correct answers were scored as '1' whereas incorrect and 'I don't know' answers were scored as

'0'. With the possible score range of 0-10, higher score indicates higher knowledge on sexual health. The Cronbach's alpha of the questionnaire in this study was .67.

### **3) Perceived Social Support**

The MSPSS modified by Zhang (2012) for international students was used to determine the significance of the social support received from family, friends, and school (international student services and international student organizations). The original version of the scale developed by Zimet et al. (1988) and Korean version translated by Shin and Lee. (1999) were used to examine the social supports from family, friends, and others. According to the result of exploratory factor analysis testing and the validity of the scale structure done by Zimet et al. (1988), a principal component analysis identified three factors that together accounted for 83.9 of the variance.

Zhang (2012) modified four items by omitting one question and replacing the subscale of support from significant other with "support from international student offices/international student clubs". To revise the Korean version of the MSPSS, only the new subscale items were translated into Korean. A total of 11 statements were provided with response choices using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). For internal reliability, previous study reported Cronbach alpha coefficient of .94 for the total scale, .88 for the family support subscale, .96 for the friend support subscale, and .96 for the school support subscale. In this study, the Cronbach's alpha was .83 for the total scale, .82 for the for the family support subscale, .89 for the friends support subscale, and .76 for the school support subscale.

### **4) Safe Sex Behavior**

The safe sex behavior of international students with previous experience of sexual intercourse was measured using the 24-itemed SSBQ developed by DiIorio et al. (1992).

The English questionnaire was translated into Korea by the researcher of this study. The subscales of safe sex behavior include condom use (questions 1, 10, 13, 14, 18, 23), partner communications about safe sex (questions 4, 6, 12, 16, 20, 21), and avoidance of risky behaviors (questions 2, 5, 7, 8, 9, 11, 15, 17, 19, 22, 24). A 4-point Likert scale was used with answer options of ‘never’, ‘sometimes’, ‘most of the time’, and ‘always’. With a score range between 24 and 96, higher scores indicate safer sex behavior. Previous studies using the SSBQ reported Cronbach’s alpha of 0.82 and 0.86 (Lee, Salman, Fitzpatrick, 2009; Salazar, 2013). In this study, the Cronbach’s alpha was found to be .73. for the total scale, .66 for the subscale of condom use, .55 for partner communications about safe sex, and .58 for avoidance of risky behaviors.

#### **4. Data Collection**

After receiving approval from the Institutional Review Board of Yonsei University College of Nursing (IRB-2017-0019), participants were recruited through survey postings on various online international student associations and communities in Korea. A total of 38 posting attempts were made on Facebook, WeChat, and HelloTalk community page groups requesting cooperation from the administrators. Excluding the five communities which refused to participate, a total of 33 successful survey postings with a URL survey link were made on the mentioned social networks. The online survey was created using the SurveyMonkey and a brief description of the study title, study purpose, sample size, and research method were provided in the link.

For the international students who accessed the survey link and agreed to participate in this study, a few mandatory screening questions were asked to determine if they meet all criteria for participation. The students who met the criteria were then permitted to proceed in answering the study questionnaires and complete the survey. The online survey was closed after reaching 50 participants from each country with a total sample quota of 260.

The participants who completed the survey had an option of providing a phone number at the end of the survey to receive a gift certificate of ₩5,000. In addition, contact information of service centers and clinics were provided at the end of the survey for students who need health counseling and help with psychological distress or sexual health problems. The collected survey data was then exported from the online survey tool into an electronic file. Of the 260 completed surveys, 245 responses were used for data analysis.

## 5. Data Analysis

The SPSS 23.0 program was used to analyze the collected data as follows:

- The frequency, percentage, average, and standard deviation of general characteristics (socio-demographics and sex-related characteristics), sexual health knowledge, perceived social support, and safe sex behavior were analyzed using descriptive statistics.
- Safe sex behavior by general characteristics was analyzed using t-test and ANOVA and a post-hoc test was also complete using the Scheffé Test.
- The correlation between sexual health knowledge, perceived social support, and safe sex behavior was analyzed using Pearson correlation coefficient.
- The factors influencing safe sex behavior were identified using the multiple linear regression.

## IV. Results

### 1. General characteristics, sexual health knowledge, and perceived social support of the international students

The data collected from study participants were entered for analysis in two groups. Of 245 participants, 119 (48.6%) who reported to have experienced sexual intercourse were categorized as the ‘sexually experienced group’ and the rest of 126 (52.7%) participants who have not experienced sexual intercourse were categorized as the ‘sexually inexperienced group’.

#### 1) General characteristics of study participants

##### a. Socio-demographics

The socio-demographics of the international students are shown in Table 1. Overall, 170 (69.4%) students were female and 75 (30.6%) were male. Fewer female students were in the sexually experienced group (67.2%) than the inexperienced group (71.4%). The average age of the participants was  $25.05 \pm 3.37$  and the sexually experienced group ( $26.07 \pm 3.45$ ) was older than the inexperienced group ( $24.08 \pm 2.96$ ). Students from five different countries participated in this study and each country was equally represented from China (20.4%), Vietnam (19.2%), Mongolia (20.8%), Indonesia (18.8%), and Malaysia (20.8%). Majority of the participants in the sexually experienced group were from Mongolia (32.8%) and majority of the participants in the inexperienced group were from Malaysia (34.9%). In terms of religion, 150 (61.2%) of the total participants and 92 (73%) of the sexually inexperienced group were religious whereas only 58 (48.7%) reported to be religious in the sexually experienced group. Majority of the participants had

been in Korea for two to four years (35.9%), living in Seoul (78.0%). The most commonly enrolled education program was bachelor's program for sexually inexperienced groups (62.7%) and master's program for the experienced group (53.8%). Regarding marital status, most of the participants as the whole sample and in the sexually inexperienced group were single (60.4% and 80.2%, respectively) where as being single and in a relationship were mostly common statuses in the sexually experienced group (39.5% each). Most students reported to exercise at least once a week, 70.6% in the sexually experienced group and 73.0% in the inexperienced group. Only 9.0% of the entire sample identified themselves as current smokers. The sexually experienced group (16.0%) showed higher smoking rates than the sexually inexperienced group (2.4%). Total alcohol consumers reached 44.1%, 57.1% in the sexually experienced group, and 31.7% in the sexually inexperienced group. Based on the results of the CES-D-R-10, nearly one third of the entire sample (63.7%) was considered depressed and the depressive proportions were similar between sexually experienced (63.9%) and inexperienced group (63.5%).

#### b. Sex-related characteristics

The sex-related characteristics of the international students are shown in Table 2.

Majority of students in the sample identified themselves as heterosexuals (83.3%). The most common place of sex was found to be "my place or partner's place" (68.1%), "hotel or motel" (24.4%), and "other" (7.6%). Most of the participants in the sexually experienced group received official sex education (52.1%), however, only 41.6% and 31.7% had sex education in the total and sexually inexperienced group, respectively. Participants who received official sex education rated their experience as average (46.1%) and expressed their likelihood of participating in future sex education programs (61.6%). According to the sexually experienced group, the top sex education topics needed for international students in Korea were "prevention and treatment of HIV/STIs" (50.4%) whereas the sexually inexperienced group selected the topic of "healthy relationships" (43.7%). In

addition, the highest sexual concern expressed in the sexually experienced group were “healthy relationships and methods of birth control” (40.3%) while the sexually inexperienced group was mostly concerned with “lack of accurate sexual knowledge” (52.4%). Lastly, majority of the participants in both sexually experienced (73.1 %) and inexperienced groups (57.9%) reported to received sex and sexual health-related information from internet search engines.

<Table 1> Socio-demographics of study participants

(N=245)

Characteristics	Categories	Frequency (%)		
		Total	Sexually Experienced Group	Sexually Inexperienced Group
Gender	Female	170 (69.4)	80 (67.2)	90 (71.4)
	Male	75 (30.6)	39 (32.8)	36 (28.6)
Age (yr)	19 - 23	98 (40.0)	29 (24.4)	69 (54.8)
	24 - 29	118 (48.2)	70 (58.8)	48 (38.1)
	30 - 35	29 (11.8)	20 (16.8)	9 (7.1)
Nationality	China	50 (20.4)	32 (26.9)	18 (14.3)
	Vietnam	47 (19.2)	24 (20.2)	23 (18.3)
	Mongolia	51 (20.8)	39 (32.8)	12 (9.5)
	Indonesia	46 (18.8)	17 (14.3)	29 (23.0)
	Malaysia	51 (20.8)	7 (5.9)	44 (34.9)
Religion	Christianity	49 (20.0)	18 (15.1)	31 (24.6)
	Buddhism	50 (20.4)	29 (24.4)	21 (16.7)
	Islam	51 (20.8)	11 (9.2)	40 (31.7)
	No Religion	95 (38.8)	61 (51.3)	34 (27.0)
Length Of Stay	6 - 12 months	27 (11.0)	13 (10.9)	14 (11.1)
	1 - 2 yrs	48 (19.6)	26 (21.8)	22 (17.5)
	2 - 4 yrs	88 (35.9)	31 (26.1)	57 (45.2)
	4 - 6 yrs	58 (23.7)	30 (25.2)	28 (22.2)
	> 6yrs	24 (9.8)	19 (16.0)	5 (4.0)
City	Seoul	191 (78.0)	101 (84.9)	90 (71.4)
	Incheon	15 (6.1)	6 (5.0)	9 (7.1)
	Gyeonggi	39 (15.9)	12 (10.1)	27 (21.4)
Enrolled Education Program	Bachelor's	118 (48.2)	42 (35.3)	79 (62.7)
	Master's	107 (43.7)	64 (53.8)	43 (34.1)
	Doctoral	20 (8.2)	13 (10.9)	7 (5.6)

<Table 1> Socio-demographics of study participants (cont')

(N=245)

Characteristics	Categories	Frequency (%)		
		Total	Sexually Experienced Group	Sexually Inexperienced Group
Marital Status	Single	148 (60.4)	47 (39.5)	101 (80.2)
	In a relationship	68 (27.8)	47 (39.5)	21 (16.7)
	Married	29 (11.8)	25 (21.0)	4 (3.2)
Exercise	I don't exercise	69 (28.2)	35 (29.4)	34 (27.0)
	1 - 3times/week	150 (61.2)	74 (62.2)	76 (60.3)
	5 - 7 times/ week	26 (10.6)	10 (8.4)	16 (12.7)
Smoking	Yes	22 (9.0)	19 (16.0)	3 (2.4)
	No	223 (91.0)	100 (84.0)	123 (97.6)
Drinking	Yes	108 (44.1)	68 (57.1)	40 (31.7)
	No	137 (55.9)	51 (42.9)	86 (68.3)
Depressed (Based on CEDS-D-R-10)	Yes	156 (63.7)	76 (63.9)	80 (63.5)
	No	89 (36.3)	43 (36.1)	46 (36.5)

&lt;Table 2&gt; Sex-related characteristics of study participants

		(N=245)		
Characteristics	Categories	Frequency (%)		
		Total	Sexually Experienced Group	Sexually Inexperienced Group
Sexual Orientation	Heterosexual	204 (83.3)	105 (88.2)	99 (78.6)
	Homosexual/ Bisexual	10 (4.1)	6 (5.0)	4 (3.2)
	Not sure	20 (8.2)	6 (5.0))	14 (11.1)
	Declined to answer	11 (4.5)	2 (1.7)	9 (7.1)
Usual Sex Location (n=119)	My/partner's place	-	81 (68.1)	-
	Motel/Hotel	-	29 (24.4)	-
	Other	-	9 (7.6)	-
Needed sex education topics	Prevention and treatment of HIV/STIs	113 (46.1)	60 (50.4)	53 (42.1)
	Healthy relationships	112 (45.7)	57 (47.9)	55 (43.7)
	Sexual abuse and avoidance of sexual harassment	90 (36.7)	42 (35.3)	48 (38.1)
	Marriage, divorce, and cohabiting	78 (31.8)	41 (34.5)	37 (29.4)
	Methods of birth control	76 (31.0)	53 (44.5)	23 (18.3)
	Physical and psychological gender differences	74 (30.2)	32 (26.9)	42 (33.3)
	Reproductive health knowledge	70 (28.6)	41 (34.5)	29 (23.0)
	Meaning of love	67 (27.3)	29 (24.4)	38 (30.2)
	Pregnancy and deliver process	57 (23.3)	34 (28.6)	23 (18.3)
	Gender roles	48 (19.6)	24 (20.2)	24 (19.0)
	Screening for reproductive disorder	48 (19.6)	27 (22.7)	21 (16.7)
	Masturbation and sexual techniques	47 (19.2)	29 (24.4)	18 (14.3)
	Sexual drive and impulses	42 (17.1)	22 (18.5)	20 (15.9)
Official Sex Education Received	Yes	102 (41.6)	62 (52.1)	40 (31.7)
	No	143 (58.4)	57 (47.9)	86 (68.3)

&lt;Table 2&gt; Sex-related characteristics of study participants (cont')

(N=245)

Characteristics	Categories	Frequency (%)		
		Total	Sexually Experienced Group	Sexually Inexperienced Group
Official Sex Education Satisfaction (n=102)	Poor	27 (26.5)	32 (26.9)	19 (15.1)
	Average	47 (46.1)	34 (28.6)	34 (27.0)
	Good	26 (25.5)	19 (16.0)	14 (11.1)
Future Sex Education Participation	Yes	151 (61.6)	66 (55.5)	85 (67.5)
	No	94 (38.4)	53 (44.5)	41 (32.5)
Sexual Concerns	Lack of accurate sexual knowledge	107 (43.7)	41 (34.5)	66 (52.4)
	Excessive interest in sex and sexuality	50 (20.4)	29 (24.4)	21 (16.7)
	Feeling guilty about sexual interest	39 (15.9)	20 (16.8)	19 (15.1)
	Low or lack of sexual interest	43 (17.6)	23 (19.3)	20 (15.9)
	Pregnancy and delivery process	51 (20.8)	38 (31.9)	13 (10.3)
	Healthy relationships and methods of birth control	69 (28.2)	48 (40.3)	21 (16.7)
	Sexuality confusion	20 (8.2)	10 (8.4)	10 (7.9)
	Conflicts due to sexual victimization or harm	12 (4.9)	10 (8.4)	2 (1.6)
	Chasity problem	21 (8.6)	5 (4.2)	16 (12.7)
	Sexual drive and impulses	32 (13.1)	18 (15.1)	14 (11.1)
	Masturbation	68 (27.8)	41 (34.5)	27 (21.4)
	None	45 (18.4)	15 (12.6)	30 (23.8)
	Sources of Sex and sexual health-related information	SNS	126 (51.4)	60 (50.4)
Internet search engine		160 (65.3)	87 (73.1)	73 (57.9)
Magazines		52 (21.2)	27 (22.7)	25 (19.8)
Friends, partner or parents		145 (59.2)	77 (64.7)	68 (54.0)
Institutes (ex clinic, school)		31 (12.7)	18 (15.1)	13 (10.3)
Do not seek information		10 (4.1)	2 (1.7)	8 (6.3)

## 2) Sexual health knowledge of study participants

The sexual health knowledge scores by items are shown in Table 3. The highest possible sexual health knowledge score was 10 and the overall participant's average was low of  $4.41 \pm 2.34$ . The sexually experienced group ( $5.08 \pm 2.12$ ) scored higher than the sexually inexperienced group ( $3.78 \pm 2.37$ ). The items which participants answered most correctly were "a person can get an STI with one sexual intercourse" (75.9%) followed by the item "an STI can relapse (occur again) with sexual intercourse even after treatment" (62.4%) and "a person can avoid getting an STI by washing the genital with soap" (57.1%). The items with the lowest correction rate was the item "Gonorrhea can be treated with oral antibiotics or antibiotic injections" (17.1%) followed by the item "if syphilis goes untreated, it can cause brain damage" (25.3%) and "STIs are not spread through kissing" (29.0%).

<Table 3> Sexual health knowledge of study participants

(N=245)

Items	% Correct		
	Total	Sexually Experienced Group	Sexually Inexperienced Group
1. STIs are not spread through kissing	29.0%	31.1%	27.0%
2. A person can get an STI with one sexual intercourse.	75.9%	77.3%	74.6%
3. Gonorrhea can be treated with oral antibiotics or antibiotic injections.	17.1%	18.5%	15.9%
4. Obesity can be a cause of erectile dysfunction.	49.8%	52.9%	46.8%
5. Female orgasmic dysfunction cannot be treated/ cured.	40.8%	48.7%	33.3%
6. An STI can relapse (occur again) with sexual intercourse even after treatment.	62.4%	72.3%	53.2%
7. A person develops immunity after being treated for an STI.	38.0%	51.3%	25.4%
8. A person can avoid getting an STI by taking an antibiotic before or after an intercourse.	45.7%	59.7%	32.5%
9. If syphilis goes untreated, it can cause brain damage.	25.3%	30.1%	19.8%
10. A person can avoid getting an STI by washing the genital with soap.	57.1%	70.6%	44.4%

### 3) Perceived social support of study participants

The level of perceived social support was examined under three subscales of support from family, friends, and school. The results of each subscale are shown in Table 4.

The total scores of perceived social support ranged from 17 to 55 with average of  $39.31 \pm 6.41$  ( $3.57 \pm 0.58$ ). Lower support was found in the sexually experienced group ( $38.33 \pm 6.63$ ) than the sexually inexperienced group ( $40.24 \pm 60.8$ ). For each subscale, highest mean of  $15.24 \pm 3.17$  ( $3.88 \pm 0.83$ ) was found in support from friends and the lowest mean of  $8.84 \pm 2.31$  ( $2.95 \pm 0.77$ ) was found in support from school.

<Table 4> Perceived social support of the study participants

Subscales	Min - Max Score	Mean Score $\pm$ SD (Mean $\pm$ SD)		
		Total	Sexually Experienced Group	Sexually Inexperienced Group
Family Support	4 - 20	$15.23 \pm 3.22$ ( $3.81 \pm 0.80$ )	$14.51 \pm 3.41$ ( $3.63 \pm 0.85$ )	$15.90 \pm 2.88$ ( $3.98 \pm 0.72$ )
Friend Support	5 - 20	$15.24 \pm 3.17$ ( $3.88 \pm 0.83$ )	$14.96 \pm 3.15$ ( $3.80 \pm 0.84$ )	$15.52 \pm 3.18$ ( $3.96 \pm 0.82$ )
School Support	3 - 15	$8.84 \pm 2.31$ ( $2.95 \pm 0.77$ )	$8.86 \pm 2.24$ ( $2.95 \pm 0.75$ )	$8.82 \pm 2.38$ ( $2.94 \pm 0.79$ )
Total	17 - 55	$39.31 \pm 6.41$ ( $3.57 \pm 0.58$ )	$38.33 \pm 6.63$ ( $3.48 \pm 0.60$ )	$40.24 \pm 60.8$ ( $3.66 \pm 0.55$ )

Table 5 shows the average scores of perceived social support by each item. Participants reported the highest score for the item “My family really tries to help me” ( $4.13 \pm 0.98$ ) followed by “I can get the emotional help and support I need from my family” ( $3.85 \pm 1.02$ ) and “my family is willing to help me make decision” ( $2.85 \pm 1.02$ ). The lowest score was found with the item “I can talk about my problems with members in international student

organizations” (2.62±0.96) followed by “I trust the university would offer me help with I need it” (2.98±0.92) and “the international student center/office on campus is available when I need it” (3.24±0.92).

<Table 5> Perceived social support by items

(N=245)

Items	Mean±SD		
	Total	Sexually Experienced Group	Sexually Inexperienced Group
1. My family really tries to help me	4.13±0.98	4.03±1.04	4.24±0.91
2. I can get the emotional help and support I need from my family	3.85±1.02	3.55±1.10	4.13±0.85
3. I can talk about my problems with my family	3.50±1.04	3.32±1.03	3.67±1.03
4. My family is willing to help me make decisions	3.74±0.95	3.61±1.01	3.86±0.88
5. I have friends with whom I can share my joys and sorrows	3.98±0.95	3.90±1.00	4.06±0.91
6. My friends really try to help me	3.85±0.88	3.81±0.87	3.89±0.89
7. I can talk about my problems with my friends	3.81±0.94	3.70±0.98	3.92±0.89
8. I can count on my friends when things go wrong	3.60±0.90	3.55±0.88	3.64±0.92
9. The International Student Center/ Office on campus is available when I need it	3.24±0.92	3.24±0.90	3.23±0.95
10. I can talk about my problems with members in international students organization	2.62±0.96	2.66±0.97	2.57±0.96
11. I trust the university would offer me help when I need it	2.98±0.92	2.95±0.95	3.02±0.89

## 2. Safe sex behavior of study participants with previous sexual experience

The data analysis of safe sex behavior was done based on the data collected from the sexually experienced group (n=119) as shown in Table 6.

With 96 being the highest possible score for total safe sex behavior, the participants' score ranged from 49 to 84 and the average was  $65.18 \pm 8.32$ . When examined under the three subscales of safe sex behavior, the average for 'condom use' was  $19.33 \pm 3.98$ ,  $13.45 \pm 3.02$  for 'partner communications about safe sex', and  $32.41 \pm 4.31$  for 'avoidance of risky behaviors'.

Table 7 shows the average scores of safe sex behavior by each item. Participants reported the highest score for the item "I used cocaine or other drugs prior to or during sexual intercourse" ( $3.81 \pm 0.54$ ) followed by "I engage in anal intercourse." ( $3.65 \pm 0.66$ ) and "I have sexual intercourse with someone who I know is a bisexual or gay person" ( $3.61 \pm 0.82$ ). The lowest score was found in the item "I ask my potential sexual partners about a history of IV drug use" ( $1.56 \pm 0.88$ ) followed by the item "I ask my potential sexual partners about a history of bisexual/homosexual practices" ( $1.71 \pm 0.88$ ) and "I avoid direct contact with my sexual partner's semen or vaginal secretions" ( $1.97 \pm 0.94$ ).

<Table 6> Safe sex behavior subscales

(n=119)		
Subscales	Min - Max Score	Mean Score $\pm$ SD
Condom use	10 - 28	$19.33 \pm 3.98$
Partner communications about safe sex	6 - 23	$13.45 \pm 3.02$
Avoidance of risky behaviors	24 - 44	$32.41 \pm 4.31$
Total	49 - 84	$65.18 \pm 8.32$

<Table 7> Safe sex behavior items

		(n=119)
Items		Mean±SD
	1. I insist on condom use when I have sexual intercourse.	2.86±0.95
*	2. I use cocaine or other drugs prior to or during sexual intercourse.	3.81±0.54
	3. I stop foreplay long enough to put on a condom (or for my partner to put on a condom).	2.31±4.03
	4. I ask potential sexual partners about their sexual histories.	2.07±0.95
	5. I avoid direct contact with my sexual partner's semen or vaginal secretions.	1.97±0.94
	6. I ask my potential sexual partners about a history of bisexual/homosexual practices.	1.71±0.88
*	7. I engage in sexual intercourse on a first date.	3.61±0.63
	8. I abstain from sexual intercourse when I do not know my partner's sexual history.	2.03±1.08
	9. I avoid sexual intercourse when I have sores or irritation in my genital area.	3.00±1.01
	10. If I know an encounter may lead to sexual intercourse, I carry a condom with me.	2.25±1.21
	11. I insist on examining my sexual partner for sores, cuts, or abrasions in the genital area.	2.20±1.07
	12. If I disagree with information that my partner presents on safer sex practices, I state my point of view.	2.60±0.98
*	13. I engage in oral sex without using protective barriers such as a condom or rubber dam.	2.82±1.06
*	14. If swept away in the passion of the moment, I have sexual intercourse without using a condom.	3.09±0.86
*	15. I engage in anal intercourse.	3.65±0.66
	16. I ask my potential sexual partners about a history of IV drug use.	1.56±0.88
	17. If I know an encounter may lead to sexual intercourse, I have a mental plan to practice safer sex.	2.56±1.00
	18. If my partner insists on sexual intercourse without a condom, I refuse to have sexual intercourse.	2.39±1.03
	19. I avoid direct contact with my sexual partner's blood.	2.61±1.15
*	20. It is difficult for me to discuss sexual issues with my sexual partners.	3.29±0.83
	21. I initiate the topic of safer sex with my potential sexual partner.	2.23±0.94
*	22. I have sexual intercourse with someone who I know is a bisexual or gay person.	3.61±0.82
*	23. I engage in anal intercourse without using a condom.	3.61±0.72
*	24. I drink alcoholic beverages prior to or during sexual intercourse.	3.34±0.70

\*Recoded Items

### **1) Safe sex behavior of study participants with previous sexual experience by general characteristics**

The association between the general characteristics and safe sex behavior of study participants are shown in Table 8 and 9.

Gender, nationality, religion, and smoking were found to be significantly associated with overall safe sex behavior. Higher safe sex behavior was found in female students compared to male students ( $t=3.094$ ,  $p=.002$ ). Students from China were found to practice safer sex behavior than students from Indonesia or Malaysia ( $F=2.786$ ,  $p=.044$ ). Higher safe sex behavior was found in students with no religion compared to other students with religion ( $F=3.254$ ,  $p=.024$ ). Students who do not smoke showed higher safe sex behavior than those who smoke ( $t=-3.756$ ,  $p<.001$ ).

For the subscale of condom use, nationality and religion were found to be significantly associated. The subscale of partner communications about safe sex was significantly associated with gender, nationality, length of stay, and smoking. The subscale of avoidance of risky behaviors was significantly associated with gender, nationality, and smoking.

<Table 8> Safe sex behavior of study participants with previous sexual experience by socio-demographics

(n=119)

Variable	Category	n	Total			Condom Use			Partner Communications			Avoidance of risky behaviors		
			Mean±SD	t or F	p	Mean±SD	t or F	p	Mean±SD	t or F	p	Mean±SD	t or F	p
Gender	Female	80	66.78±8.52	3.094	.002	19.63±4.14	1.170	.244	14.05±2.99	3.257	.001	33.10±4.34	2.553	.012
	Male	39	61.92±6.90			18.72±3.59			12.21±2.70			31.00±3.94		
Age (yr)	19 - 25	29	64.48±8.11	.342	.711	19.55±3.78	.266	.767	13.76±3.00	1.219	.299	31.17±4.44	1.662	.194
	26 - 30	70	65.71±8.33			19.40±4.08			13.59±2.95			32.73±4.01		
	31 - -35	20	64.35±8.84			18.75±4.01			12.50±3.24			33.10±4.97		
Nationality	China <sup>a</sup>	32	68.00±9.40	.786	.044	20.53±4.10	2.902	.038	13.19±3.23	3.091	.030	34.28±4.61	3.403	.020
	Vietnam <sup>b</sup>	24	66.08±7.59			19.33±3.14			14.92±3.31			31.83±3.82		
	Mongolia <sup>c</sup>	39	64.31±7.90			19.49±3.61			12.64±2.50			32.18±4.27		
	Indonesia <sup>&amp;</sup> Malaysia <sup>d</sup>	24	61.96±7.14			17.46±4.61			13.63±2.81			30.88±3.77		
Religion	Christianity <sup>a</sup>	18	65.28±6.67	3.254	.024	19.17±3.67	4.772	.004	13.78±2.69	1.749	.161	32.33±4.39	1.266	.289
	Buddhism <sup>b</sup>	29	62.83±6.69			19.03±3.13			12.34±2.65			31.45±4.44		
	Islam <sup>c</sup>	11	60.45±7.56			15.55±3.59			13.64±2.91			31.27±3.85		
	No Religion <sup>d</sup>	61	67.13±9.08			20.20±4.13			13.84±3.22			33.10±4.27		
Length of Stay	6 months - 2yrs <sup>a</sup>	39	65.00±8.08	.022	.978	19.23±4.14	.026	.974	14.44±3.19	3.279	.041	31.33±4.37	1.994	.141
	2 - 4yrs <sup>b</sup>	31	65.13±8.60			19.45±4.22			13.06±2.67			32.61±3.90		
	≥5 yrs <sup>c</sup>	49	65.37±8.49			19.33±3.76			12.90±2.95			33.14±4.42		

<Table 8> Safe sex behavior of study participants with previous sexual experience by socio-demographics (cont<sup>1</sup>)

(n=119)

Variable	Category	n	Total			Condom Use			Partner Communications			Avoidance of risky behaviors		
			Mean±SD	t or F	p	Mean±SD	t or F	p	Mean±SD	t or F	p	Mean±SD	t or F	p
City/ Region	Seoul	101	65.50±8.44			19.47±4.17			13.24±3.02	1.640		32.80±4.08		
	Incheon	6	63.67±7.82	.495	.611	19.50±3.73	.650	.524	14.33±2.50		.198	29.83±3.60	2.862	.061
	Gyeonggi	12	63.25±7.74			18.08±1.73			14.75±2.99			30.42±5.70		
Enrolled Education Program	Undergraduate	42	65.10±8.70			19.52±3.98			13.71±3.20			31.86±4.76		
	Graduate	77	65.23±8.16	-.086	.931	19.22±4.00	.396	.693	13.30±2.92	.532	.475	32.71±4.05	-1.037	.302
Marital Status	Single	47	65.49±7.59			19.51±4.11			13.47±2.88			32.51±3.91		
	In a relationship	47	65.06±8.39	.057	.945	19.55±3.72	.588	.557	13.74±3.18	.733	.483	31.77±4.25	1.258	.288
	Married	25	64.84±9.70			18.56±4.23			12.84±2.98			33.44±5.03		
Exercise	Yes	35	65.89±9.31			19.80±4.77			13.66±3.30			32.43±4.37		
	No	84	64.89±1.91	.592	.555	19.13±3.61	.746	.459	13.36±2.91	.493	.623	32.40±4.31	.027	.978
Smoking	Yes	19	60.95±4.48			19.16±2.67			11.84±2.48			29.95±3.44		
	No	100	65.99±8.64	-3.756	<.001	19.36±4.19	-.272	.787	13.75±3.02	-2.588	.011	32.88±4.31	-2.797	.006
Drinking	Yes	68	65.06±7.38			19.51±4.11			13.56±2.73			32.98±4.74		
	No	51	65.35±9.49	-.184	.855	19.08±3.81	.591	.556	13.29±3.79	.472	.638	32.98±4.74	-1.250	.214
Depression	Yes	76	64.74±8.42			18.89±4.00			13.57±2.97			32.65±4.16		
	No	43	65.98±8.17	-.780	.437	20.09±3.85	-1.590	.115	13.23±3.12	.577	.565	32.65±4.61	-.454	.650

<Table 9> Safe sex behavior of study participants with previous sexual experience by sex-related characteristics

(n=119)

Variable	Category	n	Total			Condom Use			Partner Communications			Avoidance of risky behaviors		
			Mean ± SD	t or F	p	Mean±SD	t or F	p	Mean± SD	t or F	p	Mean±SD	t or F	p
Sexual Orientation	Heterosexual <sup>a</sup>	105	65.76	8.50		19.40±4.04			13.44±3.12			32.92±4.20		
	Homo/bisexual <sup>b</sup>	6	59.00±2.45		2.471	18.00±3.58	.349	.706	14.00±1.67	.145	.865	27.00±3.23	7.808	.001
	Not sure/ declined to answer <sup>c</sup>	8	62.25±6.43			19.38±3.56			13.13±2.48			29.75±2.49		a>b
Usual Sex Location	My/partner's place	81	65.58±8.20			19.44±4.11			13.57±2.94			32.57±4.13		
	Motel/Hotel	29	66.24±8.33	2.71	.071	19.66±3.61	1.292	.279	13.66±3.37	.792	.455	32.93±4.83	2.181	.118
	Other	6	57.83±8.01			16.83±4.36			12.00±2.37			29.00±2.68		
No. of Sex Education Topics needed	1 - 4 Topics	75	64.21±8.34			18.88±3.79			12.95±2.65			32.39±4.69		
	≥5 Topics	44	66.84±7.99	2.811	.096	20.09±4.21	-1.615	.109	14.30±3.43	-2.402	.018	32.45±3.62	-0.83	.934
Official Sex Education	Yes	62	64.60±7.96			18.98±3.72			13.52±2.81			32.10±4.54		
	No	57	65.82±8.72	-0.803	.423	19.70±4.23	-0.984	.327	13.37±3.25	.266	.791	32.75±4.05	-0.831	.408
Satisfaction of Official Sex Education Received (n=62)	Poor	19	65.63±8.20			18.74±3.81			13.84±3.30			33.05±4.55		
	Average	27	65.41±8.31			19.56±3.69			13.89±2.67			31.96±4.47		
	Good	14	61.34±7.18	1.384	.259	18.07±3.97	.749	.478	12.36±2.41	1.535	.224	31.00±5.02	.810	.450

<Table 9> Safe sex behavior of study participants with previous sexual experience by sex-related characteristics (cont')

(n=119)

Variable	Category	n	Total			Condom Use			Partner Communications			Avoidance of risky behaviors		
			Mean ± SD	t or F	p	Mean±SD	t or F	p	Mean± SD	t or F	p	Mean±SD	t or F	p
Future Sex Education Participation	Yes	66	65.73±7.95			19.30±3.71			14.05±3.04			32.38±0.18		
	No	53	64.51±8.78	0.793	.430	19.36±4.32	-.075	.940	12.70±2.85	2.474	.015	32.4 ±4.51	-.093	.926
Sexual Concerns	Yes	108	65.08±8.26			19.32±4.02			13.48±3.03			32.28±4.26		
	No	11	66.18±9.17	-.416	.678	19.36±3.64	-.031	.975	13.09±3.02	.408	.684	33.73±4.82	-1.063	.290
No. of Sources of sex-related information (n=117)	1 - 2 SOIs	66	64.76±7.68			19.53±3.68			12.92±2.70			64.76±7.68		
	≥3 SOIs	51	66.08±9.07	1.484	.231	19.20±4.38	.812	.446	14.18±3.26	2.796	.065	66.08±9.07	.963	.385
	Do not seek information	2	56.50±2.12			16.00±0.00			12.00±4.24			56.50±2.12		

## 2) Correlations between sexual health knowledge, perceived social support, and safe sex behavior

The correlation between sexual health knowledge, perceived social support, and safe sex behavior are shown in Table 10.

Perceived social support showed a significant positive correlation with safe sex behavior ( $r=.234, p=.010$ ) indicating that the students with stronger social support practice safer sex. Specifically, perceived support from friends showed a significant positive correlation with safe sex behavior ( $r=.326, p<.001$ ). Sexual health knowledge was not found to have a significant relationship with perceived social support nor overall safe sex behavior. However, there was a significant positive correlation between sexual health knowledge and the safe sex behavior subscale of avoidance of risky behaviors ( $r=.203, p=.027$ ).

<Table 10> Correlation between sexual health knowledge, social support, and safe sex behavior

Variables	Perceived Social Support (Total)	Family Support	Friend Support	School Support	Sexual Health Knowledge	SSB (Total)
(n= 119)						
Perceived Social Support (Total)						
Family Support	.764 (<.001)					
Friends Support	.788 (<.001)	.387 (<.001)				
School Support	.623 (<.001)	.215 (.001)	.308 (<.001)			
Sex Health Knowledge	.022 (.735)	-.066 (.304)	.074 (.245)	.068 (.290)		
Safe Sex Behavior (Total)	.234 (.010)	.136 (.140)	.326 (<.001)	.032 (.726)	.124 (.179)	
Condom use	.231 (.011)	.125 (.175)	.294 (.001)	.065 (.480)	.093 (.313)	.747 (<.001)
Partner communications about safe sex	.107 (.248)	.020 (.832)	.212 (.021)	-.014 (.877)	-.071 (.444)	.615 (<.001)
Avoidance of risky behaviors	.164 (.075)	.133 (.148)	.209 (.023)	.012 (.894)	.203 (.027)	.012 (.894)

### 3) Factors influencing safe sex behavior of international students

Factors associated with safe sex behavior are shown in Table 11. Multiple regression analysis was conducted by the general characteristics which were found have a significant relationship with safe sex behavior. Gender, nationality, religion, and smoking were coded into dummy variables and analyzed along with sexual health knowledge, and perceived social support.

The multicollinearity values were all above .1 with the range of .463 - .885, and the variance inflation factors were all below 10 with the range of 1.129 – 2.158. The Durban Watson value was 1.816 showing no correlations among the independent variables with statistical significance ( $F=2.791$ ,  $p=.003$ ).

As a result, female students were found to be significantly more likely to practice safe sex behavior compared to male students ( $\beta=.221$ ,  $p=.019$ ), and students with higher perceived social support were significantly ( $\beta =2.197$ ,  $p=.032$ ) more likely to practice safer sex. Therefore, gender and perceived social support have statistical significance to safe sex behavior and explained 14.3% of the variances.

<Table 11> Factors influencing safe sex behavior

		(n= 119)				
Variables		B	SE	$\beta$	t	p
constant		52.278	5.035		10.382	.000
Gender						
Male <sup>§</sup>	1					
Female		3.903	1.633	.221	2.390	.019
Smoking						
Yes <sup>§</sup>	1					
No		2.446	2.175	.108	1.125	.263
Religion						
No religion <sup>§</sup>	1					
Christianity		1.848	2.362	.080	.782	.436
Buddhism		-3.101	1.900	-.161	-1.632	.106
Islam		-2.152	3.579	-.075	-.601	.549
Nationality						
China <sup>§</sup>	1					
Vietnam		-.161	2.166	-.008	-.074	.941
Mongolia		-1.583	1.993	-.090	-.794	.429
Malaysia		-3.369	4.049	-.096	-.832	.407
Indonesia		-4.737	2.947	-.200	-1.608	.111
Sexual Health Knowledge		.167	.372	.043	.448	.655
Perceived Social Support		2.721	1.249	.197	2.178	.032

F(P)=2.791(.003), R<sup>2</sup>=.223,  $\Delta$ R<sup>2</sup>= .143

<sup>§</sup> Reference group

## V. Discussion

This study was conducted to provide basic data in planning and implanting preventive interventions of sexual health to ensure safe sex practices of international students in Seoul metropolitan area by examining the relationships between sexual health knowledge, perceived social support, and safe sex behavior. Therefore, the main study results are discussed as follows:

### 1. Representativeness and sex-related characteristics of study participants

This study has significance in including equal proportionate number of Asian international students from five different countries whereas previous studies have limited the nationality of the sample to one country or have oversampling of students from one country (Lee & Jeong, 2012; An, Ahn, Woo, Song, & Sohn, (2016); N. Lee et al. 2011; Chang et al, 2010; Kim & Lee, 2014; Kim & Yoo, 2016). For proper representation of research outcomes, it is important that study samples reflect the diversity of the population (Allmark, 2004). Nevertheless, studies of international students in Korea and abroad have highlighted their limitations in generalization by focusing on one or limited group of students in relation to nationality, region, school, and grades (Burchard et al., 2011; Hyun, Quinn, Madon, & Lustig, 2007; Rosenthal et al., 2008; N. Lee et al. 2011; An et al., 2016). With efforts to overcome the mentioned limitations and increase generalizability, this study included international students from five different countries at various study levels of multiple universities. Administering an online survey also increased accessibility, honesty, and expansion of participation as participants could complete the survey at various locations at any given time. Especially in answering personal and sensitive questions, the participants may have been more willing to provide truthful and candid answers without

the physical presence of the investigator.

As a study on sexual behavior, truthfulness of the answers and responses may not be guaranteed. Nearly 50% of the students reported to have had previous sexual intercourse. The proportion of students with previous experience of sexual intercourse of university students varies by ethnicity and nationality. While previous sexual intercourse were reported in 93% of the outgoing international students in a European students (Petersson et al., 2016), an Australian study reported 34.2% among Asian international students (Song et al., 2005), 58% in a US study of Muslim students (Ahmed, Abu-Ras, & Arfken, 2014), and 30% in a Korean study of regular university students (Shin et al., 2011). In comparison, the result of this study showed smaller proportion with sexual experience compared westernized countries but higher than Asian international students in Australia and Korean university students. The difference in these findings may be due to the variation in culture and social norms where westernized countries have higher prevalence of sexual experience rates (Illsely, 2017; Sawe, 2017; Welling et al., 2006). Likewise, the lower rate of engagement in sexual intercourse in this study could be explained by studying only Asian student populations and including a fairly large group of Muslim students who follow strict Islamic laws against extramarital sex and sexual activities.

## **2. Sexual health knowledge, social support, and safe sex behavior**

### **1) Sexual health knowledge of international students**

The level of sexual health knowledge was generally low among study participants. This finding is similar to the findings of most studies on international students and regular university students in developing countries. Some Australian studies of international students have reported poor sexual health knowledge emphasizing their unlikelihood of talking about sexual health with parents, difficulty accessing sexual health information,

lack of sexual education on contraception and STIs from schools, and underestimate the prevalence of HIV/STIs (Burchard et al., 2011; Song et al., 2005). Among the non-international students in a Malaysian public university, Wong (2012) has also found low sexual health knowledge of Muslim students with mean score of 4.3 of 10. Young adults and students from other developing countries were reported to have lack of accurate knowledge on sex and sexual health (Rajapaksa-Hewageegana et al., 2015; Wong, 2012; Lee et al., 2011). In addition, S. Lee et al (2011) reported that health knowledge on the transmission of AIDS and STIs were very low among the Mongolian population in Korea who are experiencing increasing rates of STIs.

In regard to student's characteristics, lower scores of knowledge were found in undergraduate students than graduate students in this study which corresponds to previous study results relating low current educational status with low knowledge levels on sexual health and other variables such as age and marital status (Soleymani et al., 2015). It is also possible that limited sexual health education in developing countries, variance in linguistic competences, and social desirability issues affected the result of low sexual health knowledge this study. Nonetheless, when Ho (2009), the developer of the questionnaire examined the sexual knowledge of Korean undergraduate students, 44.3% of the participants were identified to have low sexual knowledge. This paralleling result, despite the sample differences by culture, language, and nationality, may lead to questioning of the appropriateness and suitability of the knowledge questionnaire. Thus a simpler, clearer, and more widely used questionnaire is recommended in examining the sexual health knowledge of international students for future research.

## 2) Perceived social support of international students

The perceived social support among the international students in this study was generally high. High perceived social support was found among single undergraduate students with no experience of sexual intercourse and who reported to have more than three sources of

information on sex and sexual health. On the other hand, students who identified themselves as smokers, depressed, and non-heterosexuals had low perceived social support. Specifically, support from friends and family were considerably high compared to the low support reported from school in terms of international offices and organizations. This may be explained through the result of other studies that international students living in a new culture tend to seek out support and advice from fellow international students and family members than hosting university's faculty, staff, and students (Yusoff & Othman, 2011; Misra, Crist, & Burant, 2003; Poyrazli, Kavanaugh, Baker, & Al-Timimi, 2004).

### 3) Safe sex behavior of international students

The total possible score of safe sex behavior was 96 and the average score of the participants who have experienced sexual intercourse was 65.18. Compared to a previous study which used the same scale on non-international students, the level of safe sex behavior of students in this study was lower (DiIorio et al., 1992). However, a thorough search of relevant literature yielded no related study using the same scale on international students. Studies which used similar tools of sexual behavior on university students have shown fairly low scores indicating high risks of unsafe sexual behaviors such as low condom use and concurrent use of alcohol and/or drugs during sexual intercourse (Bakhoun, Bachmann, El Kharrat, & Talaat, 2014; Sun et al., 2013; Vancour, 2009; Scott-Sheldon, et al., 2010)

The general characteristics which were found to have a significant effect on safe sex behavior were gender, nationality, religion, and smoking. Female international students and students who reported themselves as non-smokers had significantly higher total safe sex behavior scores (gender  $p=.002$ , smoking  $p<.001$ ) including the subscales of interpersonal skills (gender  $p=.001$ , smoking  $p=.011$ ) and avoidance of risky behavior (gender  $p=.012$ , smoking  $p=.006$ ), than male students and smoking students. Gender differences and health risk behaviors such as smoking have been found to have a significant relationship in Ahmed

et al.'s study (2014), which is also comparable with the result of this study where majority of the smokers were male.

As unmarried Muslims are less likely to report having had premarital sex (Admczyk & Hayes, 2012), only 21.6% of the Muslim students who are mainly from Indonesia or Malaysia were found to have experienced sexual intercourse in this study. Furthermore, the Muslim students compared to the other students with no religion showed significantly lower scores in total safe sex behavior ( $p=.044$ ) and the subscale of safe condom use ( $p=.004$ ). This can be explained as studies have identified religiosity and religious affiliation to be associated with risks due to restriction on behaviors, lower levels of adherence to teachings, traditions influencing the ability of women to avoid risk, and polygamy (Shaw & El-Bassel, 2014). Nonetheless, result of this study is an inconsistent finding as most previous studies have found religious involvement and religiosity to serve as a protective factor against risk behaviors (Ghandour, Karam, & Maalouf, 2009; Luczak, Shea, Carr, Li, & Wall, 2006; Michalak, Trocki, & Bond, 2007). Therefore, additional context specific research needs to be considered in relation to sexual behavior as some studies revealed weak or no associations between religiosity and contraception use (Shaw and El-Bassel, 2014; Gold, 2010).

### **3. Factors Influencing Safe Sex Behavior**

In this study, a significant positive relationship was found between perceived social support and safe sex behavior. This is supported by other studies where low social support was related to increased number of sexual partners and inconsistent condom use (Fergus et al., 2009; Glick et al., 2014; Mazzaferro et al., 2006). The study by Mazzaferro's and her colleagues (2006) reported the likelihood of having more sexual partners and inconsistent condom use with lower levels of social support. Likewise the finding persisted and was found to be stronger with the subscales of friends support in this study. Finding no relationship between sexual health knowledge and safe sex behavior was unexpected. Only

the subscale of avoidance of risky behaviors was found to have a significant positive relationship with knowledge which indicates that students with higher knowledge in sexual health are more likely to avoid direct contact with bodily fluids, avoid alcohol consumption prior to or during sexual intercourse, and avoiding anal sex. This may be due to some underlying effects and variability in terms of sexual health knowledge items with this particular sample. Yet, the direction of the relationship between sexual health knowledge and safe sex behavior has been found to be inconsistent. While Gökengin, et al., (2003) stated in their study that male students with significantly more sexual knowledge and positive sexual attitudes did not always engage in safe sex behavior, others have mentioned that sexual health knowledge increased healthy sexual awareness and sexual attitudes which ultimately increases safe sex behavior (Somers & Gleason, 2001; Swenson et al., 2010; Goldsberry, Moore, MacMillan, & Butler, 2016). Thus, further research is needed in identifying the relationship particularly for international students considering their cultural and environmental factors.

Subsequently, multiple linear regressions were conducted to determine the influence of gender, nationality, religion, smoking, sexual health knowledge, and perceived social support on safe sex behavior. Gender was found to be a significant factor on safe sex behaviors indicating that women exhibit greater overall safe sex behavior than men. This result is also supported in the study results of Oberle et al. (2016) which examined gender-related differences in safe sex behavior. Likewise, previous studies revealed that compared to men, women tend to be more careful in choosing sex partners, place more value on delayed protected sex than immediate sexual gratification, and have fewer total sex partners (Johnson & Bruner, 2013; Lawyer, Williams, Prihodova, Rollins, & Lester, 2010; Nagurney & Bagwell, 2009; Saad, Eba, & Sejean, 2009). In addition to gender, perceived social support, particularly support from friends was a significant factor influencing safe sex behavior. Previous studies have also identified support from family and friends as a strong factor in safe sex behavior, (Lansford, Dodge, Fontaine, Bates, & Pettit, 2014; Poulin, Kiesner & Dishion, 2009; Majumdar, 2006). Glick et al. (2014) reports social support

including support from parents, peers, and school-based sex education may help decrease the risk of HIV/STIs in young adults by reducing their unsafe sexual behaviors. Although variables of nationality, religion, and smoking were found to have a significant relationship with the safe sex variable, they were not identified as a significant factor on safe sex behavior. Therefore, the findings from this study further evince the important role of socio-demographics and social support in developing a strategic sexual health programs in promoting safe sex behavior among international students.

#### **4. Significance**

This study is of significance as it is the first study conducted specifically to examine the relationship between sexual health knowledge, perceived social support, and safe sex behavior among international students from various Asian countries in Korea. Examining sex-related characteristics of the international students provides basic background knowledge and expands the current understanding of their sexual experience, sexual concerns, and requested areas of sex education. Furthermore, the identified relationships between variables and factors influencing safe sex behavior may guide future sexual health programs. The found importance and effect of social support on safe sex behavior may be used at the institutional level in developing strategic educational contents to increase healthy sexual awareness and ensure safe sexual practice of international students during their stay in Korea.

#### **5. Limitations**

Although this study was a thoughtful research investigation yielding few interesting findings, there were few limitations which needs to be addressed.

- 1) The first limitation stems from the method by which the data were gathered. Due to the refusal of cooperation from requested universities, the data collection had to be complete purely online. Therefore the web-based, self-report questionnaires may be restricted by sampling bias whereby only participants who have access to internet or have online communities were able to complete the survey reducing the equal change of participation.
- 2) Undertaking a sensitive research on sexual health, social desirability bias may have influenced the responses. Participants may have felt stressful or scared to provide honest answers due to social desirability to some of the questions in the survey which may have threaten the process of obtaining accurate responses.
- 3) Although the questionnaire in this study was distributed in English and Korean with definitions to some of the words identified to be difficult, a potential limitation of language barrier may exist.
- 4) The sample of international students in the current study was from the Asian region and cannot represent the whole international student population in Korea. A larger and more diverse sample, geographically and culturally, may yield more meaningful results.
- 5) Of 245 participants, only 75 were male in the sample of this study. In future research, a sample with a much larger number of men would allow researchers to specifically assess how gender interacts with the relationship and personality variables in contributing to safe sex behaviors.
- 6) Although the reliability of the Safe Sex Behavior Questionnaire was above the sufficient Cronbach's alpha of .7, the value for the subscales were .660, .546, and .579 for the subscale of 'condom use', 'partner communications about safe sex behavior', and 'avoidance of risky behaviors', respectively. Future study is recommended to use sexual behavior scales tailored for international student population.

## VI. Conclusion and Suggestions

### 1. Conclusion

This is a descriptive correlational study with aims to examine the relationship between sexual health knowledge, perceived social support, safe sex behavior among international students in Korea. An online survey of this study was completed by undergraduate and graduate Asian international students in the Seoul metropolitan area between April 12<sup>th</sup> and 28<sup>th</sup>, 2017.

The questionnaires in the survey were provided in both English and Korean including four instruments: the short form of Center for Epidemiologic Studies Depression Scale Revised (CESD-R-10) by Andresen et al., (1994) and the Korean translated version by Cho and Kim, (1993) and Chon et al., (2001); sexual health knowledge questionnaire developed by Ho (2009); the Multidimensional Scale of Perceived Social Support (MPSS) developed Zimet et al. (1988) and modified by Zhang (2012) and translated by Shin and Lee (1999); and Safe Sex Behavior Questionnaire (SSBQ) developed by DiIorio et al., (1992). The data collected from 245 students were analyzed using SPSS/WIN version 23.0 and the major findings are as follows:

1. Of the 245 participants, about 20% were each from China, Vietnam, Mongolia, Indonesia, and Malaysia. Most of the participants were female (69.4%), religious (61.2%), living in Seoul (78.0%), and had been in Korea between two to four years (35.9%). In terms of health behavior, 71.8% reported to moderately exercise at least once a week, 9.0% currently smoked cigarettes, and 44.1% consumed alcohol. Based on the results of the CES-D-R-10 scores, 63.7% of the participants were found to be depressed.

2. About half of the total sample had experience with sexual intercourse 119 (48.6%) and of these participants, 41.6% had an official sex education in the past and 61.6% wished to participate in a sex education program. The most sex education topic requested was “prevention and treatment of HIV/STIs” and highest sexual concern was found in “lack of accurate sexual knowledge”.
3. The average score for sexual health knowledge was  $4.41 \pm 2.34$  and  $3.57 \pm 0.58$  for perceived social support. Social support subscale scores were  $3.81 \pm 0.80$  for family support,  $3.88 \pm 0.83$  for friends support, and  $2.95 \pm 0.77$  for school support.
4. Among the participants with experience with sexual intercourse ( $n=119$ ), the average safe sex behavior score was  $65.18 \pm 8.32$  and the subscale scores  $19.33 \pm 3.98$  for condom use,  $13.45 \pm 3.02$  for partner communications, and  $32.41 \pm 4.31$  for avoidance of risky behaviors.
5. A strong positive correlation was found between perceived social support and safe sex behavior ( $r=.234$ ,  $p=.010$ ), and also between perceived friend support and safe sex behavior ( $r=.326$ ,  $p<.001$ ). However, no significant relationship was found between sexual health knowledge and safe sex behavior.
6. Factors influencing safe sex behavior were identified as gender ( $\beta=.221$ ,  $p=.019$ ) and perceived social support ( $\beta=2.197$ ,  $p=.032$ ).

Based on these findings, gender and perceived social support significantly influences safe sex behavior among international students. They were also found to have low sexual health knowledge, low perceived school support, high concerns in lack of accurate sexual knowledge, and high demand for sex education. Hence, a tailored sexual health interventions are needed focusing on sexual health education to increase healthy sexual awareness to promote safe sex behavior. It is also important to incorporate support of friends and peers to ensure effectiveness of the interventions for international students in Korea.

## 2. Suggestions

As the number of international students continues to rise, health management during their stay in Korea is an important issue. Hence this study was conducted to identify factors to promote safe sex behavior and improve sexual health of international students. Based on the result of this study, following suggestions are recommended:

- 1) International students should be given priority in providing sexual health education. The deficiency in sexual health knowledge, a high demand for sex education on prevention and treatment of STIs, and sexual concerns in lack of accurate sexual knowledge reported in the present study highlights the need for education on sexual health, STIs, and contraception.
- 2) University administrators, educators, and support-service professional should consider the present finding of low perceive school support among the international students.
- 3) Effective intervention and prevention programs are needed to increase awareness of safe sex behaviors among university students including other risky health behaviors.
- 4) Gender and social support was the most influential factor on safe sex behavior in international students in Korea. A specific education and programs need to be developed to promote male student's safe sex behavior and use strategies of incorporating involvement of friends and peers.

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## Appendix 1. IRB Approval

### 결과통지서

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 2017년 4월 5일에 접수된 재심의 에 대하여 연세대학교 간호대학 기관생명윤리위원회  
 에서 심의하여 다음과 같이 결정하였음을 통보합니다.

과제번호	간대 IRB 2017-0019		관리번호	간대 IRB 2017-0019-1		
연구과제명	국내 외국인 유학생의 사회적지지, 성 건강 지식, 안전한 성 행위와의 관계					
연구책임자	성명	문설주	소속	연세대학교 간호대학원	직위	석사생
심의대상	<input type="checkbox"/> 연구계획서(신규) <input checked="" type="checkbox"/> 연구계획서(시정/보완) <input type="checkbox"/> 변경심의 <input type="checkbox"/> 지속심의 <input type="checkbox"/> 종료 및 결과보고 <input type="checkbox"/> 기타심의					
심의일자	2017년 4월 10일	심의장소		연세대학교 간호대학		
심의위원회	연세대학교 간호대학 기관생명윤리위원회					
심의종류	<input type="checkbox"/> 정규심의 <input checked="" type="checkbox"/> 신속심의					
심의결과	<input checked="" type="checkbox"/> 승인 <input type="checkbox"/> 수정후승인 <input type="checkbox"/> 수정 후 신속심의 <input type="checkbox"/> 보완 <input type="checkbox"/> 반려 <input type="checkbox"/> 중지/보류					
승인일자	2017년 4월 11일	승인 유효기간	2017.4.11.~2018.3.31			
승인번호	간대 IRB 2017-0019-1					
심의된 서류	<input checked="" type="checkbox"/> 심의결과에 대한 답변서 <input checked="" type="checkbox"/> 수정된 연구계획서(설문지, 설명문, 동의서 등 기타 서류 포함)					
심의의견	심의사항을 잘 반영하였습니다.					

※ 모든 연구자들은 아래의 사항을 준수하여야 합니다.

- 1) 승인된 계획[서]에 따라 연구를 수행하여야 합니다.
- 2) 위원회의 승인을 받은 동의서를 사용하여야 합니다.
- 3) 모국어가 한국어가 아닌 연구대상자들에게는 승인된 동의서를 연구대상자의 모국어로 인증된 번역본을 사용할 것이며 이러한 동의서 번역본은 반드시 위원회의 승인을 받아야 합니다.
- 4) 연구진행에 있어 연구대상자를 보호하기 위해 불가피한 경우를 제외하고 연구의 어떠한 변경이든 위원회의 사전 승인을 받고 수행하여야 하며 연구대상자들의 보호를 위해 취해진 어떠한 승급상황에서의 변경도 즉각 위원회에 보고하여야 합니다.
- 5) 위원회에서 승인된 계획서에 따라 등록된 어떠한 연구대상자라도 사망, 입원, 심각한 질병에 대하여는 위원회에 서면으로 보고하여야 합니다.
- 6) 연구 또는 연구대상자의 안전에 대해 유해한 영향을 미칠 수 있는 어떠한 새로운 정보도 즉각적

본 통지서에 기재된 사항은 보건복지부 지정 연세대학교 간호대학 기관생명윤리위원회에 기록된 내용과 일치함을 증명합니다.  
 본 연세대학교 간호대학 기관생명윤리위원회는 생명윤리 및 안전에 관한 법률과 관련 법규를 준수합니다.  
 본 연구와 이해상충(Conflict of Interest)이 있는 위원이 있을 경우 연구의 심의에서 배제합니다.  
 본 통지서의 사본은 연세대학교 간호대학 기관생명윤리위원회에서 보관합니다.

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- 으로 위원회에 보고하여야 합니다.
- 7) 위원회의 요구가 있을 때에는 연구의 진행과 관련된 보고를 위원회에 제출하여야 합니다.
  - 8) 위원회가 심의한 과제에 대해 조사 및 감독 차원에서 현장점검을 실시할 시 원활한 점검절차 진행을 위해 연구자는 연구진행과 관련된 서류를 준비하고 협조하여야 합니다.
  - 9) 연구대상자 모집광고를 사용할 시에는 사용 전에 위원회의 승인을 받아야 합니다.
  - 10) 동의는 강제 혹은 부당한 영향이 없는 상태에서 충분한 설명에 근거하여 수행되어야 하며, 잠재적인 연구대상자에게 연구에 참여여부를 고려할 수 있도록 충분히 기회를 제공하여야 합니다.
  - 11) 연구자와 그밖에 이해당사자는 연구계획서 승인을 광고나 홍보, 상업적 목적으로 사용할 수 없습니다.
  - 12) 위원회의 심의결과 시정요구에 대해 모두 이행 및 충족될 경우에만 연구를 진행할 수 있습니다.
  - 13) 위원회가 시정 및 보완을 요구한 경우 시정보완 계획을 1개월 이내에 본 위원회에 제출하여야 합니다. 심의일로부터 1년 이내에 시정보완 계획을 제출하지 않은 경우 심의가 무효화될 수 있습니다.
  - 14) 시정계획은 신속심의로 진행되고 보완계획은 정규심의로 진행되며, 승인일과 승인 유효기간은 심의 결과에 따라 결정됩니다.
  - 15) 승인기간 이후에도 연구를 지속하기 위해서는 적어도 승인 만료 2개월 전까지 연구의 진행상황에 대하여 중간보고를 하여야 합니다.
  - 16) 연구 종료 후 3개월 이내에 종료보고를 하여야 합니다.
  - 17) 연구와 관련된 기록은 연구가 종료된 시점을 기준으로 최소 3년간 보관하여야 합니다.

2017 년 4 월 11 일

연세대학교 간호대학 기관생명윤리위원장



본 통지서에 기재된 사항은 보건복지부 지정 연세대학교 간호대학 기관생명윤리위원회에 기록된 내용과 일치함을 증명합니다.  
 본 연세대학교 간호대학 기관생명윤리위원회는 생명윤리 및 안전에 관한 법률과 관련 법규를 준수합니다.  
 본 연구와 이해상충(Conflict of Interest)이 있는 위원이 있을 경우 연구의 심의에서 배제합니다.  
 본 통지서의 사본은 연세대학교 간호대학 기관생명윤리위원회에서 보관합니다.

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## Appendix 2. Informed Consent

### Study Description/연구대상자 설명문 (Online)

Hello! 안녕하세요! ^^

I'm a graduate student of Yonsei University College of Nursing (YUCN), conducting a research as a master's thesis on 'The relationship between social support, sexual health knowledge, and safe sex behavior in international students in Korea'. The result of this study is hoped to be used as a basic data to better understand the sexual health behavior of international students for future health education programs. Please read the research description below about the study to proceed.

저는 연세대학교 대학원 간호학과 학생으로, 석사학위논문을 위해 '국내 외국인 유학생의 사회적지지, 성 건강 지식, 안전한 성 행위와의 관계'를 파악하는 연구를 진행하고자 합니다. 연구의 결과는 국내 유학생의 건강한 성 행위 이해를 위한 기초자료로 추 후 건강 교육 프로그램에 도움이 되고자 합니다. 아래 연구자 설명문과 동의서를 읽으시고 진행해 주시면 감사 드리겠습니다.

#### 1. Research Title/ 연구 제목

The relationship between social support, sexual health knowledge, and safe sex behavior in international student in Korea.

국내 외국인 유학생의 사회적지지, 성 건강 지식, 안전한 성 행위와의 관계

#### 2. Purpose of the study / 연구목적

The purpose of this survey is to gain insight on the relationships between background characteristics (socio-demographics, health-related activities, depression), social support, sexual health knowledge, and safe sex behavior of international students in Korea.

본 설문지는 국내 거주하는 외국인 유학생들의 배경적 특성 (일반적 특성, 건강관련 활동, 우울), 사회적지지, 성건강 지식, 건강한 성행위와의 관계를 알고자 합니다.

#### 3. Subject number and study duration/ 연구 대상자 수 및 연구 기간

This study will be conducted upon day of approval from Institutional Review Board to March 31st, 2018. A total of 260 participants may participate. You may participate if you are an international student:

본 연구는 임상연구심의위원회로부터 승인 받은 이후 2018년도 3월 1일까지 진행될 예정이며, 아래에 해당하는 외국인 유학생 260명이 참여 할 수 있습니다.

- between the age of 19 and 35  
만 19세 ~ 35세
- from China, Vietnam, Mongolia, Indonesia, and Malaysia  
중국, 베트남, 몽골, 인도네시아, 말레이시아 국적
- enrolled in an undergraduate or graduate education program Seoul and metropolitan area/ 수도권 학교에서 학위 과정, 석사학위 과정, 또는 박사학위 과정
- have been living in Korea for 6 months or more  
한국에 6개월 이상 거주
- able to read and understand Korean or English  
영어 또는 한국어(읽기) 가능

If you have a history or presence of psychiatric disease or taking related treatments, you may not be eligible to participate in this study. 만약 정신과적 병력이 있거나 현재 정신과 치료관련 약물을 복용하고 있는 분은 본 연구에 조사대상이 아니므로 응하지 않으셔도 됩니다.

To prevent the oversampling of this study, please understand that you may not be eligible to



participate in this study after the survey has been completed by the targeted number of participants. 과도한 수의 대상자 참여를 막기 위해 지정된 수의 설문지가 완성되면 연구에 참여 할 수 없다는 점 이해해주시기 바랍니다.

**4. Procedures/ 연구 방법**

You will be asked to complete an online survey that should take approximately 15~20 minutes to fill out after giving consent to participate. Please read the description of this survey, privacy and confidentiality, risks and benefits, and etc. These questions will examine certain characteristics such as general background, health-related activities, depression, social support, sexual health knowledge, and safe sex behavior. **You may find some questions sensitive, however, please answer each question/statement as honestly as possible.**

귀하께서 연구 참여를 결정하시게 되면 동의서에 서명하신 후 약 15~20분 정도의 설문 조사에 참여하시게 되며 연구의 소개, 설문에 대한 내용과 비밀 보장 등에 대한 안내를 읽으신 후 귀하의 배경적 특성 (일반적특성, 건강관련 활동, 우울), 사회적지지, 성건강 지식, 건강한 성 행위에 대한 총 74문항을 온라인 설문지를 통해 작성하게 됩니다. 설문지 응답 시 문항이 다소 예민하다고 생각될 수 있습니다. 최대한 솔직하게 응답하여 주시기 바라며 연구결과는 귀한 자료로 활용될 것입니다.

**5. Expected Outcomes/ 연구 기대효과**

There is no direct benefit from your participation in this study. But your participation will help the investigators better understand the sexual health risks that may arise due to certain factors single international students engage in, and may provide basic data to develop health programs for international students.

연구의 참여로 귀하께 직접적인 이익은 발생하지 않습니다. 하지만 귀하의 연구 참여는 국내 유학생들의 건강한 성생활의 향상을 위한 건강프로그램에 기초자료로 활용 될 수 있을 것입니다.

**6. Risks of Participation/연구 위험성**

As a survey study, there are no anticipated risks associated with participation.

본 연구는 설문조사연구이므로 연구와 직접적으로 관련된 위험은 미미합니다.

**7. Privacy and confidentiality/ 연구대상자 보호**

All questions will be completely anonymous online and information collected will be identified by numbers which will only be accessed by the primary researcher with an appropriate identification name and password. Participants may offer their personal contact number to receive a participation gift certificate which will be destroyed once the certificate is sent. The study records will be used for educational and publication purposes but all data will be kept confidential. In addition, study inspector or IRB board may have access to data without invading your privacy and confidentiality. By the federal research policy, data will be maintained and safeguarded the primary researcher for a minimum of three years after completion of the study. After that time, the participant's documentation will be destroyed.

귀하께서 본 온라인 연구에 참여하여 제공하시는 자료는 무기명으로 귀하의 기록은 연구책임자만이 고유 ID와 비밀번호로 접근이 가능하게 보관되어 비밀이 보장될 것입니다. 답례품 증정을 위하여 귀하는 개인정보 (전화번호)를 입력 할 수 있으며 이 정보는 답례품 증정하는 목적으로만 쓰일 것이며 답례품 제공 직후 파기될 것입니다. 연구의 결과가 보고서로 작성되거나 출판 또는 발표되는 경우에도 귀하의 신원을 파악할 수 있는 기록은 모두 비밀 상태로 유지될 것입니다. 또한 본 연구를 모니터/점검하는 자, 연구심의위원회(IRB)는 귀하의 비밀 보장을 침해하지 않고 관련 규정이 정하는 범위 안에서 연구의



자료를 열람할 수 있습니다. 지침상 연구관련 자료는 연구 종료 후 3년간 보관 후 폐기됩니다.

**8. Voluntary participation and right to withdraw / 자유로운 참여 동의와 동의 철회 가능성**

For the accuracy and scientific process of this study, please read the study descriptions and questionnaires carefully. If you have any questions or concerns regarding some of the questions in the survey, please use the researcher's contact below. Participation to this survey is voluntary and you may withdraw your consent and stop at any time. Incomplete surveys will not be used in this survey and your decision to withdraw will involve no penalty.

귀하의 소중한 참여가 보다 정확하고 과학적인 연구에 기여될 수 있도록 설명문과 설문지 잘 읽고 답변해 주시길 바랍니다. 만약 설문지 작성 과정에 질문이나 문제가 있다면 아래의 연락처를 이용해 주시길 바랍니다. 또한 설문지 작성은 자발적으로 이루어지며 언제든지 중지할 수 있으며 미완성된 설문 자료는 사용되지 않을 것이며, 참여 중지 시 불이익은 없습니다.

**9. Participation Reward/ 참여 비용 및 보상**

Your participation in this online survey is free and upon full completion of this survey, a 3,000~4,000 won worth gift certificate will be sent via the contact number you've provided.

본 연구 참여에 따른 비용은 발생하지 않으며 귀하께서 본 연구에 참여하시는 것에 대하여 개인정보(전화번호)를 제공할 경우 소정 (4~5천원 상당)의 답례품을 드립니다.

**10. Researcher Contact Information/ 연구책임자 연락처**

For any question or concerns related to this study, please contact the researcher below.

본 연구에 관하여 궁금한 점이 있거나 연구와 관련이 있는 문제가 발생한 경우에는 아래의 연구자에게 연락하여 주십시오.

- Name/연구책임자 성명: Seol Ju Moon/문설주 (MSN student, YUCN / 연세대학교 대학원 간호학과 석사과정)
- Address/연구책임자 주소: YUCN, Seodaemun-gu, Yonsei-ro 50, #402, Seoul/ 서울특별시 서대문구 연세로 50 연세의료원 간호대학 511호
- Phone/전화번호: 010-4602-0284 (24hr)
- E-mail : sjmoon0722@gmail.com
- Advisor/지도교수: Tae Wha Lee/이태화, PhD. (YUCN /연세대학교 간호대학)

**11. IRB Contact Information/ 기관생명윤리위원회 연락처**

This study is approved by the Institutional Review Board, Yonsei University College of Nursing.

For any question, concerns, or complaints regarding this study, please use the contact below:

본 연구는 연세대학교 간호대학 기관생명윤리위원회에서 검토 후 승인한 연구입니다. 연구대상자의 권리에 대한 의문사항이 있거나 연구와 관련한 불만사항이 있는 경우 아래의 사무실로 연락해 주시기 바랍니다.

- Institutional Review Board, Yonsei University College of Nursing/ 연세대학교 간호대학 기관생명윤리위원회 : 02-2227-7909 / nursingirb@yuhs.ac



**Q1. Consent to Participate**

I have read this form and decided to participate in the survey described above by clicking the “I agree” button below. The study purpose, procedures, expected outcomes, risks, privacy and confidentiality, and etc have been explained to my satisfaction and I understand that I can withdraw at any time.

위에 설명된 연구의 목적, 방법, 기대효과, 위험성, 기밀성 및 익명성 등에 대해 충분히 읽고 이해하였습니다. 아래 ‘동의’를 클릭함으로써 연구 참여에 동의하며 언제든지 중지 할 수 있음을 알고 있습니다.

- I agree to participate 참여에 동의합니다
- I do not agree to participate 참여에 동의하지 않습니다

NEXT



## Appendix 3. Online Survey Questionnaires

### The relationship between social support, sexual health knowledge, and safe sex behavior among international students in Korea

#### SCREENING QUESTIONS

1. What year were you born? 귀하의 출생연도는? \_\_\_\_\_
2. In what city/are do you currently live in? 귀하가 현재 살고 있는 도시/지역은?
  - Seoul 서울
  - Incheon 인천
  - Gyeonggi 경기
  - Other 기타
3. What is your nationality? 귀하의 국적은?
  - China 중국
  - Vietnam 베트남
  - Mongolia 몽골
  - Indonesia 인도네시아
  - Malaysia 말레이시아
  - Other 기타
4. How long have you been living in Korea? 귀하가 한국에서 지낸 기간은?
  - Less than 6 months 6개월 미만
  - 6~12 months 6~12 개월
  - 1~2y years 1~2 년
  - 2~4 years 2~4 년
  - 4~6 year 4~6 년
  - More than 6 years 6년 이상
5. What degree program are you currently enrolled in? 귀하의 학위과정은?
  - Bachelor's degree program (Undergraduate) 학부 과정 (대학)
  - Master's degree program (Graduate) 석사 학위 과정 (대학원)
  - Doctoral degree program (graduate) 박사 학위 과정 (대학원)
  - Others (please specify) 기타 (구체적으로 설명하십시오) : \_\_\_\_\_

**DEPRESSION**

Below is the list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the past week.

아래에 적혀 있는 문항을 잘 읽으신 후, 지난 1주 동안 당신이 느끼고 행동한 것을 가장 잘 나타낸다고 생각되는 부분에 표시하시기 바랍니다.

	Rarely or Never (less than 1 day) 극히 드물게 (1일 이하)	Some of the time (1-2 days) 가끔 (1-2일)	Occasionally or a moderate amount of time (3-4 days) 자주 (3-4일)	Always (5-7 days) 거의 대부분 (5-7일)
1. I was bothered by things that usually don't bother me. 평소에 아무렇지도 않던 일들이 귀찮게 느껴졌다.				
2. I had trouble keeping my mind on what I was doing. 하고 있는 일에 정신을 집중하기가 어려웠다.				
3. I felt depressed. 우울함을 느꼈다.				
4. I felt that everything I did was an effort. 모든 일들이 힘들게 느껴졌다.				
5. I felt hopeful about the future. 미래에 대하여 희망적으로 느꼈다.				
6. I felt fearful. 두려움을 느꼈다.				
7. My sleep was restless. 잠을 설쳤다.				
8. I was happy. 행복했다.				
9. I felt lonely. 외로움을 느꼈다.				
10. I could not "get going". 도무지 뭘 해 나갈 엄두가 나지 않았다.				



**SOCIAL SUPPORT**

Below is a list of statements on your social support from family, friend, and school (international student services, international student organizations). Read each statement carefully and indicate how you feel about each statement. 다음은 가족, 친구, 학교 (유학생 센터, 유학생회) 사람들과의 관계에 대한 내용입니다. 각 문항을 잘 읽어보시고 귀하가 평소 느낀 부분에 표시하여 주시기 바랍니다.

	Strongly Disagree 매우 그렇지 않다	Disagree 그렇지 않다	Neutral 보통이다	Agree 그렇다	Strongly Agree 매우 그렇다
1. My family really tries to help me. 나의 가족들은 나에게 도움을 주고자 진정으로 노력한다.					
2. I can get the emotional help and support I need from my family. 나는 내가 필요로 하는 정서적 도움과 지지를 가족들로부터 얻는다.					
3. I can talk about my problems with my family. 나는 나의 문제에 대하여 가족들과 이야기를 나눌 수 있다.					
4. My family is willing to help me make decisions. 나의 가족들은 내가 어떤 일을 결정할 때 기꺼이 도움을 주려고 한다.					
5. I have friends with whom I can share my joys and sorrows. 나에게는 나의 슬픔과 기쁨을 함께 나눌 친구들이 있다.					
6. My friends really try to help me. 나의 친구들은 나에게 도움을 주고자 진정으로 노력한다.					
7. I can talk about my problems with my friends. 나는 나의 문제에 대하여 친구들과 이야기를 나눌 수 있다.					
8. I can count on my friends when things go wrong. 어떤 일들이 잘못되었을 때 나는 나의 친구들에게 의지할 수 있다.					
9. The International Students Center/Office on campus is available when I need it. 학교 국제처는 내가 필요할 때 이용할 수 있다.					
10. I can talk about my problems with members in international students' organization. 나는 나의 문제에 대하여 유학생회 멤버들과 이야기를 나눌 수 있다.					
11. I trust university would offer me help when I need it. 나는 대학이 내가 필요할 때 도움을 줄 것이라 믿는다.					



**SEXUAL HEALTH KNOWLEDGE**

Below is a list of statements on sexual health. Please indicate whether the statement is true or false. You may click 'I don't know' if you're not sure of the statement. STI: Sexually Transmitted Infection. 다음은 성건강 지식에 관한 질문입니다. 귀하가 평소 생각하는 대로 해당하는 부분에 표시하여 주시기 바랍니다.

	True 맞다	False 아니다	I don't know 모르겠다
1. STIs are not spread through kissing. 키스를 통해서도 성병이 전염되지 않는다.			
2. A person can get an STI with one sexual intercourse. 한 번의 성교만으로도 성병에 감염될 수 있다.			
3. Gonorrhea can be treated with oral antibiotics or antibiotic injections. 임질은 항생제를 먹거나 주사를 맞으면 완치될 수 있다.			
4. Obesity can be a cause of erectile dysfunction. 비만증은 발기장애의 원인이 될 수 있다.			
5. Female orgasmic dysfunction cannot be treated/ cured. 여성의 오르가슴 장애는 치료되지 않는다.			
6. An STI can relapse (occur again) with sexual intercourse even after treatment. 성병은 치료 후에도 성관계를 통해 재발될 수 있다.			
7. A person develops immunity after being treated for an STI. 성병을 완치한 후에는 그 성병에 대한 면역성이 생긴다.			
8. A person can avoid getting an STI by taking an antibiotic before or after an intercourse. 성관계 전이나 후에 항생제를 먹으면 성병에 걸리지 않는다.			
9. If syphilis goes untreated, it can cause brain damage. 매독이 완치되지 않으면 뇌 손상의 원인이 된다.			
10. A person can avoid getting an STI by washing the genital with soap. 성관계 후 성기를 비누로 깨끗이 씻으면 성병에 걸리지 않는다.			



**SEX EDUCATION**

1. Have you had any of the following concerns regarding your sexual activities? (Choose all that apply). 자신의 성생활이나 성행위에 대해 아래와 같은 걱정이 있습니까? (해당하는 것을 모두 고르시오).

- Lack of accurate sexual knowledge 정확한 성 지식 부족
- Excessive interest in sex and sexuality 성에 대한 지나친 관심
- Feeling guilty about sexual interest 성적 호기심에 대한 죄책감
- Low or lack of sexual interest 성에 대한 낮은 관심 및 부족
- Pregnancy and delivery process 임신과 출산 과정
- Healthy relationships and methods of birth control 건강한 성관계 및 피임방법
- Sexuality confusion 성적체성 혼란
- Conflicts due to sexual victimization or harm 성적 희생 또는 피해로 인한 갈등
- Chastity problem 순결의 문제
- Sexual drive and impulses 성욕과 충동
- Masturbation (Stimulate one's own genitals for sexual pleasure) 자위 행위 (스스로 성기나 가슴 등을 만지는 것)
- Not Applicable 해당사항 없음
- Others (please specify) 기타 (구체적으로 설명하십시오) : \_\_\_\_\_

2. Where do you get information about sex and sexual health? 성과 성건강에 대한 정보는 어디서 얻으십니까?

- Social Network Service (Facebook, twitter, etc) 소셜미디어 (페이스북, 트위터 등)
- Search engines (Google, etc) 검색창 (구글, 네이버 등)
- Magazines 잡지
- Friends 친구
- Parents 부모님
- Partner 상대방
- Sexual health clinic 성 건강 관련 클리닉
- Others (please specify) 기타 (구체적으로 설명하십시오) : \_\_\_\_\_
- Not Applicable 해당사항 없음

3. Have you ever participated in a formal sex education program (Select all that apply).

공식적인 성 교육 프로그램에 참여해 본 적이 있습니까? (해당하는 것을 모두 고르시오).

- Yes, in Korea 네, 한국에서 참여했습니다
- Yes, in my country. 네, 나의 나라에서 참여했습니다
- No. 아니요, 참여한 적이 없습니다.



4. If you had received sex education before, how would you rate it? 만약 과거에 성교육을 받은 경험이 있다면, 그 교육에 대해 어떻게 평가하십니까?

- Very poor 매우 부족했다
- Poor 부족했다
- Average 그저 그랬다
- Good 괜찮은 편이었다
- Very good 매우 괜찮은 편이었다
- Excellent 훌륭했다
- Not application 해당 없음.

5. Would you participate in sex and sexual health education program if it was held in your school or near where you live? 만약 당신의 집이나 학교 근처에서 성교육 프로그램이 있다면, 참여하시겠습니까?

- Yes 네
- No 아니오

6. Which of the topic below do you think education is most needed for international students in Korea? (Select all that apply). 다음 중 한국에 사는 외국인 학생들에게 매우 필요한 주제라고 생각하는 것은 무엇입니까? (해당하는 것을 모두 선택하십시오)

- Physical and psychological gender differences 육체와 정신적인 성별 차이
- Gender roles 성역할
- Meaning of love 사랑의 의미
- Health gender relationships 건강한성관계
- Reproductive health knowledge 생식보건에 대한 지식
- Marriage, divorce, and cohabiting 결혼, 이혼과 동거
- Pregnancy and deliver process 임신 과 출산 과정
- Methods of birth control 피임방법
- Screening for reproductive disorder 생식질환 검사
- Prevention and treatment of STIs/HIV 성접촉감염/HIV 에 대한 예방과 치료
- Sexual abuse and avoidance of sexual harassment 성적학대 및 성희롱예방
- Masturbation and sexual techniques 자위 와 섹스테크닉
- Sexual drive and impulses 성욕과 충동
- Others (please specify) 기타 (구체적으로 설명하십시오) : \_\_\_\_\_

단어의 뜻:

- 육체: 몸
- 자위: 스스로 성기나 가슴 등을 만지는 것
- 피임: 원하지 않는 임신을 예방하기 위한 여러 방법
- 임신: 여자가 몸에 아이를 가지는 것
- 출산: 아이가 태어나는 것
- 성질환: 성적으로 괴롭히는 것
- 성희롱: 성적으로 수치심(웃웃하지 못할)을 주는 말이나 행동
- 성욕: 성적 행위에 대략 욕망
- 충동: 순간적으로 어떤 행동을 하고 싶은 욕구



**Socio-demographics**

**1. What is your gender? 귀하의 성별은?**

- Male 남자
- Female 여자

**2. Which of the following best describes you? 귀하의 성적지향성과 가장 가까운 것은?**

- Heterosexual (Straight) 이성애자
- Homosexual (gay/lesbian) 동성애자
- Bisexual 양성애자
- Not sure 잘 모름
- Decline to answer 응답 거부

**3. What is your religion? 귀하의 종교는?**

- Christianity 기독교
- Catholicism 카톨릭
- Buddhism 불교
- Hinduism 힌두교
- Islam 이슬람교
- No religion 무교
- Others (please specify) 기타 (구체적으로 설명하십시오): \_\_\_\_\_

**4. What is your current marital status? 현재 결혼/연애 상태는?**

- Single/싱글
- Unmarried, in a relationship and living together 미혼이며 사귀는 사람과 같이 살고 있다
- Unmarried, in a relationship but not living together 미혼이며 사귀고 사람과 같이 살고 있지 않다
- Married and living together 기혼이며, 같이 살고 있다
- Married but not living together 기혼이며, 같이 살고 있지 않다.

**5. How often do you exercise at moderate intensity? 보통강도로 얼마나 자주 운동 합니까?**

(Moderate intensity activities: brisk walking, bicycling at 8~15kph, yoga, golf, etc. 보통 강도 운동: 활발한 걷기, 8~15kph 자전거 타기, 요가, 골프 등)

- I don't exercise 운동을 하지 않는다
- Once per week 1회/주
- 3 times per week 3회/주
- 5 times per week 5회/주



- Everyday 매일한다
- 6. Do you currently smoke cigarettes? 귀하는 흡연을 하십니까?
  - Yes, I do 흡연 한다 담배를 피운다
  - No, I don't 흡연하지 않는다 담배를 피우지 않는다
- 7. Do you drink alcohol? 귀하는 술을 마십니까?
  - Yes, I do 술을 마신다
  - No, I don't 술을 마시지 않는다
- 8. Have you ever had sexual intercourse with someone? 귀하는 성교(섹스) 경험이 있습니까?
  - Yes, with opposite sex 예, 이성친구와의 경험이 있다
  - Yes, with same-sex 예, 동성친구와의 경험이 있다
  - Yes, with both sexes 예, 이성과 동성친구와의 경험 둘 다 있다.
  - No 성교 경험이 없다.
- 9. If yes to the previous question, where do you usually have your sexual intercourse? If no, click 'not applicable'. 위 질문에 '예'라고 답하셨다면 보통 성교 (섹스)를 하는 장소는? 성교 경험이 없으면 '해당없음'을 선택하세요
  - My place or partner's place 본인/파트너 집
  - Friend's place 친구의 집
  - Motel/hotel 모텔/호텔
  - Adult entertainment establishments (norebang, DVD room, bar) 유흥업소 (노래방, DVD 방, 술집)
  - Public bathroom 공공화장실
  - Not applicable 해당 없음
  - Other (please specify) 기타 (구체적으로 설명 하시오)

(\*If 'no' to question 23, questions on safe sex behavior are not asked.)



**SAFE SEX BEHAVIOR**

Below is a list of sexual practices. Please read each statement and respond by indicating your degree of use of these practices. 다음은 성 행위와 관련된 내용입니다. 귀하가 평소 행하시는 대로 해당하는 부분에 표시하여 주시기 바랍니다.

	Never 전혀 그 행지 않 다	Someti mes 가끔 그 렇다	Most of the time 대부분 그 렇다	Always 항상 그렇다
1. I insist on condom use when I have sexual intercourse. 나는 성교(섹스)시 콘돔 사용을 강하게 주장 한다.				
2. I use cocaine or other drugs prior to or during sexual intercourse. 나는 성교(섹스) 이전이나 도중에 코카인이나 다른 약물을 사용한다.				
3. I stop foreplay long enough to put on a condom. 나는 콘돔을 씌우기 위해 전희를 그 전에 충분히 멈춘다.				
4. I ask potential sexual partners about their sexual histories. 나는 성교(섹스)가능성이 있는 상대에게 이전 성경험에 대해 물어본다.				
5. I avoid direct contact with my sexual partner's semen or vaginal secretions. 나는 직접적으로 성교(섹스) 상대의 정액이나 질 분비물이 닿는 것을 피한다.				
6. I ask my potential sexual partners about a history of bisexual/homosexual practices. 나는 성교(섹스) 가능성이 있는 상대에게 과거의 동성/양성 성경험에 대해 물어본다.				
7. I engage in sexual intercourse on a first date. 나는 첫 데이트에 성교(섹스)를 한다.				
8. I abstain from sexual intercourse when I do not know my partner's sexual history. 나는 성교(섹스) 상대의 과거 성생활에 대해 모르면 성교(섹스)를 피한다.				
9. I avoid sexual intercourse when I have sores or irritations in my genital area. 나의 생식기에 통증이나 자극이 있는 경우 성교(섹스)를 피한다.				
10. If I know an encounter may lead to sexual intercourse, I carry a condom with me. 만약 만남이 성교(섹스)로 이어질 수 있다는 것을 안다면, 나는 콘돔을 가지고 다닌다.				
11. I insist on examining my sexual partner for sores, cuts, or abrasions in the genital area. 생식기 부위의 상처, 상처 또는 찰과상에 대해 성 파트너				



너를 검사해야 한다고 주장한다.				
12. If I disagree with information that my partner presents on safer sex practices, I state my point of view. 상대방이 제시한 안전한 성교(섹스) 정보에 동의하지 않는다면, 나는 나의 주장을 이야기한다.				
13. I engage in oral sex without using protective barriers such as a condom or rubber condom. 나는 콘돔이나, 고무 콘돔과 같은 보호 기구를 사용하지 않고 구강성교(오럴섹스)를 한다.				
14. If swept away in the passion of the moment, I have sexual intercourse without using a condom. 순간적인 기분에 휩쓸리면, 콘돔을 사용하지 않고 성교(섹스)를 한다.				
15. I engage in anal intercourse. 나는 항문성교(섹스)를 한다.				
16. I ask my potential sexual partners about a history of IV drug use. 나는 잠재적인 성교(섹스) 상대에게 혈관 주사 약물 사용 경험을 물어본다.				
17. If I know an encounter may lead to sexual intercourse, I have a mental plan to practice safer sex. 만약 만남이 성교(섹스)로 이어질 것을 안다면, 안전한 성교(섹스)에 대한 계획을 머릿속에 가지고 있다.				
18. If my partner insists on sexual intercourse without a condom, I refuse to have sexual intercourse. 만약 성교(섹스) 상대가 콘돔 없이 성교(섹스)하기를 원하면, 나는 거절한다.				
19. I avoid direct contact with my sexual partner's blood. 나는 나의 성교(섹스) 상대의 피가 직접적으로 닿는 것을 피한다.				
20. It is difficult for me to discuss sexual issues with my sexual partners. 성교(섹스) 상대와 성과 관련하여 얘기하는 것이 어렵다.				
21. I initiate the topic of safer sex with my potential sexual partner. 나는 잠재적인 성교(섹스) 상대에게 안전한 섹스에 대한 이야기를 먼저 꺼낸다.				
22. I have sexual intercourse with someone who I know is a bisexual or gay person. 나는 양성/동성애자인 사람과 성교(섹스)를 한다.				
23. I engage in anal intercourse without using a condom. 나는 콘돔 사용없이 항문성교(섹스)를 한다.				
24. I drink alcoholic beverages prior to or during sexual intercourse. 나는 성교(섹스)를 하기전이나 중간에 술을 마신다.				

단어의 뜻:  
 foreplay: a sexual activity that precedes intercourse.  
 전회: 성교(섹스)하기 전에 하는 신체적 접촉  
 경액: 남자가 생식기에서 분비하는 하얀 액체  
 동성애: 같은 성을 좋아하는 것  
 양성: 같은 성 다른 성 모두 좋아하는 것  
 찰과상: 긁힌 상처



**25. GIFT CERTIFICATE FOR PARTICIPATION**

Thank you for your participation! You may enter your phone number to receive a drink gift certificate.  
(Your information will be destroyed once gifts are distributed)

본 연구에 참여해주셔서 대단히 감사합니다. 참여에 대한 답례로 음료권을 받으시고 싶으신 분은 아래 전화번호를 남겨 주시기 바랍니다. (입력하신 개인정보는 음료권 제공 직후 파기될 것입니다)

If you need help with depression or any other psychological distress, please use the counseling services below. 혹시 우울 및 다른 정신적인 어려움으로 상담이 필요하신 분은 아래 연락처를 이용해 주시기 바랍니다.

**Free Psychology Consultation at Seoul Global Center/무료 심리상담, 서울글로벌센터**

Operating hours/운영시간: 9:00-18:00 (Mon~Fri), professional counseling available in English and Korea/전문가 영어 & 한국어 상담 가능

Phone number/전화번호: 02-2075-4180

Website/링크:

[http://global.seoul.go.kr/user.do?menu\\_id=0104000000&site\\_code=0101&article\\_seq=3676&mode=view](http://global.seoul.go.kr/user.do?menu_id=0104000000&site_code=0101&article_seq=3676&mode=view)

**Suicide Prevention & Mental Health Counseling Center/ 자살예방 및 정신건강 상담센터**

Operating hours/운영시간: 24HRS, counseling available in Korean/한국어 상담 가능

Phone number/전화번호: 02-1577-0199

**Ministry of Health & Welfare Call Center/보건복지콜센터**

Operating hours/운영시간: 24HRS, counseling available in Korean/ 한국어 상담 가능

Phone number/전화번호: 02-129

If you need help with sexual health problems or sexual violence or have any related questions, please use the following services. 혹시 성 건강 및 성폭행 등과 관련된 도움이 필요한 경우 아래 연락처를 이용해 주시기 바랍니다.

**Danuri Counseling Center for Women, Korean Institute for Healthy Family/다누리콜 이주여성상담센터, 한국건강가정진흥원**

Operator call hours/운영시간: 24Hrs, counseling available in 13 languages/13개 외국어로 상담 가능

Phone number/전화번호: 02-1577-1366

Website/링크: <https://www.liveinkorea.kr/portal/main/intro.do>

**Women's Emergency Call, Seoul Center/여성긴급전화 서울센터**

Operator call hours/운영시간: 24Hrs (available in Korean, 한국어 상담 가능)

Phone number/전화번호: 02-1366



## Korean Abstract

### 국내 외국인 유학생의 성 건강 지식, 사회적 지지, 안전한 성 행위와의 관계

본 연구는 국내 외국인 유학생의 성 건강에 대한 지식, 지각된 사회적 지지 및 안전한 성행위 간 상관관계를 파악하기 위한 서술적 상관관계 연구이다. 본 연구의 대상자는 수도권에 거주하고 있는 아시아 유학생 중 학부 및 대학원 과정을 이수 중인 학생을 대상으로 하였으며, 온라인 설문지를 통해 2017년 4월 12일부터 28일까지 자료수집을 실시하였다. 연구도구로는 Andresen et al. (1994) 이 수정 보완하고, Cho 와 Kim (1993) 및 Chon et al., (2001) 이 번역한 Center for Epidemiologic Studies Depression Scale Revised (CESD-R-10)를 사용하였다. 성 관련 지식을 측정하기 위해서는 Ho (2009) 의 성 건강 지식 문항을 사용하였다. 사회적 지지를 측정하기 위해서는 Zimet et al. (1988), Zhang (2012) 에 의해 수정되고 Shin and Lee (1999) 에 의해 번역된 Multidimensional Scale of Perceived Social Support (MPSS) 를 사용하였다. 안전한 성행위 측정도구로는 DiIorio et al., (1992) 에 의해 개발된 Safe Sex Behavior Questionnaire (SSBQ) 를 사용하였다. 총 245 명의 학생들을 대상으로 수집된 자료는 SPSS 23.0 을 사용하여 분석하였으며 주요 결과는 다음과 같다.

1. 245명의 대상자는 중국, 베트남, 몽골, 인도네시아, 말레이시아 출신으로 각각 20% 를 차지했으며. 여성이 69.4%, 종교가 있는 대상자가 61.2%였다. 거주지가 서울인 경우가 78.0%로 대부분을 차지하였고, 한국에서 거주한 기간이 2년이상 4년 미만 인 경우가 35.9%로 가장 많았다. 71.8%의 대상자가 주 1회 이상 운동을 하고 있었으며, 현재 흡연을 하고 있는 대상자는 9.0%, 음주를 하는 대상자는 44.1%였다. 대상자의 63.7%가 CES-D-R-10 점수에 기초하여 우울증을 앓고 있는 것으로 나타났다.

2. 전체 대상자 중 119명(48.6%)이 성관계 경험이 있고, 41.6% 는 과거에 성교육을 받은 경험이 있었으며, 61.6%가 성교육 프로그램에 참여하기를 원했다. 가장 많이 요구된 성 교육 주제는 STIs/HIV 예방과 치료였으며, 성적 관심사는 ‘정확한 성 지식 부족’이 가장 높았다.
3. 성 건강에 대한 지식의 평균 점수는  $4.41 \pm 2.34$ 점이었으며, 지각된 사회적 지지는  $39.31 \pm 6.41$  ( $3.57 \pm 0.58$ ) 점이었다. 사회적 지지의 하위 영역 중 가족 지지는  $15.23 \pm 3.22$  ( $3.81 \pm 0.80$ ) 점, 친구 지지는  $15.24 \pm 3.17$  ( $3.88 \pm 0.83$ ) 점, 학교 지지는  $8.84 \pm 2.31$  ( $2.95 \pm 0.77$ ) 점이었다.
4. 성행위 경험자 (n=119) 의 안전한 성행위 평균 점수는  $65.18 \pm 8.32$ 점이었으며, 하위 영역 별로는 콘돔 사용이  $19.33 \pm 3.98$ , 파트너와의 의사소통이  $13.45 \pm 3.02$ 점, 위험 행동 방지가  $32.41 \pm 4.31$  점이었다.
5. 지각된 사회적 지지와 안전한 성행위 ( $r=.234, p=.010$ ), 친구 지지와 안전한 성행위 ( $r=.326, p<.001$ ) 간에 강한 양의 상관관계가 발견되었다. 그러나, 성 건강 지식과 안전한 성행위 사이에서는 유의한 관계가 발견되지 않았다.
6. 안전한 성행위에 영향을 미치는 요인은 성별 ( $\beta =.221, p=.019$ ) 과 사회적 지지 ( $\beta =2.197, p=.032$ ) 로 나타났다.

이상의 결과에서 국내 외국인 유학생은 낮은 성 건강 지식, 낮은 학교 지지, 정확한 성 지식 부족에 대한 우려를 가지고 있으며, 성교육에 대한 높은 요구를 가지고 있는 것을 확인할 수 있었다. 또한 국내 외국인 유학생들의 안전한 성행위는 성별과 지각된 사회적 지지에 영향을 받는 것으로 나타났다. 그러므로, 국내 외국인 유학생의 안전한 성행위 촉진을 위해서 성별을 고려한 성 교육 개발 및 친구 및 동료의 지지를 통한 건강한 성 행위에 대한 인지를 높이는 방안을 모색해야 할 것이다.

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핵심 되는 말: 안전한 성행위, 사회적 지지, 성 건강 지식, 외국인 유학생, 대학생