

# Birth Control Knowledge among Pharmacy Undergraduate Students in Vietnam: A Case Study and Situation Analysis

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## Abstract

**Aims:** The main goal of this study is to define the factors that contribute to the knowledge, awareness, perceptions, and practice of birth control among pharmacy students at Lac Hong University (LHU) in Dong Nai Province. **Subjects and Methods:** A prospective cohort study was conducted among pharmacy students over 4 months from September to December 2017. **Results:** All respondents ( $n = 403$ ) had heard of birth control methods. Nearly 90% of participants indicated that the male condom can protect against sexually transmitted diseases. Condoms are also the most common method of birth control. The mean knowledge and awareness scores of students were  $4.52 \pm 1.420$  and  $20.67 \pm 4.06$ , respectively. The highest birth control knowledge score was  $5.64 \pm 0.996$ . Fifth-year students were the most knowledgeable about contraceptive use and had the highest mean knowledge score ( $4.82 \pm 1.307$ ). A significant association was found between marital status ( $P < 0.001$ ), religion ( $P < 0.05$ ), and mean knowledge of the respondents. **Conclusions:** Overall, the findings reflect that the majority of students at LHU had a poor understanding and awareness of contraception methods. Health education and awareness programs should be initiated for students to provide them with correct knowledge about contraception. The knowledge of these future health-care professionals will play an important role in improving public health.

**Key words:** Awareness, birth control, knowledge, perception, practice, Vietnam

## INTRODUCTION

The planned prevention of pregnancy through the use of diverse devices, sexual practices, drugs, chemicals, or surgical operations is the definition of birth control.<sup>[1]</sup> Therefore, barrier methods, emergency contraception, hormonal methods, sterilization, and intrauterine methods that act or interfere with the normal process of ovulation, fertilization, and implantation to prevent pregnancy may be called contraception.<sup>[2]</sup> Effective contraception enables individuals and couples of all social backgrounds to enjoy a physical relationship without concerns about undesired pregnancies and provides an opportunity to engage in family planning.<sup>[1]</sup> Several goals of contraception are to provide the greatest level of both comfort and protection at the lowest cost and level of side effects. The correct use of male or female condoms, for example, provides the dual advantage of preventing pregnancy and preventing sexually transmitted diseases.<sup>[1]</sup>

At present, sex before marriage and cohabitation in Vietnam are frequently perceived as social problems. However, attitudes regarding sexuality are changing among students aged 18–22. Students are increasingly open-minded and also start sexual activity at earlier ages as a result of various social shifts and the modernization of Vietnamese society. After 30 years of economic renovation in Vietnam, the existence and development of foreign media are repeatedly mentioned as a leading cause of premarital or unintended sex in the youth of Vietnam.<sup>[3]</sup> The abortion rate among Vietnamese women of

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reproductive age is 83 of every 1000 women, and women have an average of 2.5 abortions over the course of their lifetime. Hence, Vietnam ranks first in Asia and is one of the top five countries in the world in terms of frequency of abortions. About one million abortions per year are performed in Vietnam.

Unplanned pregnancy among students is an important national health problem and represents a major threat to female fertility, especially among adolescents in developing countries. During their studies, students travel far from home and lack parental supervision. Students often begin to experiment sexually, which can lead to undesired pregnancies and a host of other problems.<sup>[4]</sup> According to the Survey and Assessment of Vietnamese Youth (SAVY) 2, the average age at first sex among 14–25 years' old is 18.1 years, which decreased in comparison to SAVY 1 (19.6 years).<sup>[5,6]</sup> Teenage girls who get pregnant are more likely to drop out of school and rarely have the social and economic means to raise children.<sup>[7]</sup> Furthermore, SAVY 2 reported that 9.5% of adolescents had premarital sex. Specifically, 5.2% of women reported having premarital sex, while 13.6% of men reported having premarital sex. Moreover, 8.4% of sexually active women aged 15–24 reported having had an abortion.<sup>[6]</sup> Overall, youth and single women in Vietnam receive insufficient education on reproductive physiology, sexuality, and contraception. Those who are sexually active have little access to birth control through either the national family planning program or the private sector. As a consequence, many of these women come to rely on abortions.<sup>[8]</sup> In short, unexpected pregnancy in students poses multiple problems for universities and for society in developing countries.

Furthermore, contraception methods are effective in preventing pregnancies when properly used, and some methods have been shown to have health benefits, especially the risk of unwanted pregnancies, ectopic and molar pregnancies, abortion and sexually transmitted infections can be reduced by using contraception.<sup>[9]</sup> Birth prevention services and products currently prevent 187 million unwanted pregnancies every year, including 60 million unintended births and 105 million abortions.<sup>[10]</sup> Birth control in the United States has led to an 86% decrease in teenage pregnancy over the past 40 years.<sup>[11]</sup> Peipert *et al.* indicated that providing free contraception to women considerably reduces unexpected pregnancies and abortion rates by 62–78%.<sup>[12]</sup> Several studies on the knowledge and practices of birth control, including attitudes toward birth control, have been carried out in countries such as China,<sup>[13]</sup> Malaysia,<sup>[14]</sup> and Pakistan.<sup>[15]</sup> For example, a cross-sectional study in Wuhan, China, showed that a better understanding of factors associated with birth control use among female students can enable colleges and families to protect students from unintended pregnancies.<sup>[13]</sup> Women with higher levels of education generally seek more contraceptive services and have lower rates of fertility compared to women of lesser educational achievement.<sup>[16,17]</sup> These examples show that reducing the rate of unplanned pregnancy is key to decreasing abortions around the world.

The present research study investigates the knowledge, awareness, practices, and perception of birth control among pharmacy students in Vietnam considering the demographic characteristics of students. A sufficient sample was considered to provide an informative assessment of using birth control use and to contribute to the National Strategy on Population of Vietnam to reduce unwanted pregnancies and associated abortions. As documented in various research studies, accurate, in-depth knowledge of birth control among pharmacy students tends to be low in developing countries in comparison to developed countries. In Vientiane, Laos, knowledge of emergency contraception pills among young adults is relatively low, and the number of misperceptions is high.<sup>[18]</sup> Similar results were found in Addis Ababa, Ethiopia, where a low level of knowledge and practice of emergency contraceptives was found among female university students.<sup>[19]</sup> In contrast, 752 student pharmacists in the United States had higher scores of contraceptive knowledge and had more favorable attitudes toward oral emergency contraceptives.<sup>[20]</sup> In addition, medical students in Germany correctly answered 50.3% of questions regarding contraceptives.<sup>[21]</sup> The main goal of the present study was to determine the factors that contribute toward the knowledge, awareness, practices, and perception (KAPP) of birth control among pharmacy students at a private university, Lac Hong University (LHU), in the Dong Nai Province of Southern Vietnam.

## SUBJECTS AND METHODS

### Study design and research tool

This cross-sectional study was based on a 4-month survey from September to December 2017 conducted at LHU, Dong Nai Province, to assess the KAPP of contraception among undergraduate pharmacy students. A validated, self-administered questionnaire was used to assess the KAPP of contraception and was based on a literature review of two previous studies.<sup>[14,22]</sup> The validity, reliability, and appropriateness of the questionnaire were pre-tested among 30 non-participants who supplied information about their sociodemographic characteristics and their KAPP of contraception.

The questionnaire was comprised of five sections. Section one had eight items that aimed to gather the demographic information of the respondents. The primary focus of section two was to assess general knowledge about contraception. Statements about contraception were rated by respondents using a nominal scale (yes/no) and a three-point Likert scale was provided for respondents. The mean knowledge score was then calculated with respect to the demographic variables of those surveyed [Table 1]. Section three was comprised of seven main items to explore respondents' awareness of birth control use [Table 3]. Section four was

**Table 1:** Association of mean knowledge scores with demographic variables (*n*=403; *n* (%))

Characteristics	Number (%) of respondents	Mean±SD of knowledge score	P value*
Gender			
Male	174 (43.2)	4.35±1.45	0.384
Female	229 (56.8)	4.66±1.38	
Ethnic			
Vietnamese	399 (99.0)	4.53±1.42	0.096
Chinese	4 (1.0)	4.00±0.82	
Religion			
Buddhism	96 (23.8)	4.92±1.33	0.002**
Roman Catholicism	83 (20.6)	4.19±1.46	
None	222 (55.1)	4.49±1.41	
Protestantism	2 (0.5)	2.00±0.00	
Marital status			
Single	310 (76.9)	4.22±1.37	<0.001**
Married	88 (21.8)	5.64±0.99	
Divorce	5 (1.2)	3.80±0.84	
Education program			
Full-time <sup>1</sup>	255 (63.3)	4.01±1.31	0.409
Part-time <sup>2</sup>	148 (36.7)	5.41±1.15	
Year of study			
First year	99 (24.6)	4.41±1.62	0.120**
Second year	93 (23.1)	4.46±1.40	
Third year	102 (25.3)	4.71±1.25	
Fourth year	58 (14.4)	4.22±1.43	
Fifth year	51 (12.7)	4.82±1.31	
Total	403 (100.0)	4.52±1.42	

<sup>1</sup>Studying in 5 years; <sup>2</sup>Studying in 4 years from technician pharmacy. \*Calculated by independent sample t-tests, \*\*Calculated by one-way ANOVAs. SD: Standard deviation

**Table 2:** Knowledge of contraception among participants (*n* [%])

Opening question and statements	Correct responses	Incorrect responses
1. Have you heard of contraceptive methods?	403 (100.0)	-
2. The risk of some types of cancer in women can be reduced by oral contraceptives	97 (24.1)	306 (75.9)
3. A woman will not get pregnant within at least 2 months after having stopped taking birth control pills	202 (50.1)	201 (49.9)
4. Male condoms can protect against sexually transmitted diseases	334 (82.9)	69 (17.1)
5. Common side effects of birth control pills include weight gain and mood swings	237 (58.8)	166 (41.2)
6. It is safe to have sex during the period of infertility	126 (31.3)	277 (68.7)
7. There is an increased risk of breast cancer in women taking estrogen-containing oral contraceptives	126 (31.3)	277 (68.7)
8. To get birth control pills, women are required to have a prescription from a doctor	298 (73.9)	105 (26.1)

comprised of nine items to gather respondents' perception of birth prevention using a 5-point Likert scale [Table 5]. The last section of the study consisted of seven main questions to explore respondents' practice of family planning [Table 7].

#### Study population and sampling method

LHU was founded in 1997 and represents the first private university in Dong Nai Province in the southern key economic

**Table 3:** Awareness of contraception among participants (*n* [%])

Symbol	Question	Participants' responses				
		Strongly agree	Agree	Not sure	Disagree	Strongly disagree
A1	Only women are responsible for using contraceptive methods	17 (4.2)	14 (3.5)	8 (2.0)	138 (34.2)	226 (56.1)
A2	Contraceptive methods are more harmful than beneficial to health	39 (9.7)	122 (30.3)	57 (14.1)	126 (31.3)	59 (14.6)
A3	Contraceptive methods can protect the health of families and society	98 (24.3)	235 (58.3)	23 (5.7)	23 (5.7)	24 (6.0)
A4	The use of contraceptive methods in young people will increase the risk of infertility in the future	50 (12.4)	185 (45.9)	53 (13.2)	87 (21.6)	28 (6.9)
A5	Contraceptive pills are not 100% effective in preventing pregnancy	52 (12.9)	209 (51.9)	59 (14.6)	58 (14.4)	25 (6.2)
A6	Women's experiences of the side effects of birth control can be diminished by changing to a different or safer form of contraception	39 (9.7)	149 (37.0)	117 (29.0)	82 (20.3)	16 (4.0)
A7	Discussing contraception with my partner is embarrassing	18 (4.5)	25 (6.2)	45 (11.2)	200 (49.6)	115 (28.5)

**Table 4:** Association of contraception awareness with demographic variables

Question	P value*			
	Year	Gender	Marital status	Education system
A1	0.152	0.027	<0.001	<0.001
A2	0.010	0.300	<0.001	<0.001
A3	0.430	0.273	0.092	0.406
A4	0.130	0.737	0.002	<0.001
A5	0.034	0.002	0.053	<0.001
A6	0.380	0.801	<0.001	<0.001
A7	<0.001	0.014	0.001	<0.001

\*Chi-square test

zone of Vietnam. Specifically, LHU is a multidisciplinary and multilevel educational institution that provides vocational, college, undergraduate, and postgraduate education. The university currently has 9 faculties, 20 branches, and 29 majors with an enrolment of more than 20,000 students. The Faculty of Pharmacy was established in 2012. Students may obtain a bachelor's degree, which includes practical and research training and transmits knowledge and skills for prospective pharmacists. This university generates highly qualified professionals for Dong Nai Province and other regions.

#### Calculation of sample size and sample assignment

The number of participants were determined using the following formula applicable to survey research that is based on normal to hypergeometric approximation:

Where  $n$  = the sample size of pharmacy students at LHU,  $p = 0.5$ ,  $d$  = the rate of allowable error, and  $z$  = the standard normal deviation at a 95% confidence interval. Based on the aforementioned formula, the obtained sample size should be equal to the following 2:

To eliminate errors related to the survey size, the sample size was increased by a factor of 110% to allow for a lack of follow-up and non-response. All factors were based on expert opinion. Overall, 423 participants were surveyed in this prospective cohort study. The convenience sampling method was used, and questionnaires were self-administered (using paper and pencil). In particular, a 43-item questionnaire was used to assess university students' knowledge of contraceptive.

#### Data collection

The respondents participating in this survey had different ages, genders, marital status, and educational backgrounds. No specific criteria for inclusion and exclusion were used for this survey. However, respondents who were unwilling to participate were excluded from this study. Verbal consent to participate in this study was provided by all respondents as an ethical requirement.

The original questionnaires were hand-delivered to students in lecture halls. An investigator provided a brief introduction and instructions and later visited the students to collect the completed

**Table 5: Perception of contraception among participants (*n* [%])**

Question	Participants' responses				
	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
It is unnecessary to purchase contraceptives	6 (1.5)	25 (6.2)	22 (5.5)	190 (47.1)	160 (39.7)
Courage is needed to purchase condoms from pharmacies, conventional shops, or dispensaries	12 (3.0)	69 (17.1)	44 (10.9)	175 (43.4)	103 (25.6)
Using condoms will generate less sexual pleasure during sexual intercourse	29 (7.2)	147 (36.5)	151 (37.5)	55 (13.6)	21 (5.2)
Changing attitudes have led males to participate in contraception and to increase the rate of contraception use in some areas	99 (24.6)	216 (53.6)	44 (10.9)	24 (6.0)	20 (5.0)
Contraception can reduce the fear of unwanted pregnancy and allow women the freedom to enjoy a sexual relationship	51 (12.7)	230 (57.1)	56 (13.9)	57 (14.1)	9 (2.2)
Contraceptives allow women to pursue higher education by delaying pregnancy and to achieve some measure of economic security	76 (18.9)	250 (62.0)	37 (9.2)	31 (7.7)	9 (2.2)
The use of contraceptive methods is complicated	20 (5.0)	82 (20.3)	126 (31.3)	135 (33.5)	40 (9.9)
Sex education, including contraception, should be introduced at an early age	91 (22.6)	168 (41.7)	53 (13.2)	67 (16.6)	24 (6.0)
Health-care providers should provide counselling on contraceptive methods, their mechanisms of action, their best time to use, and their possible side effects to all women	168 (41.7)	189 (46.9)	22 (5.5)	9 (2.2)	15 (3.7)

questionnaires. Of the 423 questionnaires that were distributed, 9 were not returned, and 11 were incorrectly completed. A total of 403 respondents met the survey requirements.

### Data analysis

A descriptive analysis was performed in the Statistical Package for the Social Sciences version 20. Furthermore, to identify the factors affecting the KAPP toward contraceptive medicine, a covariate analysis was applied using gender (reference: Male) and field of education (reference: Non-health science) as the covariates. A significance value of 0.05 was set in the analysis of respondents' responses. Knowledge and attitudes were assessed by a scoring system based on the research of Elkalmi *et al.*<sup>[12]</sup>

### Ethical clearance

The study design was approved by the LHU. All participants in this study voluntarily participated in answering the questionnaire. The responses were kept private, and the respondents remained anonymous. The results are expressed as numbers and statistics and are discussed without using the names of respondents.

## RESULTS

Surveys were distributed to a total of 423 respondents, of which 403 completed the survey, resulting in a response rate of 95.3%. The remaining variables for intergroup comparisons were gender (43.2% of male and 56.8% of female) and ethnicity (99% Kinh and 1% Hoa ethnicity). The majority of participants (76.9%) were single. More than half of respondents (55.1%) were non-religious. Most students (63.3%) were studying full time.

The mean knowledge scores of the respondents were  $4.52 \pm 1.420$ . The highest birth control knowledge score was  $5.64 \pm 0.996$ . The 5-year students were the most knowledgeable about contraceptive use and had the highest average knowledge score ( $4.82 \pm 1.307$ ). A significant association was found between religion ( $P < 0.05$ ), marital status ( $P < 0.001$ ), and the mean knowledge score of the participants.

Of the 403 students that answered the questionnaire, all had heard of contraceptive methods. Nearly 90% of respondents ( $n = 403$ ) indicated that male condoms can protect against sexually transmitted diseases. In addition, more than 70% of



**Table 6:** Association of perception with demographic variables

Questions	P value*			
	Year	Gender	Marital status	Education system
P1	0.006	0.189	0.153	0.001
P2	0.042	0.510	<0.001	<0.001
P3	0.002	0.001	<0.001	<0.001
P4	0.011	0.032	<0.001	<0.001
P5	0.011	0.810	0.096	0.001
P6	0.014	0.445	0.048	<0.001
P7	0.033	0.037	0.001	<0.001
P8	0.032	0.064	<0.001	<0.001
P9	0.001	0.178	0.001	<0.001

P value was calculated by Mann–Whitney and Krusal–Wallis test

**Table 7:** Practice of using contraception among participants (*n* [%])

Question	Frequency (%)
Ever used contraception ( <i>n</i> =403)	
Yes	168 (41.7)
No	235 (58.3)
Type of contraceptive used ( <i>n</i> =298)	
Contraception pills	87 (29.2)
Condoms	133 (44.6)
Emergency oral contraceptives	53 (17.8)
Coitus interruptus	2 (0.7)
Etonogestrel implants	2 (0.7)
Intrauterine devices	21 (7.0)
Reason for choosing contraceptive method ( <i>n</i> =258)	
Convenient to use	132 (51.2)
Has no side effects (weight gain, nausea, etc.)	17 (6.6)
Not easy to forget	27 (10.5)
Low cost	59 (22.9)
Long-acting effectiveness	16 (6.2)
Other	7 (2.7)
Reason for using contraceptive method ( <i>n</i> =209)	
Fear of pregnancy	139 (66.5)
Advised by health worker	22 (10.5)
To avoid sexually transmitted diseases	14 (6.7)
To delay menstrual cycle	8 (3.8)
To treat acne	6 (2.9)
At request of partner	18 (8.6)
Other	2 (1.0)

respondents (*n* = 298) correctly affirmed the statement “To get birth control pills, women are required to have a prescription

from a doctor.” In contrast, 75.9% (*n* = 306) of respondents incorrectly answered the statement about whether the risk of certain types of cancer in women can be reduced by birth control pills.

Three hundred and sixty-four respondents (90.3%) disagreed or strongly disagreed that only women are responsible for using contraceptive methods. Similarly, 82.6% of respondents agreed or strongly agreed that contraceptive methods can protect the health of families and society. In contrast, a few students (4.5%) strongly agreed that discussing contraception with their partner is embarrassing. Furthermore, 64.8% of respondents believed that contraceptive pills are not 100% effective in preventing pregnancy. Overall, the mean awareness score of participants was  $20.67 \pm 4.06$ .

Few students (1.5%) strongly agreed that the purchase of contraceptives is unnecessary. No more than half of participants (37.5%) were unsure whether the use of condoms would create less sexual pleasure during sexual intercourse. Most students (88.6%) agreed or strongly agreed that health-care providers should provide counseling on contraceptive methods to all women in addition to information on their mechanism of action, their best time of use, and their possible side effects. In fact, 69.3% of female students agreed or strongly agreed with this statement ( $P < 0.001$ ). Meanwhile, 315 students (78.2%) agreed that male attitudes toward contraceptive methods are changing. Only 20 students (5.0%) strongly agreed that the use of contraceptive methods is complicated.

The practice of contraceptive use among respondents is presented in Table 7. One hundred and sixty-eight (41.7%) students have used contraception, and condoms (51.2%; *n* = 133) are the most common method because of their convenience of use. Other contraceptive methods included vaginal diaphragms, emergency oral contraceptives, vasectomy, spermicides, etonogestrel implants, and intrauterine devices, which were either comparatively uncommon or not used. More than half

of students choose to use birth control because of a fear of pregnancy (66.5%). Other students used birth control following health workers' advice (66.5%) or at their partners' request (8.6%). While most chose birth control that was convenient to use ( $n = 132$ ), some also preferred methods that were not easy to forget (10.5%), low cost (22.9%), and without side effects (6.6%).

## DISCUSSION

These findings of this study indicated that the knowledge and awareness of birth control of pharmacy students at LHU were lower than the rates reported in other studies in Malaysia,<sup>[14]</sup> Nigeria,<sup>[23,24]</sup> and South Africa.<sup>[25]</sup> However, increasing levels of awareness can be attributed to the increasing use of social networks/media, which was identified as one of the main sources of knowledge in this study. This finding is consistent with other studies that identified the internet and social media as the greatest sources of health-related information for undergraduate students.<sup>[26]</sup> Notably, some studies have demonstrated that high awareness and knowledge of contraceptive methods did not signify that these methods were popular or highly utilized. For instance, the regular usage of family planning among sexually active, single undergraduate students at a tertiary institution in Kano State, Nigeria, was low (15.63%),<sup>[23]</sup> and only 38.0% of the University of Venda's (South Africa) male students reported correctly using a method for preventing pregnancy.<sup>[25]</sup> This confirms that awareness and knowledge of contraceptive methods do not necessarily translate to the use of contraception.

Slightly less than half of students (41.7%) involved in this study reported having used contraception. Condoms were most frequently used (44.6%), followed by contraception pills (29.2%) and emergency oral contraceptives (17.8%). Other methods such as coitus interruptus and etonogestrel implants were rarely mentioned. Most students (82.9%) were also aware that male condoms can protect against sexually transmitted diseases. The primary motivation for using contraception was to avoid pregnancy. The main reasons for choosing contraceptive methods were related to convenience of use and low cost. In another study, individuals who received a lesson on the human immunodeficiency virus later had higher rates of condom use at last intercourse; therefore, health education can help increase condom use in certain subgroups.<sup>[27]</sup> However, in the present study, around 50% of respondents also believed that using condoms would produce less sexual pleasure during sexual intercourse.

Nearly 80% of respondents believed that the risk of some types of cancer in women cannot be reduced by oral contraceptives. The majority women are not exposed to long-term cancer threats using oral contraceptives; instead, many women have effectively lower risks of some cancers for many years after ceasing oral contraceptives.<sup>[28]</sup> Furthermore, the pharmacy students did not

believe that oestrogen-containing oral contraceptives were related to a high risk of breast cancer in women (68.7%). However, a research study on African-American women showed that persistent and recent usage of oral contraceptives was associated with a greater risk of breast cancer.<sup>[29]</sup> Therefore, pharmacy students should recognize their gaps in knowledge with respect to contraceptives. More than 80% of respondents agreed with the statement that birth control represents an opportunity for women to pursue higher education and higher incomes. Kallner *et al.* demonstrated that women achieved higher knowledge and higher incomes by stopping childbirth.<sup>[9]</sup> More than half of our respondents affirmed that sex education, including contraception, should be introduced at an early age.

Pharmacy students should receive training on communicating about birth control in addition to health education. Advance practice lessons could be implemented to provide students with more in-depth knowledge about the correct use of contraception and the selection of an appropriate method. In particular, freshman should have a basic knowledge of birth control. In addition, a website on contraception could be created. Such a website could be easily accessed by students and be continuously updated. Furthermore, real-life scenarios and situations could be presented. Finally, individuals with questions could anonymously contact professional health-care providers through an online message system, keeping individuals' information private.

However, the present study also has some limitations. The research was only carried out at one department of LHU. Hence, the results cannot be generalized to pharmacy students across Vietnam. Further studies are required to establish statistics on contraceptive methods and use at the national level, although the present study can serve as a basis for a nationwide study evaluating the KAPP of pharmacy students in regard to contraception.

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