Use of emergency contraceptive pills and condoms by college students: A survey

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Abstract

Objectives: This study examined the intentions, knowledge, and attitudes of college students regarding the use of emergency contraceptive pills (ECPs) and condoms.

Design and setting: A cross-sectional descriptive study was conducted at 16 Korean colleges.

Methods: Data were collected from March 15 to June 10, 2006 from a convenience sample of 1046 college students using a survey questionnaire. The survey included measures of demographic variables, intention to use ECPs (one item) and condoms (one item), knowledge about ECPs (12 items), and attitudes toward using ECPs (12 items) and condoms (16 items). All items except knowledge were rated on a 5-point Likert-type response format, with higher scores indicating greater intentions, more positive attitudes, and greater knowledge.

Results: Of the 1046 participants, 76.3\% had heard of ECPs and 13.2\% of the sexually active participants (\( n = 190 \)) had used them. Participants showed a general lack of knowledge about ECPs and misconceptions about their safety. The intentions of using ECPs and condoms were positively correlated with each other and with attitude such that the more positive the attitude, the greater their intention to use both ECPs and condoms. There were significant gender differences on many of the variables, in that female students had higher knowledge about ECPs, intention of using ECPs and condoms, and more positive attitude toward condoms than male students who had more positive attitudes toward ECPs. Females had more concerns about the safety of ECPs than males.

Conclusions: The findings suggest that college students must be better informed about ECPs, and reassured about their safety. Additionally, promoting ECPs would not negatively affect condom use. Efforts are needed to disseminate up-to-date information to the general public and to develop educational and awareness programs to empower young people to make informed decisions about the use of ECPs and condoms.

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Keywords: Contraception; Condoms; College student; Intention; Attitude

What is already known about the topic?

- Willingness to use emergency contraceptive pills (ECPs) is associated with the beliefs and attitudes toward using ECPs.
There are concerns that the availability of ECPs will result in reduced condom use. However, the relationship of intention to use ECPs and condom use remain unclear.

What this paper adds

- The safety of ECPs was of great concern for female college students.
- Individuals with more positive attitudes about ECPs were more willing to use ECPs if they were needed.
- This study demonstrates that the intent to use ECPs is positively associated with attitude about condoms as well as the intent to use them.

1. Introduction

Worldwide, unplanned pregnancy is a major medical, social, and public health problem. It often results in induced abortion, which occurs at a relatively high rate even when it is illegal (Jeon and Seo, 2003). The appropriate use of emergency contraceptive pills (ECPs) or condoms has the potential to reduce abortion numbers by preventing unplanned pregnancies. College students, in particular, might benefit from ECPs because of the increased prevalence of first-time sexual intercourse, and unreliable or inconsistent primary contraceptive use in this population (Arowojolu et al., 2002; Kang and Chang, 2004).

Several factors are known to contribute to the restricted availability and utilization of ECPs, including lack of knowledge (Romo et al., 2004), attitude of both provider and customer (Larsson et al., 2004), and requirement for a prescription (Free et al., 2002). Thus, exploring college students’ attitude and knowledge about ECPs as well as their intent to use them represents a first step toward promoting utilization and acceptance of these drugs.

The literature supports the efficacy of ECPs for up to 120h following unprotected intercourse that results from using no contraception at all, condom slippage, primary contraceptive failure, or rape (Jones et al., 2002; Rodrigues et al., 2001). ECPs can be purchased without prescription in some countries, including Canada and some parts of Europe. Recently, the US Food and Drug Administration (FDA) approved ECPs for over the counter purchase for women 18 years and older. There is concern, however, about using ECPs as primary contraceptives. Proponents of over the counter ECP sales claim that a prescription presents an unnecessary obstacle preventing them from being obtained in an emergency situation. Opponents argue that easier access to ECPs will result in increased promiscuity and reduced usage of primary contraception such as condoms, which in turn could lead to more sexually transmitted infections such as HIV/AIDS (Gichangi et al., 1999; Langer et al., 1999; Orellana, 2004). Few studies have observed the effects of ECP availability on primary-contraception behavior, however, and the ones that have shown equivocal results. Advance provision of ECPs increased the likelihood of its use, but had no adverse effect on contraceptive and risk-taking behavior in parenting teens (Belzer et al., 2005), family planning clients (Walsh and Frezieres, 2006), and low-income postpartum women (Jackson et al., 2003). Also, Walker et al. (2004) found that ECP use did not negatively affect condom use among Mexican adolescents. In contrast, 55% of male college students interviewed in Ghana stated that they would use condoms less often if ECPs became available (Baiden et al., 2002).

Intention often determines behavior, and attitude is one of the major factors affecting intention (Ajen and Fishbein, 1980). Thus, it is important to understand attitude before attempting to positively influence the intent and actual use of ECPs. It is also worthwhile to examine whether the intention to use ECPs is negatively related to attitude and intent to use condoms.

The main purpose of this study was to assess the intent to use ECPs and condoms, knowledge about ECPs, and attitude about using ECPs and condoms. We also sought to explore the relationship between the intention of using these contraceptives and the attitude toward them, as well as differences between intention, knowledge, and attitude of male versus female college students.

2. Methods

2.1. Design, sample, and setting

The cross-sectional descriptive study recruited a convenience sample consisting of 1046 single undergraduate students from 16 colleges throughout South Korea. Data were collected using a self-administered questionnaire distributed to students between March 15 and June 10, 2006.

In contrast to Western countries where ECPs have been used for several decades, ECPs were only recently introduced to Korea. The Korean government deliberated for many years before deciding to introduce ECPs. Before they were made publicly available, a trial of PC4 (Tetragynon), a combined ECP, was conducted by the Planned Parenthood Federation of Korean from November 1998 to October 2000 with its distribution to adolescents and rape victims. Findings from the trial period demonstrated the need for ECPS and supported making them available to all women. Consequently, their use was approved by the Ministry of Health and Welfare (Planned Parenthood Federation of Korea, 2000). In 2001, the first dedicated ECP, Norlevo,
a progestin-only pill, became available by medical prescription in Korea. This is in contrast to oral contraceptive pills that do not require a prescription.

In the last 5 years, there has been an increase in the number of ECPs registered in Korea, including Norlevo, Firstrel, and Sexcon One and One (manufactured by HRA Pharm, Samil Pharm, and Crown Pharm, respectively; all are progestin-only pills). Despite the increase in registration and availability of ECPs, however, very few studies have investigated their use in Korea.

2.2. Procedures

South Korea is divided into nine provinces and seven metropolitan cities. Undergraduate students were recruited from 16 colleges, one from each province and metropolitan city. The data were collected primarily in classrooms before or after scheduled class with the permission of the teacher.

Questionnaires were administered to those students who chose to participate after being informed about the research. The participants were assured that their participation was both voluntary and confidential and informed consent was obtained. Approval for the study was granted by the expert research-reviewing panel of the Korean Research Foundation. The questionnaires took 10–15 min to complete.

Questionnaires were distributed to 1255 college students. A total of 1085 students (86.5%) completed the survey, of which 1046 met the eligibility criteria and were included in the final analysis. No names or other identifying information were included on the questionnaire to assure anonymity.

2.3. Instruments

The questionnaire included measures of demographic characteristics, intent to use ECPs and condoms, knowledge about ECPs, and attitudes toward ECPs and condoms. Demographic variables measured included age, grade, religion, experience of sexual intercourse and ECP use, being informed of ECP, sex education, and needs for ECP education.

Intent to use ECPs and condoms were each measured by single items developed by the investigator rated on a 5-point Likert-type response format of the extent of their intention, with higher scores indicating greater intention to use them. For the purpose of determining the percentage of the sample intending to use ECPs or condoms, respondents were classified as either intending to use ECPs or condoms (selection of response option 4 or 5) or not intending to use ECPs or condoms (selection of response option 1, 2, or 3). Attitude toward ECPs was measured using the 12-item ECP-Attitude Scale developed by Kang (2005). Each item is a statement about ECPs to which respondents indicate their agreement using a 5-point Likert scale ranging from “strongly disagree” (scored as 1) to “strongly agree” (scored as 5). The scale also consisted of three subscales, “fear of misuse” (five items), “easy accessibility” (four items), and “health concerns” (three items). Items are summed for a total score, with possible scores ranging from 12 to 60 and higher scores indicating a more favorable attitude toward ECPs. Cronbach’s alpha was .80 at the time of development and .76 for the study sample. Cronbach’s alphas for the subscales were .80 for “fear of misuse”, .71 for “easy accessibility”, and .71 for “health concerns”.

Attitude toward using condoms was measured by the 16-item Condom-Attitude Scale developed by Kang and Chang (2004). Each item was rated on a 5-point Likert scale ranging from “strongly disagree” (scored as 1) to “strongly agree” (scored as 5). The scale consists of three subscales, including “protection” (five items), “interruption of sexual pleasure” (seven items), and “image” (four items). Possible scores range from 16 to 80, with higher scores indicating a more positive view of using condoms. Cronbach’s alpha was .88 at the time of development and .83 for the study sample. Cronbach’s alphas for the subscales were .79 for “protection”, .87 for “interruption of sexual pleasure”, and .62 for “image”.

Knowledge about the use of ECPs was measured using the 12-item Knowledge-on-ECPs Scale developed by Kang (2005). Each item is a statement about ECPs with three response options, “true”, “false”, or “not sure”. A total score was computed by summing the number of correct responses with a higher score indicating greater knowledge about ECPs. The reliability coefficient for the 12-item knowledge scale was .76, as calculated using Kuder–Richardson Formula 20.

2.4. Data analysis

Data were analyzed using SPSS (Statistical Package for Social Sciences) for Windows (version 12.0). Descriptive statistics were used to describe the demographic characteristics, the attitudes toward using ECPs and condoms, intent to use ECPs and condoms, and knowledge about ECPs.

Comparisons between groups of continuous variables were performed using two-tailed independent-sample t-tests. The relationship between variables was calculated using Pearson’s correlation. All analyses were two-tailed, using a probability value of $p < .05$ as the criterion for statistical significance.

3. Results

3.1. Sample characteristics

Participants ranged in age from 17 to 30 years, with a mean of 22.72 years (SD = 2.06). The majority of the
participants were female \((n = 788, \text{75.3\%})\), and sophomores (41.8\%), with 279 freshmen (26.7\%), 198 juniors (18.9\%), and 132 seniors (12.6\%) also included. The largest portion of participants had no religious affiliation (52.2\%) followed by Christian (excluding Catholics) (22.1\%), Buddhists (14.7\%), and Catholics (10.5\%), with the remainder having another religion (5.5\%).

Only 18.2\% \((n = 190)\) of the participants reported that they were sexually active, and only 13.2\% \((n = 25)\) of this subgroup had ever used ECPs. Reasons for using ECPs were failure to use primary contraception \((n = 21)\), condom rupture \((n = 2)\), and rape \((n = 2)\). Most of the participants (76.3\%) had heard of ECPs, and 90.1\% had received sexual education. However, only 21.3\% had received education on ECPs, and 79.6\% asked for more knowledge about ECPs. Table 1 displays the demographic information for the sample.

### 3.2. Intent to use ECPs and condoms

Among respondents, 52.6\% (46.5\% of male and 54.6\% of female) intended to use ECPs and 40.8\% (30.7\% of male and 44.2\% of female) intended to use condoms. The mean scores for intent to use ECPs and condoms were 3.44 (1.07 SD) and 2.88 (1.53 SD), respectively. The mean score for intent to use ECPs was significantly lower for male students (3.28, 1.15 SD) than for female students (3.49, 1.05 SD) \((t = -2.779, p = 0.006)\).

### 3.3. Knowledge about ECPs

Approximately half the participants (55.4\%) scored 5 or less on knowledge items (maximum score of 12), with a mean score of 4.74 (3.07 SD). Knowledge about ECPs was significantly higher for females (5.03, 2.98 SD) than male students (3.85, 3.16 SD) \((t = -5.295, p = 0.0001)\). Moreover, participants who had received education about ECPs exhibited significantly higher knowledge about them \((t = 6.989, p = 0.0001)\).

Table 2 lists the percentage of students who correctly answered individual items on the knowledge scale. The greatest knowledge deficits about ECPs included efficacy time frame, active ingredients, effects on pregnancy, and common side effects. Fewer than half of the students knew that ECPs could not prevent STIs and that this drug was only available by prescription.

### 3.4. Attitude toward using ECPs

Table 3 lists the scores for items from the measure of attitude toward ECPs. The overall score for attitude was 2.73 (.52 SD), and attitudes were significantly more positive among males (2.80, .53 SD) than females (2.70, .51 SD) \((t = 2.629, p = .009)\). For the subscales, the score for “easy accessibility” was the highest, followed by “fear of misuse”, and “health concerns”. Attitude scores were higher for male than female students and the

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Demographic characteristics of the study sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristic</strong></td>
<td><strong>All subjects ((n = 1046))</strong></td>
</tr>
<tr>
<td>Age (years) ((n = 1016))</td>
<td></td>
</tr>
<tr>
<td>(\leq 19)</td>
<td>305 (30.0)</td>
</tr>
<tr>
<td>20</td>
<td>269 (26.5)</td>
</tr>
<tr>
<td>21</td>
<td>172 (16.9)</td>
</tr>
<tr>
<td>(\geq 22)</td>
<td>270 (26.6)</td>
</tr>
<tr>
<td>Grade ((n = 1046))</td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>279 (26.7)</td>
</tr>
<tr>
<td>Sophomore</td>
<td>437 (41.8)</td>
</tr>
<tr>
<td>Junior</td>
<td>198 (18.9)</td>
</tr>
<tr>
<td>Senior</td>
<td>132 (12.6)</td>
</tr>
<tr>
<td>Religion ((n = 1046))</td>
<td></td>
</tr>
<tr>
<td>Other Christian</td>
<td>231 (22.1)</td>
</tr>
<tr>
<td>Catholic</td>
<td>110 (10.5)</td>
</tr>
<tr>
<td>Buddhist</td>
<td>154 (14.7)</td>
</tr>
<tr>
<td>Other</td>
<td>550 (52.7)</td>
</tr>
<tr>
<td>Sexual-intercourse experience ((n = 1045))</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>190 (18.2)</td>
</tr>
<tr>
<td>No</td>
<td>855 (81.8)</td>
</tr>
<tr>
<td>ECP use among sexually active ((n = 190))</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25 (13.2)</td>
</tr>
<tr>
<td>No</td>
<td>165 (86.8)</td>
</tr>
</tbody>
</table>

ECP: emergency contraceptive pill.
differences were statistically significant for “health concerns” \( (t = 2.801, p = .005) \). There were also significant gender differences for the items “ECP might be harmful to the body” \( (t = -2.499, p = .013) \) and “I am afraid to use ECPs due to side effects” \( (t = -3.361, p = .001) \), with females scoring lower than males on these items.

### 3.5. Attitude about using condoms

Table 4 lists the scores for attitude toward using condoms. The mean score was 3.38 (.51 SD), and was significantly higher for female (3.42 , .51 SD) than male students (3.27 , .50 SD) \( (t = -4.231, p = .0001) \). There was a significant gender difference for the “interruption
of sexual pleasure” ($t = -7.303, p = .0001$) subscale, with females scoring higher than males.

### 3.6. Relationships between variables

There were statistically significant correlations between the intent to use ECPs and attitude about using ECPs ($r = .260, p = .0001$), attitude about using condoms ($r = .116, p = .0001$), and intent to use condoms ($r = .147, p = .0001$) (Table 5). There was also a significant correlation between attitude toward and intent to use condoms ($r = .399, p = .0001$).

### 4. Discussion

Participants showed a general lack of knowledge about ECPs and misconceptions about the safety of their use. The intention to use ECP correlated with both intent to use condoms and attitude toward condoms. The intent to use ECPs and condoms was significantly higher for females than for male students, which is not surprising given that women feel responsible for the use of contraceptives and are likely to be most affected by the prospect of unplanned pregnancies.

In previous studies, the intent to use ECPs differed between study populations. In samples of US populations, more than 60% of male and female college students (Harper and Ellerton, 1995; Sawyer and Thompson, 2003) and 64.4% of low-income postpartum women (Jackson et al., 2000) responded that they would use ECPs. In this study, 52.6% of college students had intention to use ECPs. In contrast, Ball et al. (2006) found that less than 10% of Kuwaiti women had ever heard of ECPs (10 out of 103) or had the intention of using them (8 out of 103). Thus, it is important to examine differences in intent to use ECPs across populations and cultures as well as to elucidate those factors that influence intentions. Such information is critical to developing interventions to promote their use.

Much has been written about the influence of attitudes on intentions and behavior (Ajen and Fishbein, 1980), and the findings of this study support the role attitudes may play in the intention to use ECPs. People have concerns about the safety of ECPs, even though they are approved by the WHO and FDA, and there is no evidence that ECPs cause fetal abnormalities or have negative effects on later fetal development (Trussell et al., 2004). In spite of this, the women in this study perceived that ECPs will have negative health effects on their bodies, perhaps inducing infertility (Harper and Ellerton, 1995; Ikeme et al., 2005; Mandiracioglu et al., 2003). Based on this finding and those from previous studies, the safety of ECPs appears to be a common concern across cultures, which might bar effective decision making about their use. Willingness to use ECPs has been associated with the belief that ECPs are safe to use (Jackson et al., 2000). Thus, educational campaigns need to reassure women that ECPs are safe and effective and that their benefits outweigh the risks for most women. In spite of their concerns about ECP safety, however, our participants were still willing to use ECPs if necessary, possibly because they may be viewed as safer than an induced abortion (Kang, 2006).

### Table 5
Pearson correlations of study variables

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Intention of using ECPs</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Attitude toward using ECPs</td>
<td>.260 (.0001)*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>c. Attitude toward using condoms</td>
<td>.116 (.0001)*</td>
<td>.072 (.021)*</td>
<td>1</td>
</tr>
<tr>
<td>d. Intention of using condoms</td>
<td>.147 (.0001)*</td>
<td>.106 (.001)*</td>
<td>.399 (.0001)*</td>
</tr>
</tbody>
</table>

*p < 0.05
Although most participants in this study thought that it should be easy to purchase ECPs, approximately one-third thought that they should be prescription-only drugs. This coincides with fears that ECPs may lead to an increase in STIs and misuse of primary contraception (Kang, 2006; Mandiracioglu et al., 2003). Studies show, however, that the prevalence of unsafe sex does not increase when women are able to obtain ECPs without a prescription (Marston et al., 2005; Moreau et al., 2006; Walker et al., 2004). The majority of college students in Princeton (Harper and Ellertson, 1995), 65% of college students in Ghana (Baiden et al., 2002), and more than half of Swedish women who were having induced abortions (Anelblom et al., 2001) hoped that ECPs could be purchased without prescription. In contrast, most women in Hong Kong believed that ECPs have side effects, can promote irresponsible sex, and thus should only be available under a doctor’s supervision (Wan and Lo, 2005). It may be important to use such findings when attempting to support the use of ECPs.

Although attitudes toward using condoms were more favorable among female than male students, with male students believing more strongly that condoms would interrupt their sexual pleasure, an unexpected findings was that male participants had significantly more favorable views of ECPs than females. Health concerns about the use of ECP may be a particularly relevant issue for females that influences their attitude. This finding suggests the importance of making sure that women are knowledgeable of the health risks of using ECPs so they can make an informed decision about their use.

Although most students reported having at least heard of ECPs, their specific knowledge about them was poor. Knowledge about ECPs was higher for female than male students. Most were unaware that a prescription was required (54.8%), and very few knew the time frame of ECP efficacy. The current educational material on ECPs still quotes 72 h as the efficacy time frame, and hence it is not surprising that many students provided incorrect answers about the 120-h time frame. The vast majority of participants (90.1%) had received sexual education, but most had never received education on ECPs, even though 79.6% desired such education. These findings highlight the need to make information about ECPs widely available in both academic and nonacademic settings (Sawyer and Thompson, 2003), and include ECPs as a fundamental part of sexual education. Such programs would improve knowledge of ECPs (Beckman et al., 2001). Dedicated websites on ECPs could prove to be a useful source of information (Foster et al., 2005). Providing ECP information on a user-friendly website would be especially beneficial to Korean college students, since many hours a day are spent using the Internet.

Positive correlations were observed between the intent to use ECPs and the attitude about ECPs and condoms. Individuals with more positive attitudes about ECPs and condoms were more willing to use ECPs if they were needed. Thus, one strategy to increase the intention of people to use ECPs is to improve attitudes toward ECPs and condoms. Accurate information can play a key role in changing attitudes toward both ECPs and condoms.

5. Study limitations

The use of convenience sampling limits the generalizability of the study findings beyond the study sample. However, by selecting students from multiple colleges around the Korean nation, we believe the findings are fairly representative of Korean college students in general. However, young adults not enrolled in college as well as other sexually active groups may have decidedly different attitudes and intentions. Thus, research of other such populations is warranted.

6. Conclusions

Although a relatively high proportion of students reported having heard of ECPs, their perceived knowledge levels were very low and most had received little education about them. Based on these results, we conclude that campaigns designed to increase awareness of ECPs in college students provide an inadequate depth of information about them. College students also appear to have misconceptions about ECPs that raise their concerns about the safety of these drugs. Thus, more intense efforts to raise awareness about ECPs in order to deliver correct knowledge and dispel any myths are required. Such efforts would empower young people to make informed and responsible decisions about their reproductive and sexual health, and promote positive attitudes about using ECPs. It will be important to elucidate the barriers that prevent college students (or even younger students) from being appropriately educated about ECPs.

Interestingly, attitudes about ECPs and condoms differed between male and female students. Although condoms and ECPs are used by only males and females, respectively, partners can influence each other to make particular decisions about contraception. These differences should be considered to help partners better understand and help one another.

Although many health providers may be reticent about actively promoting ECPs for fear of negatively influencing condom use, this study supports the growing literature demonstrating that promotion of ECP use has no adverse effect on condom use. Thus, improving access and promoting ECPs and condoms will likely both increase condom use and provide backup contraception when a condom ruptures or is not used.
In general, health educators should make greater efforts to minimize the knowledge gap, disseminate the latest information to the general public, and update information in educational materials (including the Internet).

Acknowledgments

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References


