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The effect of knowledge and attitudes of emergency contraception on its use in undergraduate students

Amanda Marie Waldrup

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The Effect of Knowledge and Attitudes of Emergency Contraception on its use in
Undergraduate Students

By

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Thesis

Submitted to the School of Health Promotion and Human Performance

Eastern Michigan University

In partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE

in

Health Education with a concentration in Community Health

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November 15, 2008

Ypsilanti, Michigan

DEDICATION

To my mother and grandmother, who always stressed the importance of education
and encouraged me to keep reaching for the stars!

ABSTRACT

A web-based cross sectional analysis utilizing the Spearman Coefficient was used to examine the relationship between 341 college students' knowledge and attitudes toward emergency contraception. Personal characteristics and background factors such as age, race, gender, past and current use of contraception, past unintended pregnancies, and type of sex education in high school were compared to current knowledge levels and attitudes as related to use among college students. Results indicated that general knowledge is high, but detailed knowledge is lacking. Confusion between emergency contraception and RU-486 exist, which could lead to concerned attitudes ultimately effecting use. Most high schools that offer sex education do not include information about emergency contraception. Of those that do, knowledge is significantly affected. In conclusion, implementations should focus on obtaining correct detailed knowledge about emergency contraception and advocating for inclusion of emergency contraception information in sex education programs during high school.

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Chapter I
Introduction

Introduction

It is estimated that there are more than 3 million unplanned pregnancies in the United States each year (Brening, Dalve-Endes, & Patrick, 2003). This accounts for nearly half (49%) of all pregnancies. Fifty-four percent of these pregnancies will end in abortion, while the remaining (excluding miscarriages) will result in a live birth (Brening et al., 2003). The consequences of these unintended pregnancies are far reaching. Relationships fracture, educational and career aspirations are put on hold or abandoned altogether, and the financial responsibilities associated with pre-natal care and raising a child can be financially devastating to those who had not planned for the pregnancy. The recent approval by the Food and Drug Administration (FDA) of Plan B, an emergency contraceptive pill aimed at prohibiting conception, could theoretically help to significantly decrease the number of unplanned pregnancies in the U.S.

Emergency Contraception Therapies

The most common methods of emergency contraception in the United States are the Yuzpe method and Plan B. The Yuzpe method is a combination of 200 mcg of ethiny estradiol and 2.0 mg of norgestrel (or 1.0 mg of levonorgestrel) that is

dispensed at two pills per dose, started within seventy-two hours after unprotected sexual intercourse, and another two pills are taken twelve hours later (Harper & Ellertson, 1995). Trussell, Rodriguez, and Ellertson (1999) conducted a meta-analysis and found the Yzupe method to be 74.1 percent effective at preventing pregnancy. Plan B is a progestin only regimen, (containing 0.75 mg of levonorgestrel). It requires one pill per dose, started within seventy-two hours after unprotected sexual intercourse, followed by a second pill taken twelve hours later (Corbett, Mitchell, Taylor, & Kemppainen, 2006). Plan B has an effectiveness of 85 percent (Grimes, Herten, Piaggio, & Van Look, 1998). Plan B is currently available without a prescription to women over the age of eighteen (FDA, 2006).

Current Use by College Students

No studies have focused on the percentage of college students who have used emergency contraception. Most studies have looked at what the college participants' knowledge and attitudes were regarding emergency contraception (Harper & Ellertson, 1995; Corbett et al., 2006). In a national representative sample of 2002 Americans who were over the age of 18 conducted in 1994, the Kaiser Family Foundation found that only one percent of the population had used emergency contraception (Delbanco, Mauldon, & Smith, 1997). One explanation for this low percentage may be due in part to emergency contraception not being available (marketed as such) until 1998 (Harvey, Beckman, Sherman, & Petitti, 1999). Age and educational attainment may also play a role. In the research conducted by Harvey et al: (1999), they had a smaller size sample of women than the Kaiser Family

Foundation, with 235 participants. However, the majority of participants were young adults and had at least some college education. Approximately half (48.1%) were 18-25 years of age, with 77.8 percent having at least some college education. In this sample 14.5 percent had used emergency contraception in the past. Similar results were found in a study of college-aged participants aged 18-21. They found that 12.4 percent had used emergency contraception in the past (Corbett et al., 2006).

Background and Significance

This study was based on the only two previous studies conducted specifically on college students' knowledge and/or attitudes about emergency contraception. Both used cross-sectional research designs. The first study (Harper & Ellertson, 1995) used a telephone interview format. The participants were required to call a phone number to participate in the research. When they called in, the entire survey was pre-recorded. There were 25 questions. The researchers found that there was basic awareness and approval of emergency contraception, but detailed knowledge was absent, leading to ethical concerns. The major misconception was that emergency contraception was the same as RU 486 ("the abortion pill").

The second study was conducted more recently (Corbett, Mitchell, Taylor, & Kemppainen, 2006). It used a paper and pencil survey format that included 33 items. It was limited to men and women aged 18-21 years of age. All surveys were administered by a researcher in a public place on campus. The results indicated that the majority of college students had heard of emergency contraception and that they

did not have religious or moral objections to its use, but 87.6 percent could not distinguish that emergency contraception and RU 486 were different.

The current study differed in that an on-line survey was utilized. While this research utilized both men and women, it was limited to those 18-24 years of age. It was also limited to undergraduate students who had been heterosexually active within the last six months.

The associations between demographics, knowledge, and attitudes about emergency contraception had a limited amount of research to draw conclusions from. In all previous research that took place in the United States, demographical information was not the primary focus of the study. This was due in part to how recent emergency contraception has been marketed in the United States. The first regimen approved specifically for emergency contraception was only approved in 1998 (Harvey, Beckman, Sherman, & Petitti, 1999). The first and only brand, Plan B, made available over the counter without a prescription to women over 18 years of age, was not approved until August 2006 (FDA, 2006).

Gender has not been shown to influence knowledge and attitudes about emergency contraception (Harper & Ellertson, 1995). However, it has been shown to be significant in terms of use (Corbett et al., 2006) Race does play a role in knowledge about emergency contraception. White women have been found to be the most informed, followed by African Americans, and then Hispanic women (Foster, et al., 2004).

Differences of knowledge and attitudes about emergency contraception have been shown based on knowledge of ingredients (Harper & Ellertson, 1995). While not

statistically examined for significance, Corbett et al. (2006) found that 75.3 percent had knowledge of emergency contraception, and their primary method of birth control was the birth control pill. Based on this it is no surprise that women are statistically more likely to have knowledge about emergency contraception if they have talked to their doctors about birth control (Delbanco, Mauildon, & Smith, 1997; Foster et al., 2004).

Unintended pregnancy has not been specifically examined in terms of emergency contraception knowledge and attitudes. Several studies have conducted their research in abortion clinics with women wishing to terminate their pregnancies (Jones, Darroch, & Henshaw, 2002; Jamieson, Hertweck, & Sanifilippo, 1999). In these studies the participants had virtually no salient knowledge of emergency contraception (Jones et al., 2002) and few had used it (Jamieson et al., 1999).

The type of sex education provided in high school has never been studied as it relates to emergency contraception. However, in 1999, 40 percent of public high schools were found to either not teach about contraception or to teach that contraception methods including condoms were ineffective (Darroch, Landry, and Singh, 2000).

Purpose Statement

The purpose of this study was to examine the relationship between college students' knowledge and attitude toward emergency contraception and their current or intended use, using The Theory of Reasoned Action as a guide. Personal

characteristics and background factors such as: age, past and current use of contraception, past unintended pregnancies, and type of sex education in high school were compared to current knowledge levels and attitude toward emergency contraception on use among college students.

Research Questions

1. Is there a significant relationship between knowledge about emergency contraception and its subsequent use among college students?
2. Is there a significant relationship between knowledge about emergency contraception and its intended use among college students?
3. Is there a significant relationship between attitudes about emergency contraception and its subsequent use among college students?
4. Is there a significant relationship between attitudes about emergency contraception and its intended use among college students?
5. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the knowledge about emergency contraception?
6. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the attitudes about emergency contraception?

7. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the current use of emergency contraception?
8. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the intended use of emergency contraception?
9. How does participation in abstinence only/abstinence plus sex education programs in high school affect the knowledge about emergency contraception among college students?
10. How does participation in abstinence only/abstinence plus sex education programs in high school affect the attitudes about emergency contraception among college students?
11. How does participation in abstinence only/abstinence plus sex education programs in high school affect the current use of emergency contraception among college students?
12. How does participation in abstinence only/abstinence plus sex education programs in high school affect the intended use of emergency contraception among college students?

Delimitations

1. Students who participated in the online survey represented the general population of undergraduate students at Eastern Michigan University.

2. Participants reported sensitive personal topics accurately, honestly, and without reservation.
3. The instruments used accurately measured the participants' knowledge and attitudes about emergency contraception along with contextual factors.
4. The sample would be restricted to heterosexual (male and female) students who have reportedly been sexually active during the previous 6 months.

Limitations

1. The survey was available only on-line and required internet access.
2. Participants were limited to undergraduate students at Eastern Michigan University.
3. Participants were between 18 and 24 years old.
4. Results may not be generalized to other colleges or college students.
5. Self-report measures are always limited by the participants' willingness to be honest when answering questions.
6. Participants may not be representative of Eastern Michigan University's undergraduate student population.

Definition of Terms

1. *Emergency Contraception*: Emergency Contraception is defined as hormonal pills given to a female up to 72 hours after unprotected intercourse. These pills can

- prevent a fertilized ovum from implanting in the wall of the uterus (Harper & Ellertson, 1995).
2. *Plan B*: It is one name brand of emergency contraception available in the United States. It is a high dose of progestin (levonorelrel 0.75 mg) that was approved by the Food and Drug Administration (FDA) in 1999 (Corbett et al., 2006). The FDA approved it for over the counter sale to women over the age of 18 on August 24, 2006 (FDA, 2006).
 3. *Preven*: It is one name brand of emergency contraception available by prescription in the United States.
 4. *Yuzpe method*: Named after its Canadian creator, Dr. Albert Yuzpe, this is the method of emergency contraception most commonly used in the United States. It is a 2-step process. The first dose of pills is given immediately to the patient. The second follows 12 hours later.
 5. *RU-486*: This is a pill given to women that makes the lining of the uterus detach from the uterine wall. If an implanted egg is present, it will also be shed from the woman's body. This is also known as "The abortion Pill."
 6. *Unintended Pregnancy*: The act of becoming pregnant without planning or wanting to become pregnant.
 7. *Sexual Intercourse*: Sexual intercourse for the purpose of this research is defined as heterosexual vaginal intercourse from which a pregnancy can result.
 8. *Unprotected Sexual Intercourse*: Unprotected sexual intercourse is defined for the purpose of this study as heterosexual vaginal intercourse without the use of a barrier or hormonal method of birth control.

9. *Birth Control*: Any method that can prevent a pregnancy from happening.
10. *Barrier Method*: A method that prevents sperm from reaching and inseminating an egg. A male condom is the most common example.
11. *Hormonal Method*: A method by which a female takes hormones that prevent ovulation from occurring. This method is most commonly referred to as “birth control pills” or “the pill.”
12. *Theory of Reasoned Action*: A model introduced in 1967 to address the relationship between beliefs, attitudes, intentions, and behavior (Montano & Kasprzyk, 2002)

Chapter II

Review of the Literature

Introduction

The purpose of this research was to conduct a cross-sectional study of undergraduate students to examine the relationship between their knowledge and attitudes about emergency contraception and how it affects their use. This chapter will present a review of the current and relevant literature in the field of emergency contraception. The first section will give an explanation of what emergency contraception is as well as its need. The next section presents research that examined individuals' knowledge and attitudes toward emergency contraception. Because emergency contraception (packaged and labeled as such) has only been in use in the United States since 1998, the literature will focus on U.S. research. Demographic information is presented with respect to emergency contraception. The last section presents literature on background factors such as past contraceptive use, past unintended pregnancy, and type of sex education taken in high school.

What is Emergency Contraception?

“Emergency contraception, otherwise known as postcoital contraception, refers to a group of birth control modalities that, when used after unprotected intercourse within defined time constraints, can markedly reduce the risk of a resultant

unintended pregnancy” (Jamieson, Hertweck, & Sanfilippo, 1999, p.1).

Since the 1960s, emergency contraception pills have come in several forms. Today the United States uses a two dose formula known as the Yuzpe method (Harvey, Beckman, Sherman, & Petitti, 1999). It is named after the Canadian Doctor, Albert Yuzpe, who began studies of emergency contraception in 1972. Emergency contraception pills reduce the risk of pregnancy by approximately 75 percent if administration is started within 72 hours after unprotected sexual intercourse and a subsequent follow-up dose is taken 12 hours later (Delbanco, Mauldon, & Smith, 1997). In a study conducted by The Center for Reproductive Health Research and Policy, it was found that potential users of emergency contraception were described as women who were at risk for an unintended pregnancy-those who were fertile, sexually active, and who did not want to become pregnant (Foster, Harper, Bley, Mikanda, Induni, Saviano, & Stewart, 2004).

In August 1998, Gynetics Inc. announced that the Food and Drug Administration (FDA) had approved PREVEN, an Emergency Contraception Kit, for use as an emergency contraceptive method (Harvey, Beckman, Sherman, & Petitti, 1999). It was the first of its kind on the market in the United States. In July 1999, PLAN B, marketed by the Women’s Capital Corporation, received approval from the FDA (Harvey, Beckman, Sherman, & Petitti, 1999). It is the first progestin-only emergency contraceptive. The FDA approved it for over-the-counter sale to women over the age of 18 on August 24, 2006 (FDA, 2006). Each protocol must be started within 72 hours after unprotected sexual intercourse.

The Cost of Unintended Pregnancies

Unintended pregnancy is a major social, medical, and public health problem (Abbott, Feldhaus, Houry, & Lowenstein, 2003). Unintended pregnancies have become a major source of social burden in the United States. According to the Administration for Children and Families, more than one third of all births (33.7%) were to unmarried women in 2001-2002. Unintended pregnancy rates are highest, at twice the overall rate, in women aged 18-24 (Finer & Henshaw, 2006).

The welfare system is overburdened with single mothers and their children. Having a child at a younger age has negative consequences on the mother's educational attainment, social economic status, and health status, as well as other factors. Medicaid-funded births for unintended pregnancies, which equates to approximately 60 percent, cost an estimated \$90 million annually (Hayes, Hutchings, & Hayes, 2000). The cycle of young mothers giving birth to children is often repeated through generations. Emergency contraception use is one way that the cycle could be broken.

Jamieson et al. (1999) found that there are 3.6 million unintended pregnancies each year, with half ending in termination. When miscarriages were excluded, abortions were the result in 54 percent of unintended pregnancies, with the remaining unintended pregnancies ending in live births (Brening, Dalve-Endes, & Patrick, 2003) Therefore, approximately 1.5 million children are born every year in the United States to women who did not intend to have a child. This creates an undue burden on the woman as well as society. The savings by utilization of emergency contraception is tremendous. The widespread availability of emergency contraception pills could prevent 0.8 million abortions annually, at least 1.7 million unintended pregnancies, and result in tremendous

cost-savings to society (Brening et al., 2003). The availability of emergency contraception pills has already begun to work. In 2000, as many as 51,000 abortions were averted by use of emergency contraceptive pills (Jones, Darroch, & Henshaw, 2002).

Knowledge and Attitudes about Emergency Contraception

“The American Public Health Association, American Medical Association, The International Planned Parenthood Federation, and the American College of Obstetrics and Gynecology have argued that patients and providers should learn more about emergency contraception and that emergency contraception pills should be made available to women 24 hours a day, perhaps even without a prescription.” (Abbott et al., 2003, p. 2)

A nationwide study conducted by the Kaiser Family Foundation (1997) found that of 1,000 women aged 18-44, two thirds had heard of emergency contraception, only 28 percent knew it was available in the United States, 13 percent knew the treatment could be initiated up to 72 hours after sexual intercourse, and only one percent had ever used it (Harvey et al., 1999). Although the sample size was small, similar results were found in another study. Foster and colleagues (2004) found that among women at risk, the lowest levels of knowledge about emergency contraception were among women not using a method of contraception (29%), and the highest levels of knowledge about emergency contraception use were among women using contraception (45%).

Many studies have focused their research on patients coming to clinics for abortions of unintended pregnancies. In a study in which 437 women were surveyed at a women's health clinic, 41 percent had had an abortion in the past, but of these women, approximately 85 percent were unaware of emergency contraception (Schein, 1999).

College Students' Knowledge and Attitudes Toward EC

Very few studies have measured the knowledge, attitudes, and use of emergency contraception among college students. One such study (Harper & Ellertson, 1995) used an automated random sample telephone survey to gather data. The participants were given a specific amount of time to record their answers. At the conclusion, participants were given time to include anything they felt relevant to the research. These data had to be interpreted by the researchers. Of the 550 participants, 58 percent were male and 42 percent were female. The sample consisted of undergraduate and graduate students.

The background factors the researchers examined were the level of importance of religion, political affiliation, experience with a "close call," knowledge of side effects of emergency contraception, ability to distinguish from RU 486, knowledge of ingredients, and timeline for taking emergency contraception pills. Age, gender, and race were not analyzed. The results indicated that there was basic awareness and approval of the emergency contraception pill, yet students lacked detailed knowledge. While the majority (95%) had heard of emergency contraception pills, only 26 percent knew that the ingredients were a higher dose of oral contraception pills, and only 38 percent knew the correct timing for use (Harper & Ellertson, 1995). The researchers also found that there

was confusion among many participants between emergency contraception pills dispensed by the university health services and the abortifacient RU-486.

Corbett and associates (2006) examined the knowledge, attitudes, and behaviors in university students regarding emergency contraception. A convenience sample of male and female college students entering the lobby of the university library was used. The anonymous paper/pencil survey was conducted in person by the researchers. In all, 97 participants ranging in age from 18-21 years of age completed the survey.

The researchers examined the role of sources of information on emergency contraception, preferred birth-control method and usage, perceptions of their personal risk of unintended pregnancy, and objections to and perceived worthiness of emergency contraception. Results indicated that most participants had knowledge of emergency contraception and considered it a worthy tool to prevent pregnancy. However, while Harper and Ellertson (1995) found that approximately half (49.5%) could not distinguish that emergency contraception and RU-486 were different, Corbet et al. (2006) found that 87.6 percent could not distinguish the difference. Female participants who responded they would use emergency contraception if needed were found to be significantly more likely to use it if they had a prescription already. Embarrassment or feeling judged was indicated by all females who reported they were not likely to use emergency contraception. The primary reported method of birth control used was the pill (40.2%). Females were significantly more likely to have discussed emergency contraception with their healthcare provider.

Demographic Characteristics Affecting Knowledge and Attitudes about Emergency Contraception

Race.

In the Foster et al. study (2004), a significant relationship was found between race and knowledge of emergency contraception in women 18-44 years of age. African American women were approximately one-third (31%) less likely than White females to know about emergency contraception. Hispanic women were less than half as likely as White women to know about emergency contraception. The researchers did not attribute these findings to a specific cause, only noting that disparities existed and should be addressed. In a study of Americans over the age of 18, race was shown to have a significant effect on knowledge of emergency contraception, noting large differences between groups (Delbanco, Mauldon, & Smith, 1997). The researchers theorized that knowledge may reflect cultural and social networks.

Gender.

In Harper and Ellertson's study of college students (1995), no differences were found in relation to the participants' attitudes about emergency contraception. In variables that were found to be significant, gender was not extrapolated. Corbett et al. (2006) noted statistically significant findings in three areas based on gender: discussing emergency contraception with a healthcare provider, past use (or partner's use), and embarrassment in asking for emergency contraception. In all areas, females were more likely than males to have the experience. In a study of Americans over the age of 18,

gender was shown to have a significant effect on knowledge of emergency contraception (Delbanco et al., 1997). The researchers theorized that knowledge may be affected by school health services, sexual partners, friends, or family members.

Age.

In women 20-24 years old, it is estimated that 58.5 percent of all pregnancies are unintended, and 75 percent are unintended for 18-19 year olds (Brening et al., 2003). Most undergraduate college students range in age between 18 and 24 years. According to this research, college students are at an increased risk for unintended pregnancies, therefore having an increased need for emergency contraception. Age was also found to be a significant predictor of knowledge of emergency contraception both individually and cumulatively with other characteristics in a national survey (Delbanco et al., 1997). In a random weighted study of California women aged 18-44, 1,040 participants were in the typical college age group of between 18-24 years of age. Of this subgroup, almost half (47.7%) answered that they did not believe there was anything that could be done after having unprotected intercourse to prevent pregnancy (Foster et al., 2004).

Background Factors Affecting Knowledge and Attitudes about Emergency Contraception

Past Contraceptive Use.

Women are statistically more likely to have knowledge about emergency contraception if they have talked to their doctors about birth control (Delbanco et al.,

1997; Foster et al., 2004). Delbanco and associates (1997) examined whether there was a link between knowledge of patients and health care professional. They found that women who had talked with their health care professionals about birth control were significantly (62%) more aware of emergency contraception pills. However, only 26 percent had salient knowledge about them.

Both males and females are more likely to support emergency contraception if they know the ingredients are the same as in birth control pills. In Harper and Ellertson's study of college students (1995), 26 percent of the participants knew the ingredients in emergency contraceptive pills were a larger dose of oral contraceptives. The odds of approval were shown to be 149 percent higher in participants who knew what the ingredients were. Corbett et al. (2006) found that although not examined for significance, 75.3 percent of participants had knowledge of emergency contraception, and the primary method of birth control was the pill.

Past Unintended Pregnancy.

A study conducted at an abortion clinic examined the knowledge about emergency contraception in women who were there to terminate an unintended pregnancy (Jamieson et al., 1999). The sample was very small (N=83). One hundred and fifty-three women out of two hundred and thirty-six refused to participate. The participants ranged in age from 15 to 44 years of age. Of these participants, 46 percent were under 21 years of age. The researchers found that 71 percent had no real knowledge

of emergency contraception options. They found that only three percent had somewhat complete information.

Sex Education in High School.

The knowledge and attitudes about emergency contraception have never been analyzed in relation to the type of sex education received in high school. Therefore, this research would be the first of its kind. However, in 1999, 40 percent of public high schools were found to either not teach about contraception or to teach that contraception methods including condoms were ineffective (Darroch, Landry, & Singh, 2000).

Summary

Previous research that has examined knowledge and attitudes about emergency contraception of college students has shown increases. Yet there have been flaws in the research designs, data collection methods, or the sampling.

This current research utilized a web-based survey design to collect data. The data obtained, guided by The Theory of Reasoned Action, provided not only information regarding knowledge and attitudes, but also about past use, background characteristics, and contextual factors that contributed to the utilization of emergency contraception. Based on found results, health education implementations can be developed to utilize preexisting knowledge and attitudes while still working to advocate in areas of deficiencies.

Chapter III

Methodology

The relationship between knowledge and attitudes about emergency contraception and subsequent use of emergency contraception using a cross-sectional research design was examined. This chapter presents the theoretical framework that was used to guide the development of this study, as well as the methods and procedures that were used. This chapter includes instrumentation, pilot testing, sample, sample recruitment, data collection procedure, funding, and data analysis.

Theoretical Framework

The conceptual model used to initially guide the development of this research study (see Figure 1) was formed as an improvement on research conducted on college students' knowledge and attitudes about emergency contraception (Harper et al., 1995; Corbett et al., 2006). For this research, constructs of The Theory of Reasoned Action were used.

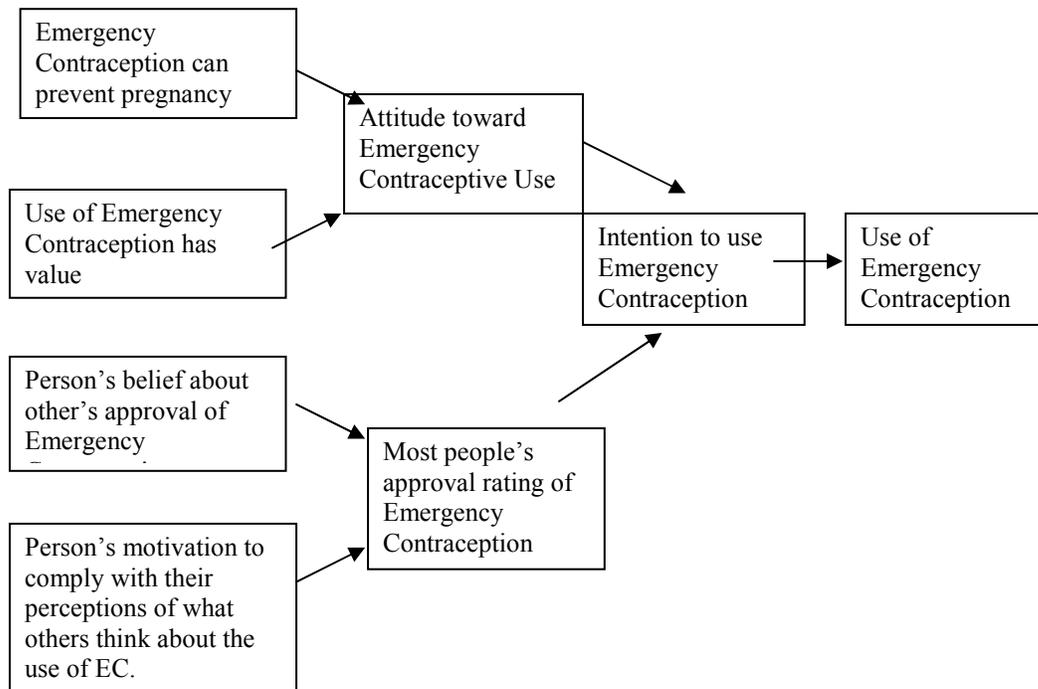


Figure 1. Theoretical framework

The Theory of Reasoned Action was developed by Fishbein in 1967 to address the internal motivational factors as determinants of the likelihood of performing a specific behavior (Montano & Kasprzyk, 2002). The attitude toward the behavior (i.e., behavioral beliefs and evaluation of behavioral outcomes) and subjective norms (i.e., normative beliefs and motivation to comply) of the individual are used to determine behavioral intention and thus behavior. The constructs in Figure 1 represent key components of the Theory of Reasoned Action in that the use of emergency contraception may be influenced by attitudes and subjective norms established by (perceived) knowledge. The theory provided a foundation for instrumentation design and creation to measure attitudes, subjective norms, and intentions about emergency contraception.

Institutional Review Board Approval

This research protocol was reviewed and approved by the College of Health and Human Services Human Subjects Review Committee at Eastern Michigan University.

Cross-Sectional Research Design

This research study used a cross-sectional research design. Cross-sectional research is a quick and relatively easy way to measure a population. Cross-sectional studies have been used in all of the research that has examined the knowledge, attitudes, and perceptions of potential users about emergency contraception in the United States. Some of these cross-sectional studies were used as a needs assessment for subsequent outreach programs that promoted emergency contraception to the priority population. One such outreach study, taking place outside of the US, was conducted in Mexico City, Mexico with positive results (Heimbürger et al., 2002).

Instrumentation

This research used an on-line survey adapted from two pre-existing survey instruments. The first, “The emergency contraception pill: A survey of knowledge and attitudes among students at Princeton University,” developed by Harper and Ellertson (1995), was a 25-item questionnaire. Permission was obtained from Cynthia K. Harper, the primary researcher, to elaborate, add, or otherwise change survey questions to fit this

study. The survey was approved by the Princeton Institutional Review Panel of Human Subjects. It has already been shown to be valid and reliable (See Appendix A).

The second instrument (also 25-items), “Emergency Contraception: Knowledge and perceptions in a university population,” was developed by Corbett and colleagues (2006). Permission was obtained from Julie Taylor, the primary researcher, to elaborate, add, or otherwise change the survey to fit the proposed research. The survey was approved by the University of North Carolina at Wilmington Institutional Review Board for Human Subjects. It has already been shown to be valid and reliable (See Appendix B).

The online survey was used to collect information on knowledge, attitudes, and use of emergency contraception. It also collected information on unintended pregnancy, contraceptive use, and participation in abstinence only/abstinence plus sex education in high schools.

Knowledge and Attitudes about Emergency Contraception Survey

The following is a brief description of the scales used to measure the variables of interest. It was a 47-item instrument (see Appendix C).

1. *Demographics*: Three items were asked on this topic. These items include: gender, age, and race/ethnicity.
2. *Knowledge of Emergency Contraception*: Twelve items were used to assess the participant’s knowledge regarding emergency contraception (i.e., “Have you ever heard of emergency contraception?”). Response choices were coded using both a

- 3-point likert scale ranging from 1=yes/true, 2=no/false, 3= not sure, and a multiple choice format.
3. *Attitudes on Emergency Contraception*: Sixteen items were used to assess participant's attitudes regarding emergency contraception (i.e., "Emergency contraception should be available 24 hours a day"). Response choices were coded using both a 3-point likert scale ranging from 1=yes/true, 2=no/false, 3= not sure, and a multiple choice format.
 4. *Subjective Norms*: Two items were used to assess participants' subjective norms regarding emergency contraception (i.e., "Most people would approve of emergency contraception pills"). Response choices were coded using both a 3-point likert scale ranging from 1=yes/true, 2=no/false, 3= not sure, and a multiple choice format.
 5. *Emergency Contraception Use*: Four items were used to assess the participant's use of emergency contraception (i.e., "Have you, or your partner, ever used emergency contraception pills"). Response choices were coded using both a 3-point likert scale ranging from 1=yes/true, 2=no/false, 3= not sure.
 6. *Unintended Pregnancy Risk*: Five items were used to assess the participant's risk of pregnancy (i.e., "Have you, or your partner, ever experienced an unintended pregnancy?"). Response choices were coded using both a 3-point likert scale ranging from 1=yes/true, 2=no/false, 3= not sure, and a multiple choice format.
 7. *Contraceptive History*: Three items were used to assess the participant's contraceptive use (i.e., "How often do you use a birth control method?").

Response choices were coded using both a 3-point likert scale ranging from 1=yes, 2=no, 3= not sure, and a multiple choice format.

8. *Sex Education*: Two items were used to assess the participant's type of sex education while in high school (i.e., "What type of sex education did you participate in while in high school?"). A likert scale was used ranging from 1= abstinence plus sex education, 2=abstinence only education, 3= none offered/did not participate.

Pilot Testing.

A qualitative pilot test was used to examine the understanding and readability of the adapted Knowledge and Attitude Survey. A group of five undergraduate students from Eastern Michigan University were recruited and utilized to report their understanding and comprehension of the meaning of each question. No comprehension or formatting problems were identified; therefore, the survey was not modified.

Sample and Sample Recruitment

The participants in this research were undergraduate students enrolled at the Ypsilanti campus of Eastern Michigan University. The student body represented 46 states and 80 countries. However, 85 percent were Michigan residents. In the fall of 2006, females accounted for 60 percent of the undergraduate population; Whites made up 70 percent, and African Americans 16 percent, of the total population.

Three hundred and forty-one participants were recruited from undergraduate students enrolled at Eastern Michigan University during the Winter 2007 semester. Recruitment took place the last week of the semester. The principal investigator sent a college-wide email to all undergraduate students. Information was provided about the purpose of the study, the criteria for participation, incentives, and how to access the survey online.

The following criteria was used to establish participation in this research: (1) 18-24 years of age, (2) heterosexual, (3) sexually active within the last six months, (4) not currently trying to conceive, and (5) enrolled as an undergraduate student at Eastern Michigan University. Participation was open to both male and female students. Each participant was instructed to complete the online survey, designed using SNAP. They were given the web address in order to complete the survey. SNAP took advantage of the typical college student's use of the internet by enabling them to complete the survey at anytime. They were instructed to be alone while completing the survey. This was to ensure that the participants felt comfortable in giving honest answers to the questions. These criteria were established to ensure that the target population would have been at risk for unintended pregnancy and be in an age range where most unintended pregnancies occur.

Data Collection Procedure

The following survey methodology was used to address the research questions guiding this research study. The SNAP version 8 program, an online survey creation package, was utilized for this research. It enables the researcher to create, modify, and

launch a survey without any cost to the researcher. SNAP allowed the researcher to design the survey in such a way that the participant was first given the consent form (designed as Survey #1). If the participant gave his/her consent to participate in the research, he or she was then linked to the survey (designed as Survey # 2). Those who did not choose to give their consent were not directed to the survey. At the end of the survey, the participants were linked to another page asking if they would like to be entered into the drawing for the incentive (designed as Survey # 3). They could choose to leave their name and email address in order to be entered into the drawing. Otherwise they could exit the program. Each survey (#1, 2, and 3) created a separate data file, thus ensuring that the information provided on the consent form and the incentive form was not linked to the specific answers provided by the participant in the actual survey.

Data Storage and Handling

After the window of time for participants in the survey had expired, the survey was taken down from the web. SNAP organized the data, created folders and downloaded the data directly into the Statistical Package for the Social Sciences (SPSS), thereby reducing human errors in the data entry process. The SNAP administrator was the only person who could see the encoded data; however, the administrator did not see the corresponding questions. The data and corresponding questions were only combined on the researcher's hard drive, which was password protected. After the data were e-mailed to the researcher, the data were erased from the server. This further increased the security of the information provided by the participants.

The final data obtained for this research was stored for five years in a locked office at Eastern Michigan University by the researcher's thesis advisor. After the five years, the data will be destroyed.

Informed Consent

Participants first had to give their consent before being directed to the survey. They were told to write down or print the page for their records should they have any questions. The consent agreement specified the purpose of the study, benefits and risks, voluntary participation, right to withdraw, confidentiality and anonymity, and the dissemination of the results of the study (see Appendix D). A record of the participants' Eastern Michigan University e-mail address was kept to ensure that the participants were enrolled at Eastern Michigan University as well as to discourage participating more than once.

Incentives for Participation

Incentives were utilized in order to recruit the optimal number of participants for this research. Once the survey was completed, participants were given the opportunity to enter their name and Eastern Michigan University e-mail address in order to enter the contest. Participants had a chance at winning one of thirty \$10 gift cards. Those who were selected as the winners were contacted by email. Participants were assured that their name and all other identifying information were kept confidential. Only the principal

investigator came into contact with this information. Once the drawing was held, participants' information was destroyed.

Funding

The researcher utilized SNAP for the survey implementation. The cost was free, given that the researcher was a student at Eastern Michigan University. Three hundred dollars was needed to purchase gift cards for use as incentives for participation in this research. These funds were provided by the School of Health Promotion and Human Performance.

Data Analysis

Unit of Analysis

This research hoped to answer six key questions: (1) Is there a significant relationship between knowledge about emergency contraception and its subsequent/intended use among college students? (2) Is there a significant relationship between attitudes about emergency contraception and its subsequent/intended use among college students? (3) How do demographic factors such as age, race/ethnicity, gender, past contraception use, and past unintended pregnancies, affect the current/intended use of emergency contraception? (4) How do demographic factors such as age, race/ethnicity, gender, past contraception use, and past unintended pregnancies affect the knowledge and

attitudes about emergency contraception? (5) How do abstinence only/abstinence plus sex education programs in high school affect the current/intended use of emergency contraception among college students? (6) How do abstinence only/abstinence plus sex education programs in high school affect the knowledge and attitudes about emergency contraception?

Through the use of SNAP, the raw data were downloaded into the Statistical Package for the Social Sciences (SPSS) version 16.0. SPSS was used to conduct frequency analyses, reliability analyses, cross-tabulations, and the recoding and computing of new variables. All analysis was conducted using SPSS with a confidence level of at least 95%.

Chapter IV

Results

The present study used a cross sectional analysis methodology to assess the relationship between knowledge, attitudes, and use of emergency contraception. This chapter provides a description of the sample that includes background characteristics, knowledge about emergency contraception, attitudes about emergency contraception, use of emergency contraception, sexual behaviors, and related factors. In addition, the chapter presents the results used to answer the twelve research questions.

Description of the Sample

The Emergency Contraception Survey was completed by 341 undergraduate heterosexually active college students. The vast majority of respondents were young White females (see Table 1). The participants ranged in age from 18 to 24 years of age; 71.4 percent were under 23 years old. Most (85.3%) identified as White, while nearly 9 percent (8.9%) identified as African America/Black. The remaining 5.9 percent identified as Latino, Asian, Arabic, Multiracial, or Other.

Table 1

Demographic Characteristics of Study Participants

Characteristics	Number	Percent
Gender	(n=339)	
Male	72	21.2
Female	267	78.8
Age	(n=336)	
18	10	3
19	16	4.8
20	49	14.6
21	92	27.4
22	73	21.7
23	40	11.9
24	56	16.7
Race/Ethnicity	(n=338)	
White	291	86.1
American/Black	30	8.9
Latino/Latina	2	0.6
Asian	2	0.6
Arabic	1	0.3
Multiracial	5	1.5
Other	7	2.1

* percentage may not add up to 100 due to missing data

Background Characteristics

Past Contraceptive Use

Participants were asked how often they use a birth control method. More than three fourths (77.7%) acknowledged using a birth control method *all of the time*, while 10.6 percent answered *most of the time*. Therefore it can be concluded that participants did use some form of birth control the vast majority (88.3%) of the time. When participants were asked what their preferred method of birth control was, a majority (59.8%) stated that hormones such as the pill, the patch, or the ring were their method of choice. The male condom was used 28.7 percent of the time. More than half of participants (55.1%) engaged in sexual intercourse at least once a week. However, approximately 18 percent indicated that they had had unprotected sexual intercourse at least once a week. When participants were asked if a birth control method had ever failed, 45.2 percent indicated that it had. Yet 85.1 percent either *agreed* or *strongly agreed* that they wanted to lower their risk of unintended pregnancies (see Table 2).

Table 2

Past Contraceptive Responses

Items	Responses	Frequency	%	Total (n)
How often do you use a birth control method?	Always	265	77.7	336
	Most of the time	36	10.6	
	Some of the time	10	2.9	
	Rarely	11	3.2	
	Never	14	4.1	
What is your preferred method of birth control?	Male condom	98	28.7	337
	Birth control pills etc	204	59.8	
	Depo Provera	8	2.3	
	IUD	5	1.5	
	Withdrawal/rhythm method	14	4.1	
	None	6	1.8	
	Other	2	.6	
How often have you engaged in sexual intercourse in the past 6 months?	At least once a day	19	5.6	335
	At least once a week	188	55.1	
	At least once a month	76	22.3	
	At least once every couple of months	32	9.4	
	Once in the last 6 months	18	5.3	
How often have you engaged in <u>unprotected</u> sexual intercourse in the past 6 months?	At least once a day	7	2.1	268
	At least once a week	60	17.6	
	At least once a month	31	9.1	
	At least once every couple of months	39	11.4	
	Once in the last 6 months	131	38.4	
Have you ever had a birth control method failure?	Yes	154	45.2	335
	No	169	49.6	
	Not sure	12	3.5	

* Percentage may not add up to 100 due to missing data

Table 2 (continued)

Past Contraceptive Responses

Items	Responses	Frequency	%	Total (n)
I want to lower my risk of unintended pregnancy.	Strongly agree	214	62.8	337
	Agree	76	22.3	
	Neutral	28	8.2	
	Disagree	6	1.8	
	Strongly disagree	8	2.3	
	Not sure	5	1.5	

* Percentage may not add up to 100 due to missing data

Past Unintended Pregnancies

Participants were asked their perception on whether unintended pregnancies were a problem. More than half (51.6%) thought that it was a major problem, while the rest of the sample (41.6%) thought it was an average problem. Approximately 12 percent (11.7%) had experienced either themselves or their partner an unintended pregnancy. See Table 3 for full results.

Emergency Contraception

Knowledge of Emergency Contraception

When asked about what was known about emergency contraception, the results were mixed (see Table 3). Most respondents (97.1%) knew that there was something they could do in the days following unprotected sexual intercourse. Less than a half of the

respondents (38.4%) knew that emergency contraception was not the same as RU-486, while more than half (50.7%) were unsure if they were the same. Approximately half of the respondents (51.9%) knew that emergency contraception was not medically appropriate if a woman had an already confirmed pregnancy. However, almost half (47.2%) either believed that emergency contraception was appropriate (22.6%) or were not sure (24.6%). Most participants (80.4%) were aware that that emergency contraception was between 75-90 percent effective at reducing the risk of pregnancy, and that it could be started up to 72 hours (61.3%) after unprotected sexual intercourse. Nearly all respondents (90.9%) knew that emergency contraception was available in the United States. Yet less than half (41.9%) knew that it was available over-the-counter to adults. Over half (56.9%) either thought it was not available over-the-counter or were not sure. See Table 4 for full results.

Table 3

Unintended Pregnancy Responses

Items	Responses	Frequency	%	Total (n)
How big of a problem do you think unintended pregnancy is in the United States?	Major	176	51.6	339
	Average	142	41.6	
	Minor	12	3.5	
Have you (or your partner) ever experienced an unintended pregnancy?	Yes	40	11.7	336
	No	291	85.3	
	Not sure	5	1.5	

* Percentage may not add up to 100 due to missing data

Table 4

Knowledge of Emergency Contraception Responses

Items	Responses	Frequency	%	Total (n)
If a woman has just had unprotected sexual intercourse or thinks that her birth control method may have failed, is there anything that she can do in the following days to prevent pregnancy?	Yes	331	97.1	339
	No	6	1.8	
	Not sure	2	.6	
Emergency Contraception pills are the same as RU-486, the "abortion pill."	Yes	34	10.0	338
	No	131	38.4	
	Not sure	173	50.7	
Do you think that emergency contraception pills are medically appropriate after a woman has missed her period or confirmed pregnancy?	Yes	77	22.6	338
	No	177	51.9	
	Not sure	84	24.6	
Are emergency contraception pills currently available in the US?	Yes	310	90.9	339
	No	2	.6	
	Not sure	27	7.9	
How effective are emergency contraception pills at reducing pregnancy?	100%	25	7.3	331
	75-90%	274	80.4	
	50%	23	6.7	
	25-40%	6	1.8	
	0%	3	.9	
How long after unprotected sexual intercourse do you have to start taking emergency contraception?	Up to One week	3	.9	337
	Up to 72 hours	209	61.3	
	Up to 24 hours	60	17.6	
	Up to 12 hours	11	3.2	
	Not sure	54	15.8	

* Percentage may not add up to 100 due to missing data

Table 4 (Continued)

Knowledge of Emergency Contraception Responses

Items	Responses	Frequency	%	Total (n)
What are the ingredients in emergency contraception pills?	Just the same as regular birth control pills	3	.9	336
	The same, but a larger dose	142	41.6	
	Completely different	21	6.2	
	Not sure	170	49.9	
Are emergency contraception pills available over-the-counter?	Yes	143	41.9	337
	No	108	31.7	
	Not sure	86	25.2	

* Percentage may not add up to 100 due to missing data

Attitudes about Emergency Contraception

When respondents were asked if they were concerned about the health risks related to emergency contraception, more than half (51.9%) stated that they were. Approximately 31 percent were concerned about the ethical/moral issues surrounding emergency contraceptive use.

However, when asked whether either of these concerns, health or ethical/moral, would prevent them from using emergency contraception, only 28.4 percent identified that it would. The majority of participants (66.6%) reported fear that the EC pills would not work. When asked if most people would approve of using emergency contraception pills, the results were mixed. More than a third (38.2%) either strongly agreed or agreed, while approximately 36 percent were neutral. Only a small percent (17.9%) either strongly disagreed or disagreed (see Table 5).

Intended Use of Emergency Contraception

Respondents were similar in their results about intended use. The majority (77.1%) stated they would be either *very likely* or *somewhat likely* to take emergency contraception pills to prevent a pregnancy. Similarly, the majority (74.1%) stated that if they had a pack of emergency contraception pills at home they would be *very likely* or *somewhat likely* to use them. When asked if the risk of pregnancy was low enough to not obtain emergency contraception, the majority (69.8%) either *disagreed* or *strongly disagreed*. For further breakdown of results, refer to Table 6.

Table 5

Attitudes about Emergency Contraception Responses

Items	Responses	Frequency	%	Total (n)
Do health risks concern you about emergency contraception pills?	Yes	177	51.9	335
	No	130	38.1	
	Not sure	28	8.2	
Do ethical/moral issues concern you about emergency contraception pills?	Yes	108	31.7	335
	No	211	61.9	
	Not sure	16	4.7	
Do you worry that emergency contraception pills might not work?	Yes	227	66.6	338
	No	84	24.6	
	Not sure	27	7.9	
Would health risks, ethical, or moral issues keep you from using emergency contraception pills?	Yes	97	28.4	337
	No	193	56.6	
	Not sure	47	13.8	
Most people would approve of emergency contraception pills.	Strongly agree	19	5.6	337
	Agree	111	32.6	
	Neutral	122	35.8	
	Disagree	56	16.4	
	Strongly disagree	5	1.5	
	Not sure	24	7.0	

* Percentage may not add up to 100 due to missing data

Table 6

Intended Use of Emergency Contraception Responses

Items	Responses	Frequency	%	Total (n)
If you wanted to prevent pregnancy and you did not use a contraceptive, or your birth control method failed, how likely would you be to take emergency contraception?	Very likely	177	51.9	336
	Somewhat likely	86	25.2	
	Neutral	20	5.9	
	Somewhat unlikely	15	4.4	
	Very unlikely	27	7.9	
	Not sure	11	3.2	
	If you had a pack of emergency contraception pills at home in case you needed them, how likely would you be to use them?	Very likely	171	
Somewhat likely		82	24.0	
Neutral		25	7.3	
Somewhat unlikely		11	3.2	
Very unlikely		31	9.1	
Not sure		17	5.0	
The risk of pregnancy is low enough that it is NOT worth it to obtain emergency contraception pills.	Strongly agree	6	1.8	336
	Agree	27	7.9	
	Neutral	41	12.0	
	Disagree	120	35.2	
	Strongly disagree	118	34.6	
	Not sure	24	7.0	

*percentage may not add up to 100 due to missing data

Subsequent Use of Emergency Contraception

When respondents were asked if they would take emergency contraception pills, almost three fourths (72.7%) stated that they would if needed. For further results, see Table 7.

Table 7

Subsequent Use of Emergency Contraception Responses

Items	Responses	Frequency	%	Total (n)
Would you take emergency contraception pills if needed?	Yes	248	72.7	335
	No	40	11.7	
	Not sure	47	13.8	

*percentage may not add up to 100 due to missing data

Sex Education in High School

Participants indicated that the majority (79.6%) were taught abstinence plus sex education in their high school. In contrast, 17.4 percent had either abstinence only or no sex education while in high school. When participants were asked if they had received information on emergency contraception, only 21.4 percent stated that they had. See Table 8 for full results.

Table 8

High School Sex Education Responses

Items	Responses	Frequency	%	Total (n)
What type of sex education did you have in high school?	Abstinence Only	37	10.9	339
	Abstinence Plus	270	79.6	
	None	22	6.5	
	Not sure	10	2.9	
Did you receive information in high school about emergency contraception?	Yes	72	21.1	336
	No	214	62.8	
	Not sure	38	11.2	

*percentage may not add up to 100 due to missing data

Results of Research Questions

The following section contains a discussion of each of the research questions.

Research question #1: Is there a significant relationship between knowledge about emergency contraception and its subsequent use among college students?

A number of variables were used to measure the participants' knowledge of emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' knowledge of emergency contraception and the subsequent use of emergency contraception among college students. Results of the analysis indicated a strong positive correlation between awareness of EC and subsequent use ($\rho (341) = .158, p < .01$), indicating a significant relationship between the two variables.

When examining the relationship between a subject's knowledge regarding the availability of EC and college students' subsequent use, a strong positive correlation was found ($\rho (341) = .130, p < .05$), indicating a significant relationship between the two variables. Additional significant relationships were found between a subject's knowledge of pregnancy reduction and subsequent use ($\rho (341) = .150, p < .01$), a subject's knowledge of onset of EC and subsequent use ($\rho (341) = .331, p < .01$), a subject's knowledge of ingredients in EC and subsequent use ($\rho (341) = .203, p < .01$), and a subject's knowledge of over-the-counter status of EC and subsequent use ($\rho (341) = .189, p < .01$). Additional correlations yielded no significant relationships (see Table 9).

Table 9
Knowledge About EC and Subsequent Use

Knowledge Questions	Subsequent Use (#35)
If a woman has just had unprotected sexual intercourse or thinks that her birth control method may have failed, is there anything she can do in the following days to prevent pregnancy?	.158**
Emergency contraception pills are the same as RU-486, the “abortion pill”.	.082
Do you think that emergency contraception pills are medically appropriate after a woman has missed her period or just confirmed pregnancy?	.078
Are emergency contraception pills currently available in the United States?	.130*
How effective are emergency contraception pills at reducing the chance of pregnancy if taken correctly?	.150**
How long after unprotected sexual intercourse do you have to start taking emergency contraception pills in order to work?	.331**
What are the ingredients in emergency contraception pills?	.203**
Are emergency contraception pills available over the counter to adults?	.189**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research question #2: Is there a significant relationship between knowledge about emergency contraception and its intended use among college students?

A number of variables were used to measure the participants’ knowledge of emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants’ knowledge of emergency contraception and the intended use of emergency contraception among college students.

Results of the analysis indicated a significant negative correlation between a subject’s low pregnancy risk belief and confusion that RU-486 and EC are the same ($\rho(341) = -.115, p < .05$). Additional significant relationships were found between the subject’s on hand (if you had a pack already at home) intended use and timing of EC use ($\rho(341) = .119, p < .05$), the subject’s on hand intended use and pregnancy

reduction ($\rho(341) = .127, p < .05$), the subject's on hand intended use and onset use of EC ($\rho(341) = .213, p < .01$), the subject's on hand intended use and knowledge of ingredients ($\rho(341) = .147, p < .01$), the subject's seeking out EC if needed and pregnancy reduction of EC ($\rho(341) = .161, p < .01$), the subject's seeking out EC if needed and onset use of EC ($\rho(341) = .271, p < .01$), the subject's seeking out EC if needed and knowledge of ingredients ($\rho(341) = .176, p < .01$), and the subject's seeking out EC if needed and over-the-counter status of EC ($\rho(341) = .188, p < .01$). Additional correlations yielded no significant relationships (see Table 10)

Table 10

Knowledge About EC and Intended Use

Knowledge Questions	Intended Use (#45)	Intended Use (#46)	Intended Use (#47)
If a woman has just had unprotected sexual intercourse or thinks that her birth control method may have failed, is there anything she can do in the following days to prevent pregnancy?	.098	.050	-.099
Emergency contraception pills are the same as RU-486, the "abortion pill".	.078	.062	-.115*
Do you think that emergency contraception pills are medically appropriate after a woman has missed her period or just confirmed pregnancy?	.104	.119*	.009
Are emergency contraception pills currently available in the United States?	.069	.018	-.014
How effective are emergency contraception pills at reducing the chance of pregnancy if taken correctly?	.161**	.127*	-.020
How long after unprotected sexual intercourse do you have to start taking emergency contraception pills in order to work?	.271**	.213**	-.043
What are the ingredients in emergency contraception pills?	.176**	.147**	-.054
Are emergency contraception pills available over the counter to adults?	.188**	.096	-.096

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research question #3: Is there a significant relationship between attitudes about emergency contraception, and its subsequent use, among college students?

A number of variables were used to measure the participants' attitudes about emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' attitudes about emergency contraception and the subsequent use of emergency contraception among college students.

Results of the analysis indicated a strong negative correlation between a subject's perceived health risk and subsequent use ($\rho (341) = -.174, p < .01$), indicating a significant relationship between the two variables. When examining the relationship between a subject's ethical/moral concerns and subsequent use, a strong negative correlation was found ($\rho (341) = -.447, p < .01$), indicating a significant relationship between the two variables. Additional significant relationships were found between a subject's risk of EC failure and subsequent use ($\rho (341) = .121, p < .05$), the subject's barriers to usage and subsequent use ($\rho (341) = -.398, p < .01$), and the subject's approval belief and subsequent use ($\rho (341) = .170, p < .01$). Additional correlations yielded no significant relationships (see Table 11).

Table 11

Attitudes about EC and Subsequent Use

Attitude Questions	Subsequent Use (#35)
Do health risks concern you about emergency contraception pills?	-.174**
Do ethical/moral issues concern you about emergency contraception pills?	-.447**
Do you worry that emergency contraception pills might not work?	.121*
Would health risks, ethical, or moral issues keep you from using emergency contraception pills?	-.389**
Most people would approve of emergency contraception pills if needed?	.170**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research question #4: Is there a significant relationship between attitudes about emergency contraception and its intended use among college students?

A number of variables were used to measure the participants' attitudes about emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' attitudes about emergency contraception and the intended use of emergency contraception among college students.

Results of the analysis indicated a strong negative correlation between a subject's perceived health risk and seeking out EC if needed ($r_{ho} (341) = -.205, p < .01$), indicating a significant relationship between the two variables. When examining the relationship between a subject's perceived health risk and on hand intended use, a strong negative correlation was found ($r_{ho} (341) = -.141, p < .05$), indicating a

significant relationship between the two variables. Additional significant relationships were found between the subject's ethical/moral concerns and seeking out EC if needed ($\rho(341) = -.402, p < .01$), the subject's ethical/moral concerns and on hand intended use ($\rho(341) = -.245, p < .01$), the subject's risk of EC failure and on hand intended use ($\rho(341) = .162, p < .01$), the subject's barriers to using EC and seeking out EC if needed ($\rho(341) = -.303, p < .01$), the subject's barriers to using EC and on hand intended use ($\rho(341) = -.237, p < .01$), the subject's barriers to using EC and low pregnancy risk belief ($\rho(341) = .167, p < .01$), the subject's approval belief and seeking out EC if needed ($\rho(341) = .310, p < .01$), the subject's approval belief and on hand intended use ($\rho(341) = .214, p < .01$), and the subject's approval belief and low pregnancy risk belief ($\rho(341) = -.132, p < .05$). Additional correlations yielded no significant relationships (see Table 12).

Table 12

Attitudes about EC and Intended Use

Attitude Questions	Intended Use (#45)	Intended Use (#46)	Intended Use (#47)
Do health risks concern you about emergency contraception pills?	-.205**	-.141*	.102
Do ethical/moral issues concern you about emergency contraception pills?	-.402**	-.245**	.097
Do you worry that emergency contraception pills might not work?	.048	.162**	-.082
Would health risks, ethical, or moral issues keep you from using emergency contraception pills?	-.303**	-.237**	.167**
Most people would approve of emergency contraception pills if needed?	.310**	.214**	-.132*

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 5: How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the knowledge about emergency contraception?

A number of variables were used to measure the participants' attitudes about emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' attitudes about emergency contraception and the intended use of emergency contraception among college students.

Results of the analysis indicated a strong positive correlation between a subject's past contraceptive use and awareness of EC ($\rho (341) = .170, p < .01$), indicating a significant relationship between the two variables. When examining the relationship between a subject's past unintended pregnancy and confusion that RU-486 and EC are the same, a strong positive correlation was found ($\rho (341) = .111, p < .05$), indicating a significant relationship between the two variables. Additional significant relationships were found between the subject's gender and timing of use of EC ($\rho (341) = .129, p < .05$), the subject's gender and US availability ($\rho (341) = -.202, p < .01$), the subject's past contraceptive use and US availability ($\rho (341) = .186, p < .01$), the subject's gender and onset use of EC ($\rho (341) = -.263, p < .01$), the subject's past unintended pregnancy and onset use of EC ($\rho (341) = .116, p < .05$), the subject's past contraceptive use and onset use of EC ($\rho (341) = .111, p < .05$), the subject's gender and knowledge of ingredients ($\rho (341) = -.120, p < .05$), and the

subject's past contraceptive use and over the counter status ($\rho(341) = .158, p < .01$).

Additional correlations yielded no significant relationships (see Table 13).

Table 13

Knowledge about EC and Demographic characteristics

Knowledge Questions	Age (#1)	Race (#2)	Gender (#3)	Past Unintended Pregnancy (#10)	Past Contraception Use (#11)
If a woman has just had unprotected sexual intercourse or thinks that her birth control method may have failed, is there anything she can do in the following days to prevent pregnancy?	.036	.062	-.061	.048	.170**
Emergency contraception pills are the same as RU-486, the "abortion pill".	-.030	-.088	-.015	.111*	.081
Do you think that emergency contraception pills are medically appropriate after a woman has missed her period or just confirmed pregnancy?	.033	.104	.129*	-.032	.031
Are emergency contraception pills currently available in the United States?	.023	-.030	-.202**	.063	.186**
How effective are emergency contraception pills at reducing the chance of pregnancy if taken correctly?	.031	-.035	-.009	.032	.084
How long after unprotected sexual intercourse do you have to start taking emergency contraception pills in order to work?	.067	.033	-.263**	.116*	.111*
What are the ingredients in emergency contraception pills?	-.056	-.039	-.120*	.021	.081
Are emergency contraception pills available over the counter to adults?	.082	.046	-.079	-.047	.158**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 6: How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the attitudes about emergency contraception?

A number of variables were used to measure the participants' attitudes about emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' demographic factors and attitudes about emergency contraception among college students.

Results of the analysis indicated a strong positive correlation between a subject's age and approval belief of EC ($\rho (341) = .114, p < .05$), indicating a significant relationship between the two variables. When examining the relationship between a subject's race and barriers to using EC, a strong negative correlation was found ($\rho (341) = -.144, p < .01$), indicating a significant relationship between the two variables. Additional correlations yielded no significant relationships (see Table 14).

Table 14

Attitudes about EC and Demographic Characteristics

Attitude Questions	Age (#1)	Race (#2)	Gender (#3)	Past Unintended Pregnancy (#10)	Past Contraception Use (#11)
Do health risks concern you about emergency contraception pills?	.097	-.070	-.040	.008	-.054
Do ethical/moral issues concern you about emergency contraception pills?	.050	-.087	-.009	-.055	-.074
Do you worry that emergency contraception pills might not work?	.013	-.048	.026	.029	-.007
Would health risks, ethical, or moral issues keep you from using emergency contraception pills?	.000	-.144**	-.065	-.025	-.019
Most people would approve of emergency contraception pills if needed?	.114*	-.005	.037	.004	.045

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 7: How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the subsequent use of emergency contraception?

One variable was used to measure the participants' subsequent use of emergency contraception. A Spearman rho correlation coefficient was used to calculate the relationship between the participants' demographic factors and subsequent use of emergency contraception among college students.

Results of the Spearman rho correlation coefficient indicated a strong negative correlation between a subject's gender and subsequent use ($\rho (341) = -.157, p$

<.01), indicating a significant relationship between the two variables. Additional correlations yielded no significant relationships (see Table 15).

Table 15
Demographic Factors and Subsequent Use

Demographic Factors	Subsequent Use (#35)
What is your age?	.056
What is your race/ethnicity?	.106
What is your gender?	-.157**
Have you (or your partner) ever experienced an unintended pregnancy?	.040
How often do you use a birth control method?	.068

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 8: How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the intended use of emergency contraception?

A number of variables were used to measure the participants' intended use of emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' demographic factors and intended use of emergency contraception among college students.

Results of the analysis indicated a strong positive correlation between a subject's age and on hand intended use ($\rho(341) = .113, p < .05$), indicating a significant relationship between the two variables. When examining the relationship between a subject's age and past contraceptive use, a strong positive correlation was found (ρ

(341) = .131, $p < .05$), indicating a significant relationship between the two variables. An additional relationship between a subject's seeking out EC if needed and past contraceptive use (ρ (341) = .209, $p < .01$) was found to be significant between the two variables. Additional correlations yielded no significant relationships (see Table 16).

Table 16
Demographic Factors and Intended Use

Demographic Factors	Intended Use (#45)	Intended Use (#46)	Intended Use (#47)
What is your age?	.038	.113*	.055
What is your race/ethnicity?	.072	.059	.080
What is your gender?	.020	-.032	.026
Have you (or your partner) ever experienced an unintended pregnancy?	.072	.000	-.036
How often do you use a birth control method?	.209**	.131*	-.057

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 9: How does participation in abstinence only/abstinence plus sex education programs in high school affect the knowledge about emergency contraception among college students?

A number of variables were used to measure the participants' knowledge about emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' participation in abstinence only/abstinence plus sex education programs in high school and knowledge about emergency contraception among college students.

Results of the analysis indicated a strong positive correlation between a subject's EC information in high school and knowledge of over-the-counter status ($r_{ho} (341) = .114, p < .05$), indicating a significant relationship between the two variables. Additional correlations yielded no significant relationships (see Table 17).

Table 17

Knowledge about EC and Sex Education

Knowledge Questions	Type of Sex Education in High School (#21)	Emergency Contraception information in HS (#22)
If a woman has just had unprotected sexual intercourse or thinks that her birth control method may have failed, is there anything she can do in the following days to prevent pregnancy?	.004	.083
Emergency contraception pills are the same as RU-486, the "abortion pill".	-.055	.075
Do you think that emergency contraception pills are medically appropriate after a woman has missed her period or just confirmed pregnancy?	.041	.045
Are emergency contraception pills currently available in the United States?	-.061	.089
How effective are emergency contraception pills at reducing the chance of pregnancy if taken correctly?	-.045	-.003
How long after unprotected sexual intercourse do you have to start taking emergency contraception pills in order to work?	-.048	.049
What are the ingredients in emergency contraception pills?	.015	-.007
Are emergency contraception pills available over the counter to adults?	-.063	.114*

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 10: How does participation in abstinence only/abstinence plus sex education programs in high school affect the attitudes about emergency contraception among college students?

A number of variables were used to measure the participants' attitudes about emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' participation in abstinence only/abstinence plus sex education programs in high school and attitudes about emergency contraception among college students. In each correlation, results were found to be extremely weak and not statically significantly. All results are shown in Table 18.

Table 18
Attitudes about EC and Type of Sex Education

Attitude Questions	Type of Sex Education in High School (#21)	Emergency Contraception information in HS (#22)
Do health risks concern you about emergency contraception pills?	.029	.057
Do ethical/moral issues concern you about emergency contraception pills?	.094	.038
Do you worry that emergency contraception pills might not work?	.003	.081
Would health risks, ethical, or moral issues keep you from using emergency contraception pills?	-.013	-.019
Most people would approve of emergency contraception pills if needed?	-.036	.045

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 11: How does participation in abstinence only/abstinence plus sex education programs in high school affect the subsequent use of emergency contraception among college students?

One variable was used to measure the participants’ subsequent use of emergency contraception. A Spearman rho correlation coefficient was used to calculate the relationship between the participants’ participation in abstinence only/abstinence plus sex education programs in high school and subsequent use of emergency contraception among college students. In each correlation, results were found to be extremely weak and not statically significantly. All results are shown in Table 19 below.

Table 19

Subsequent Use and Type of Sex Education

Subsequent Use	Type of Sex Education in High School (#21)	Emergency Contraception Information in HS (#22)
Would you take emergency contraception pills if needed?	-.064	-.052

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Research Question # 12: How does participation in abstinence only/abstinence plus sex education programs in high school affect the intended use of emergency contraception among college students?

A number of variables were used to measure the participants' intended use of emergency contraception. In each case, Spearman rho correlation coefficients were used to calculate the relationship between the participants' participation in abstinence only/abstinence plus sex education programs in high school and intended use of emergency contraception among college students.

Results of the analysis indicated a strong negative correlation between a subject's participation in sex education in high school and on hand intended use of emergency contraception ($\rho (341) = -.140, p < .05$), indicating a significant relationship between the two variables. A second Spearman rho correlation coefficient was run to measure the relationship between a subject's participation in sex education and seeking out EC if needed. A strong negative correlation was found ($\rho (341) = -.143, p < .01$), indicating a significant relationship between the two variables. Additional correlations yielded no significant relationships (see Table 20).

Table 20

Intended Use and Type of Sex Education

Intended Use	Type of Sex Education in High School (#21)	Emergency Contraception information in HS (#22)
If you wanted to prevent pregnancy and you did not use a contraceptive, or your birth control method failed, how likely would you be to take (recommend to your partner) emergency contraception?	-.143**	-.047
If you had a pack of emergency contraception pills at home in case you needed them, how likely would you be to use them (recommend to your partner) after unprotected sexual intercourse?	-.140*	-.035
The risk of pregnancy is low enough that it is NOT worth it to obtain emergency contraception pills.	.009	-.036

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Chapter V

Summary, Conclusion, and Recommendations

The present study used a cross sectional analysis to assess the relationship between knowledge, attitudes, and use of emergency contraception. This chapter will present the conclusions and recommendations resulting from the assessments conducted in this study. The following research questions guided this study:

1. Is there a significant relationship between knowledge about emergency contraception and its subsequent use among college students?
2. Is there a significant relationship between knowledge about emergency contraception and its intended use among college students?
3. Is there a significant relationship between attitudes about emergency contraception and its subsequent use among college students?
4. Is there a significant relationship between attitudes about emergency contraception and its intended use among college students?
5. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the knowledge about emergency contraception?
6. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the attitudes about emergency contraception?
7. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the current use of emergency contraception?
8. How do demographic factors such as age, gender, race, past contraceptive use, and past unintended pregnancies affect the intended use of emergency contraception?

9. How does participation in abstinence only/abstinence plus sex education programs in high school affect the knowledge about emergency contraception among college students?
10. How does participation in abstinence only/abstinence plus sex education programs in high school affect the attitudes about emergency contraception among college students?
11. How does participation in abstinence only/abstinence plus sex education programs in high school affect the current use of emergency contraception among college students?
12. How does participation in abstinence only/abstinence plus sex education programs in high school affect the intended use of emergency contraception among college students?

Summary of Procedures

Data for this study were collected by means of The Emergency Contraception Survey. Participants were asked to complete a 47-item questionnaire that assessed their knowledge, attitudes, and prior use of emergency contraception along with other contextual factors.

Correlation statistics were used to describe the knowledge, attitudes, use, and behaviors of the participants. The Spearman Correlation Coefficient was used to determine if significant relationships between the variables existed.

Summary of Findings and Discussion

The research questions in this study were guided by a growing body of literature that supported a correlation between knowledge and attitudes about emergency contraception. The following is a summary of the important findings derived from the research questions asked in this study.

Knowledge about Emergency Contraception

Almost all (97.1%) participants knew that something could be done in the days following unprotected sexual intercourse. However, little more than half (51.9%) were able to correctly state that emergency contraception was not medically appropriate if a woman has missed her period or confirmed pregnancy. This may be due to the confusion with RU-486. Approximately half (50.7%) of the participants could not distinguish the difference between emergency contraception and RU-486. Harper and Ellertson (1995) yielded similar results (49.5%) This was surprising given that nearly twice (41.9%) the participants in this study knew the correct ingredients compared to what Harper and Ellertson (1995) found (26%). This may be due to the year in which Harper and Ellertson conducted their study. As emergency contraception has become widely marketed as such in the last decade, so too could the knowledge of the ingredients.

The vast majority (90.9%) of the participants in this study knew that emergency contraception was available in the U.S., compared to only 28 percent identified by the Kaiser Foundation in 1997. This increase in knowledge was continued when more than

half (61.3%) of the participants knew the correct timing of emergency contraception, compared to only 13 percent in 1997 also found by the Kaiser Foundation.

The primary method of birth control used by the participants of this study was the pill or similar hormonal method (59.8%). This is consistent with findings from Corbett et al. (2006), who found that participants with the most knowledge of emergency contraception used the pill as their primary method of birth control.

Age was not found to be significant as it relates to knowledge of emergency contraception. This is in direct opposition to the research conducted by Foster et al.(2003), who found that approximately half (47.7%) of 18-24 year olds did not believe there was anything that could be done to prevent pregnancy after unprotected sexual intercourse. One major difference in this study was that the participants were all enrolled college students. This may have contributed in some way to this inconsistency because college enrollment may lend itself to higher levels of knowledge. This research found that participants had overwhelming knowledge (97.1%) that something could be done to prevent pregnancy in the days following unprotected sexual intercourse.

Race was not a factor in relation to knowledge of emergency contraception. This finding is inconsistent with previous research by Foster et al. (2003), who found that knowledge of emergency contraception was affected by race. The findings in this study may be due to sampling. The majority of the participants in this study were White (86.1%). African Americans represented less than 9 percent of the sample. All other races did not have enough participants to compare further.

Gender was found to be significant in knowledge about timing of use, U.S. availability, onset use of emergency contraception, and ingredients. Most of these were

negative correlations and could be caused by the low percentage of male (21.2%) participants. Gender was also found to have a significant effect on knowledge of emergency contraction in research conducted by Delbanco et al. (1997) and Corbett et al. (2006).

Attitudes about Emergency Contraception

Attitudes about emergency contraception were mixed. More than half (51.9%) were concerned about the health risks. Two thirds (66.6%) were concerned that emergency contraception might not work. Only a little over a third (38.2%) either agreed or strongly agreed that most people would approve of emergency contraception. However, over half (56.6%) still expressed that health risks, ethical, or moral issues would not keep them from using emergency contraception. These results may be due to the high rate of general knowledge and lack of specific knowledge about emergency contraception, which would include the confusion between RU-486. This was the same conclusion that Harper and Ellertson (1995) came to in their research.

Race was a significant factor affecting the participants' attitude when asked if health risks, and moral and/or ethical concerns would not stop them from using emergency contraception. No previous literature reviewed by this researcher examined race as it relates to attitudes about emergency contraception. Age was significant when addressing whether or not most people would approve of emergency contraception pills. No previous research looked at has examined age as it related to attitudes about emergency contraception. Gender was not found to be significant in attitudes about emergency contraception.

Intended and Subsequent Use

Age was significant for intended use of emergency contraception, specifically if they had a pack at home in case it was needed. Although age was not extrapolated, Harper and Ellertson (1995) found similar significant results based on subsequent use. Those who stated they would use emergency contraception pills if needed were significantly more likely to do so if they already had a prescription for emergency contraception (which was needed at the time of their research). These findings would lead to the conclusion that the older you are, the more likely you are to prepare in advance for an emergency contraception need.

Past Contraceptive Use

Half of the participants (55.1%) indicated that they had sexual intercourse at least once a week. Of those having sexual intercourse at least once a week, approximately 18 percent indicated they engage in unprotected sexual intercourse at least once a week. Therefore we can conclude that one third of the participants who are having intercourse once a week are doing so in an unprotected manner. This directly conflicts with nearly 80 percent (77.7%) of the participants, who indicated they always or most of the time (10.6%) use a birth control method. This difference may be accounted for by confusion as to what unprotected sexual intercourse meant. Participants might consider anytime they do not use a condom to be unprotected sexual intercourse because they are still at risk for sexually transmitted infections, just not pregnancy.

Past Unintended Pregnancies

While participants indicated unintended pregnancies were a major problem in the United States, only 12 percent had (or their partner had) experienced an unintended pregnancy. This is inconsistent with previous research, which found that unintended pregnancy rates are twice the overall rate in women aged 18-24 (Finer & Henshaw, 2006). Reasons for this inconsistency were not extrapolated from this data, however; college enrollment status may serve as a protective factor against unintended pregnancies in this age group.

Sex Education in High School

This study was the first to address the type of sex education in high school as it related to emergency contraception. Participants indicated that while the majority (79.6%) had received abstinence plus sex education while in high school, most (62.8%) did not receive any information about emergency contraception. The participants who did receive emergency contraception information in high school were significantly more likely to have knowledge that emergency contraception was available over-the-counter. Therefore this research concluded that knowledge of emergency contraception will increase if information is included in abstinence plus sex education. This research should be used to support justification of inclusion of emergency contraception information in abstinence plus sex education programs for high school students.

Limitations

Several limitations of the present study must be examined, including generalizability. Criteria for participation required that the students had to have been heterosexually active within the last six months, between the ages of 18 and 24, undergraduate students, and not currently trying to conceive. These criteria may have contributed to the homogeneity of the participants. Participants meeting these criteria may be more liberal in their sexual behavior and willingness to participate in sexually-based research.

Overall, there was a low response rate from minority students, so results can only be extrapolated to White and African American students. Therefore, these findings cannot be generalized to college students of other minority groups.

The use of self-report always presents concerns when addressing data collection. In these types of reporting, participants may wish to cast themselves in a way they see as more moral, socially acceptable, or culturally acceptable norm. It is unclear if this means that participants over- or understated their amount sexual activity, amount of contraceptive use, type of contraceptive use, or attitudes and knowledge about emergency contraception.

Finally, while sex education received in high school was measured in this study, the knowledge participants acquired during college was not taken into consideration. Therefore, some or all of the participants' knowledge of emergency contraception may have been gained in college and unrelated to their high school sex education experience. This may have affected the results of measured knowledge and incorrectly attributed to the participants' high school sex education experience.

Conclusions

The following are the major findings of this study:

1. General overall knowledge of emergency contraception is high.
2. Detailed knowledge of emergency contraception is lacking.
3. Detailed knowledge could lead to more positive attitudes toward emergency contraception.
4. There is overall confusion between emergency contraception and RU-486.
5. Sex education in high school that includes information about emergency contraception results in knowledge of over-the counter status.

Recommendations for Future Research

Further research in the relationship between knowledge and attitudes on the use of emergency contraception should focus on:

1. the need to adopt more complex approaches to examine knowledge and attitudes about emergency contraception.
2. where the participants' information about emergency contraception is obtained.
3. whether information obtained is medically correct.
4. whether college enrollment alone offers a protective factor for unintended pregnancies in 18-24 year old students.
5. obtaining a representative sample of gender and races to see if disparities exist.

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APPENDICES

APPENDIX A

The emergency contraception pill: A survey of knowledge and attitudes among students at Princeton University

Questionnaire

For our database

TO BE RECORDED BEFORE THE SUBJECT IS CONTACTED:

Study ID number and address (from registrar):

Sex (from register): a) Female b) Male

Introduction

TO BE READ ALOUD BY THE INTERVIEWER:

“Hello. Thank you for calling. We are conducting a short survey for the University’s Office of Population Research that focuses on the morning after pill. You were selected as part of a random sample. We guarantee that your answers will be kept confidential. This survey has 25 questions. They are all multiple choice. State your answer verbally into the telephone after you have listened to all the possible choices. Wait for the beep to respond to each question. After you answer each question, please press the pound button on the lower right hand side of your telephone. If you need to hear the question again, remain silent and the question will be repeated”

Background Information

“The first questions are for background.”

1. “After you hear the beep, please state the study ID number on the front of your survey postcard. State the number verbally into the telephone. Do not try to punch it in. When you have finished, press pound.”
2. What class are you in?
 - a. 93
 - b. 94
 - c. 95
 - d. 96
 - e. Graduate student
3. Would you describe your academic interests as mainly:
 - a. Sciences
 - b. Humanities
 - c. Social sciences
 - d. Not sure

Knowledge about the morning after pill

4. Have you ever heard about the morning after pill?

- a. Yes
- b. No
- c. Not sure

If you answered no to not sure, please bear with us of the next few questions. If any of the questions jog your memory; try to answer. You can always say not sure.

5. Do you think the morning after pill should ever be used?

- a. Yes
- b. No
- c. Not sure

6. If you answered no, why don't you think it should be used?

- a. My answer was yes
- b. It might not work
- c. Health concerns
- d. Moral doubts
- e. Other reasons
- f. Not sure

7. If a couple has had unprotected intercourse, at which time during the women's menstrual cycle would it be medically appropriate to take the morning after pill.

- a. At any time in her monthly cycle
- b. Only during certain times
- c. Never
- d. Not sure

8. Do you think the morning after pill is medically appropriate after a woman has missed her period or had just confirmed a pregnancy?

- a. Yes
- b. No
- c. Not sure

9. How much do you think the morning after pill reduces the chances of pregnancy if taken correctly?

- a. Almost 100%
- b. 75%
- c. 50%
- d. 25%
- e. Not sure

10. By when do you think the pill must be taken after unprotected intercourse in order to work?
- Immediately afterward
 - Within 24 hours
 - 72 hours
 - One week
 - Not sure
11. Do you think that the morning after pill has side effects?
- Almost none
 - Minor side effects
 - Uncomfortable, but not serious
 - Serious
 - Not sure
12. Is the effective ingredient in the morning after pill:
- Just the same as in the regular birth control pill
 - The same, but a larger dose
 - Completely different
 - Not sure
13. Is the morning after pill currently available at McCosh Health Center?
- Available 24 hours a day, 7 days a week
 - Available during regular weekday hours
 - Not available
 - Not sure

Knowledge about the risk of pregnancy and the availability of emergency contraceptives at McCosh

“In case you weren’t sure, the morning after pill is a medication taken after unprotected intercourse that can help to prevent pregnancy. The pill is designed to be taken when unprotected intercourse has occurred during the fertile time in a woman’s cycle. While the pill works best when taken right away, it can work for up to 72 hours (or 3 days). It can reduce the chances of pregnancy by about 75%. Some women who take it experience relatively minor side effects, including nausea and headaches. The morning after pill is the same as the birth control pill, but a larger dose. It is available at McCosh 24 hours/day, 7 days a week.”

“Now I’d like to ask some questions about pregnancy risk and about your opinions on the morning after pill.”

14. At what point in her menstrual cycle is a woman most likely to get pregnancy?

- a. During her period
 - b. One week before her period
 - c. Two weeks before
 - d. Three weeks before
 - e. Not sure
15. Has anyone you know at Princeton ever been in a situation when it would have been good to have known more about the morning after pill?
- a. Yes
 - b. No
 - c. Not sure
16. Would health risks concern you about the morning after pill?
- a. Yes
 - b. No
 - c. Not sure
17. Would ethical issues about its use concern you?
- a. Yes
 - b. No
 - c. Not sure
18. Would you worry that the morning after pill might not work?
- a. Yes
 - b. No
 - c. Not sure
19. Do you think the morning after pill is appropriate when a woman has been raped?
- a. Yes
 - b. No
 - c. Not sure
20. From what you know now about the morning after pill, do you think that you might take it, or recommend it to a friend if needed?
- a. Yes
 - b. No
 - c. Not sure
21. Do you agree or disagree with the following: The morning after pill should be easy to obtain when needed?
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree

- e. Strongly disagree
 - f. Not sure
22. Do you agree or disagree with the following: The Princeton University Health Services should provide the morning after pill as an emergency contraceptive?
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Not sure
23. Do you agree or disagree with the following: Princeton's Health Services should do more to inform students about the morning after pill?
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Not sure

“Finally I would like to ask two more background questions.”

24. Do your political views tend to be affiliated with:
- a. Republicans
 - b. Democrats
 - c. Independents
 - d. None of these
 - e. Not sure
25. How important is religion to you?
- a. Very important
 - b. Somewhat important
 - c. Not very important
 - d. Not at all
 - e. Not sure

Conclusion

“Thank you very much for participating in the survey. If you would like to comment further or to change an answer you gave, stay on the line. Your comments will not be linking to your survey answers unless you are changing or explaining an answer you gave. Please comment now. Press pound when you are finished. Thank you.”

APPENDIX B

Emergency Contraception: Knowledge and perceptions in a university population

Instructions: Your participation in this research is entirely voluntary. You may refuse to participate or stop participation at any time without penalty. Please check or fill in the appropriate answer for each of the following questions. You may skip any question that you are uncomfortable answering. **Please do not put your name on this survey.**

1. Do you think that unintended pregnancy is a major problem facing our country, a minor problem, or not a problem at all?

Major ____
Minor ____
Not a problem ____
Don't know ____
Skip ____

2. As far as you know, if a woman has just had unprotected sex or thinks her birth control may have failed, is there anything she can do in the following days to prevent pregnancy?

Yes ____
No ____
Not sure ____
Don't know ____
Skip ____

3. What could she do in the following days to prevent pregnancy?

4. Have you ever heard of emergency contraceptive pills, sometimes called morning-after pills?

Yes ____
No ____
Don't know ____
Skip ____

5. Emergency contraceptive pills are used primarily to prevent pregnancy.

True ____
False ____
Don't know ____
Skip ____

6. Emergency contraceptive pills are another term for RU-486, the "abortion pill."

True ____
False ____
Don't know ____
Skip ____

7. If you have heard of emergency contraceptive pills or morning after pills, when did you first hear of them?

- Within the last 6 months _____
- Between 6 months and 1 year _____
- Two or three years ago _____
- Over three years ago _____
- Don't know _____
- Skip _____

8. If you have heard of emergency contraceptive pills, how did you hear about them?

9. Have you ever discussed emergency contraception with a doctor or other health care professional?

- Yes _____
- No _____
- Don't know _____
- Skip _____

10. Have you, or any of your partners ever taken emergency contraceptive pills?

- Yes _____
- No _____
- Don't know _____
- Skip _____

11. If you or your partner have taken emergency contraceptive pills, where did you, or she obtain them?

12. Do you know anyone else who has ever used emergency contraceptive pills?

- Yes _____
- No _____
- Don't know _____
- Skip _____

The topic you have been reading about, emergency contraception, involves taking a high dose of the hormone progesterone after unprotected sexual intercourse. If taken within 3 days of having unprotected sex, the chance of becoming pregnant is greatly reduced.

13. Do you have religious or moral objections to emergency contraception?

- Yes _____
- No _____
- Don't know _____
- Skip _____

14. As far as you know, are emergency contraceptive pills currently available in the United States, or not?

Yes _____
No _____
Don't know _____
Skip _____

These next few questions are about your own sexual behavior. Please keep in mind that all answers are anonymous. Remember that you may skip these questions if you are uncomfortable answering any of them.

15. Have you ever had sexual intercourse, or do you anticipate that you may have sex in the next year?

Yes _____
No _____
Skip _____

16. If you have had sexual intercourse, how often do you use birth control or do anything else to try to prevent pregnancy?

Never _____
Sometimes _____
Most of the time _____
All of the time _____
Have not had sexual intercourse _____
Skip _____

17. If you have sexual intercourse, what is your preferred method of birth control?

Male condom _____
Pill _____
IUD _____
Depo Provera injection _____
Patch _____
Female condom _____
Withdrawal _____
Other _____
Have not had sexual intercourse _____
Skip _____

18. Are you or your partner currently pregnant, or trying to get pregnant?

Yes _____
No _____
Don't know _____
Skip _____

19. Females answer only please:
If you had sex without using a contraceptive or if you think your regular birth control may have failed, and you wanted to prevent pregnancy, how likely would you be to take emergency contraceptive pills?

Very likely _____
Somewhat likely _____
Somewhat unlikely _____
Very unlikely _____
Don't know _____
Skip _____

20. Females answer only please:
If you had a pack of emergency contraceptive pills at home on hand in case you needed them (and you were not trying to get pregnant), would you be more likely or less likely to use them after unprotected sex?

More likely _____
Less likely _____
Don't know _____
Skip _____

21. Males answer only please:
If you had sex without using a contraceptive or if you think your regular birth control may have failed, and you wanted to prevent pregnancy, how likely would you be to suggest to your partner that she take emergency contraceptive pills?

Very likely _____
Somewhat likely _____
Somewhat unlikely _____
Very unlikely _____
Don't know _____
Skip _____

22. If you wanted to learn more about emergency contraception, where would you go to find out accurate information?
-

23. If you have unprotected sex, what do you feel is the chance of you or your partner becoming pregnant?

High chance _____
Moderate chance _____
Low chance _____
Don't know _____
Skip _____

24. The risk of pregnancy is low enough that it is not worth it to obtain emergency contraception.

Agree _____
Disagree _____
Don't know _____
Skip _____

25. When obtaining emergency contraception, do you think you would, or did you feel embarrassed or judged?

Yes _____
No _____
Don't know _____
Skip _____

APPENDIX C

Emergency Contraception Survey

Please make sure that you are alone while completing this survey. Be assured your name will in no way be connected to your answers. Please answer the following demographic information questions before continuing onto the actual survey.

1. What is your age?
 - a. 18
 - b. 19
 - c. 20
 - d. 21
 - e. 22
 - f. 23
 - g. 24
2. What is your race/ethnicity?
 - a. White
 - b. African American/Black
 - c. Latino/Latina
 - d. Asian
 - e. Arabic
 - f. Multiracial
 - g. Other
3. What is your gender?
 - a. Male
 - b. Female

Please answer the following questions. Thank you for your participation in this research!

4. How big of a problem do you think unintended pregnancy is in the United States?
 - a. Major
 - b. Average
 - c. Minor
 - d. Don't know/ not sure
5. If a woman has just had unprotected sexual intercourse or thinks that her birth control method may have failed, is there anything that she can do in the following days to prevent pregnancy?
 - a. Yes
 - b. No
 - c. Don't know/ not sure
6. Have you heard of emergency contraception pills, sometimes called the "morning after" pills?

- a. Yes
 - b. No
 - c. Don't know/ not sure
7. If you have heard of emergency contraception pills, when did you first hear of them?
- a. In the last 6 months
 - b. In the last 12 months
 - c. Over 12 months ago
 - d. Don't know/ not sure
 - e. Have never heard of emergency contraception
8. If you have heard of emergency contraception pills, how did you hear about them?
- a. Doctor's office
 - b. Clinic
 - c. Internet
 - d. Article/ Advertisement
 - e. Friend/ Family
 - f. Other
 - g. Have not heard of emergency contraception
9. Emergency contraception pills are used primarily to prevent pregnancy.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
10. Have you (or your partner) ever experienced an unintended pregnancy?
- a. Yes
 - b. No
 - c. Don't know/ not sure
11. How often do you use a birth control method (i.e. condoms, the pill, the ring, depo shot, withdraw, etc)?
- a. Always
 - b. Most of the time
 - c. Some of the time
 - d. Rarely
 - e. Never
12. What is your preferred method of birth control?
- a. Male condom
 - b. Birth control pills/patch/ring
 - c. Depo Provera injection
 - d. IUD
 - e. Female condom
 - f. Diaphragm
 - g. Withdraw/ rhythm method
 - h. None
 - i. Other
13. How often have you engaged in sexual intercourse in the past 6 months?

- a. At least once a day
 - b. At least once a week
 - c. At least once a month
 - d. At least once every couple of months
 - e. Once in the last 6 months
14. How often have you engaged in unprotected sexual intercourse in the past 6 months?
- a. At least once a day
 - b. At least once a week
 - c. At least once a month
 - d. At least once every couple of months
 - e. Once in the last 6 months
15. Have you ever had a birth control method failure (i.e. no birth control used, condom broke, forgot to that the pill, diaphragm slipped out of place, didn't withdraw fast enough, missed depo shot appointment, etc)?
- a. Yes
 - b. No
 - c. Don't know/ not sure
16. I want to lower my risk of unintended pregnancy.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
17. Emergency contraception pills are the same as RU-486, the "abortion pill".
- a. Yes
 - b. No
 - c. Don't know/ not sure
18. Do you think that emergency contraception pills are medically appropriate after a woman has missed her period or just confirmed a pregnancy?
- a. Yes
 - b. No
 - c. Don't know/ not sure
19. Are emergency contraception pills currently available in the United States?
- a. Yes
 - b. No
 - c. Don't know/ not sure
20. How effective are emergency contraception pills at reducing the chance of pregnancy if taken correctly?
- a. 100%
 - b. 75-90%
 - c. 50%
 - d. 25-40%
 - e. 0%
21. What type of sex education did you have in high school?

- a. Abstinence Only (abstinence was the only thing talked about)
 - b. Abstinence Plus (gave information on birth control. STDs, etc.)
 - c. None
 - d. Don't know/ not sure
22. Did you receive information in high school about emergency contraception?
- a. Yes
 - b. No
 - c. Don't know/ not sure
23. How long after unprotected sexual intercourse do you have to start taking emergency contraception pills in order to work?
- a. Up to One week
 - b. Up to 72 hours
 - c. Up to 24 hours
 - d. Up to 12 hours
 - e. Don't know/ not sure
24. What are the ingredients in emergency contraception pills?
- a. Just the same as regular birth control pills
 - b. The same, but a larger dose
 - c. The same, but a smaller dose
 - d. Completely different
 - e. Don't know/ not sure
25. Emergency contraception pills have extreme/harsh side effects.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
26. Are emergency contraception pills available over the counter to adults?
- a. Yes
 - b. No
 - c. Don't know/ not sure

Emergency contraception is a form of back-up birth control. It is to be used after unprotected sexual intercourse. It is a stronger dose of the same ingredients as in some birth control pills. When started within 72 hours after unprotected intercourse, it is 75-89% effective at preventing pregnancy. One brand (PLAN B) is available over the counter to adults over the age of 18 at many pharmacies for approximately \$35.00. It has minimal side effects. RU-486 “the abortion pill” is different from emergency contraception. Emergency contraception will not have an effect if the woman has already become pregnant. RU-486 is ***only*** used to terminate a pregnancy that has been confirmed.

27. Do you think that emergency contraception pills should ever be used?

- a. Yes
 - b. No
 - c. Don't know/ not sure
28. Has anyone you know ever been in a situation when it would have been good to have known about emergency contraception pills?
- a. Yes
 - b. No
 - c. Don't know/ not sure
29. Emergency contraception pills are a good way of reducing the risk of unintended pregnancy.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
30. My close friends would approve of my use of emergency contraception.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
31. Do health risks concern you about emergency contraception pills?
- a. Yes
 - b. No
 - c. Don't know/ not sure
32. Do ethical/moral issues concern you about emergency contraception pills?
- a. Yes
 - b. No
 - c. Don't know/ not sure
33. Do you worry that emergency contraception pills might not work?
- a. Yes
 - b. No
 - c. Don't know/ not sure
34. Would health risks, ethical, or moral issues keep you from using emergency contraception pills?
- a. Yes
 - b. No
 - c. Don't know/ not sure
35. Would you taken emergency contraception pills if needed?
- a. Yes
 - b. No
 - c. Don't know/ not sure
36. Would you recommend emergency contraception pills to someone you know if needed?

- a. Yes
 - b. No
 - c. Don't know/ not sure
37. Most people would approve of emergency contraception pills.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
38. Emergency contraception pills should be easy to obtain when needed?
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
39. Have you ever discussion emergency contraception with a health care provider?
- a. Yes
 - b. No
 - c. Don't know/ not sure
40. Emergency contraception pills should be available 24 hours a day, 7 days a week.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure
41. Have you (or any of your partners) ever taken emergency contraception?
- a. Yes
 - b. No
 - c. Don't know/ not sure
42. When obtaining emergency contraception pills, do you think you would, or did you feel embarrassed or judged?
- a. Yes
 - b. No
 - c. Don't know/ not sure
43. Have you ever wished that you (or your partner) had taken emergency contraception pills?
- a. Yes
 - b. No
 - c. Don't know/ not sure
44. Do you know anyone (besides yourself/partner) that has taken emergency contraception pills?
- a. Yes
 - b. No
 - c. Don't know/ not sure

45. If you wanted to prevent pregnancy and you did not use a contraceptive, or your birth control method failed, how likely would you be to take (recommend to your partner) emergency contraception?
- a. Very likely
 - b. Somewhat likely
 - c. Neutral
 - d. Somewhat unlikely
 - e. Very likely
 - f. Don't know/ not sure
46. If you had a pack of emergency contraception pills at home in case you needed them, how likely would you be to use them (recommend to your partner) after unprotected sexual intercourse?
- a. Very likely
 - b. Somewhat likely
 - c. Neutral
 - d. Somewhat unlikely
 - e. Very likely
 - f. Don't know/ not sure
47. The risk of pregnancy is low enough that it is NOT worth it to obtain emergency contraception pills.
- a. Strongly agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly disagree
 - f. Don't know/ not sure

APPENDIX D

Informed Consent Eastern Michigan University

School of Health Promotion and Human Performance

Information of Risk

Description of the Study:

The primary purpose of this research is to assess college students' knowledge and attitudes about Emergency Contraception. In addition, we will be looking at certain background factors to assess their impact on the knowledge and attitudes about Emergency Contraception.

Benefits and Risks:

As a subject in this study, you may gain insight into your decision making process. You may also gain knowledge about Emergency Contraception. The risks are minimal. Because a few items deal with sexuality and reproduction, you may experience some anxiety while completing the questionnaire. It is not the intent of the researchers to offend or embarrass you. If, for any reason, you experience distress during the course of this study, please feel free to notify the researchers listed below.

Voluntary Participation:

Your participation is strictly voluntary. If you choose to participate, you may choose to be entered into a drawing for one of 30 \$10.00 gift cards. Entrance into the drawing does require that you provide your name and email address to the researchers. Your personal information will not be connected in any way to your actual questionnaire. Your personal information will be destroyed once the drawing has taken place. All winners will be notified by email.

Right to Withdraw:

You have the right to refuse participation and withdraw from participation in the study at any time. You may refuse to answer any item on the testing instrument. No penalties or negative consequences will result from your withdrawal or refusal.

Confidentiality and Anonymity:

All information collected will be held in the strictest of confidence. No names will be placed on the testing instruments at any time. Your name and/or email address will not be connected in any way with your questionnaire. Be assured that your personal information will in no way be associated with this study.

Results of the Study:

The results of this research study will be shared with the members of the principal investigator's thesis committee members. In addition, the results may be presented at an upcoming health education professional conference or in a health education publication.

You may print or write down this information for your reference. If you have any questions or concerns related to this study, please contact:

Christine Karshin, Ph.D.
Faculty Supervisor
734-487-7120 ext 2705
ckarshin@emich.edu

Chair
CHHS Human Subjects Review Committee
(734) 487-1238

Eastern Michigan University

School of Health Promotion and Human Performance

INFORMED CONSENT AGREEMENT

Your clicking the “I Consent” button below indicates that you have read and fully understand the information provided about the research study and have decided to voluntarily participate in the study. Again, if you have any questions, feel free to contact the researchers listed on the previous page before participating.

I understand that the primary purpose of this research is to assess college students’ knowledge and attitudes about Emergency Contraception. In addition, we will be looking at certain background factors to assess their impact on the knowledge and attitudes about Emergency Contraception.

I understand that by participating in this study, I may gain insight into my decision making process. I also understand that I may gain knowledge about Emergency Contraception. I understand that while the risks of participation are minimal, I may experience some anxiety while completing the questionnaire. I understand that it is not the intent of the researchers to offend or embarrass me.

I understand that my participation is strictly voluntary. I understand that I have the opportunity to enter into a drawing for one of 30 \$10.00 gift cards.

I understand that I have the right to refuse participation and withdraw from the study at anytime. I understand that I may refuse to answer any item on the testing instrument. I understand that no penalties or negative consequences will result from my withdrawal or refusal.

I understand that all information collected will be held in the strictest of confidence. I understand that no names will be placed on the testing instruments at any time. I understand that my name and/or email address will in no way be associated with this study.

Please provide your Eastern Michigan email address in order to verify that you are an Eastern Michigan University Student. You may only participate in this study once.

“I Consent”

