

THE PENNSYLVANIA STATE UNIVERSITY
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DEPARTMENT OF BIOBEHAVIORAL HEALTH

**THE RIGHT TO EMERGENCY CONTRACEPTION:
THE REALITY BEHIND KNOWLEDGE, ATTITUDES, AND PRACTICES AMONG
COLLEGE STUDENTS IN CENTRAL PENNSYLVANIA**

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ABSTRACT

Purpose: The purpose of this study was to examine knowledge, attitudes, and practices regarding emergency contraception (EC) among college-aged men and women in the central region of Pennsylvania.

Methods: An online survey was completed with a convenience sample of male and female students ages 18-24 years who were enrolled at Pennsylvania State University during the spring semester of 2011. A total of 768 students responded to the web-based survey, of which 746 (97%) fell between the ages of 18-24 years and were thus included in the descriptive analyses.

Results: Nearly all respondents were aware of a postcoital method to prevent pregnancy; 92% had heard of emergency contraception, and over 83% knew one of the mechanisms by which EC has been shown to prevent pregnancy. Although over half of respondents rated their knowledge level of EC as 'average' or 'high,' a fourth confused EC with the abortion pill RU-486, and only 3% were aware that EC can be taken up to 5 days after unprotected intercourse. Despite the inclusion of 17 year olds in over-the-counter access to EC in August of 2009, 64% of respondents thought the age limit for purchasing EC without a prescription was ≥ 18 years. The majority of respondents knew someone who had taken EC, and 88% indicated that a prescription should not be necessary to buy EC. Over 26% percent of participants/participant's sexual partners had previously taken EC, of which 40% had taken EC more than once, and 15% had taken it three or more times.

Conclusions: Despite the increase in access to EC after becoming over-the-counter in 2006, a sizeable proportion of college-aged students remain misinformed about EC's availability, effectiveness, and regulations. Even though the knowledge level of EC reported was quite high among the survey population, findings from this study suggest a lack of contraceptive counseling and education from healthcare professionals in university settings. More comprehensive methods for preventing pregnancy, including increased awareness about EC and its over-the-counter availability, are important if rates of unintended pregnancy and abortion are expected to decrease among the high-risk college-aged population.

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CHAPTER 1

INTRODUCTION

Half of all pregnancies in the United States, close to 3 million a year, are unintended.¹ Of these 3 million unintended pregnancies, nearly 1.3 million end in abortion.² The highest rates of unintended pregnancy in the U.S. occur among college-age women between the ages of 18 and 24.³ According to a national health risk survey conducted by the Centers for Disease Control and Prevention, 86% of college students nationwide have had sexual intercourse and 35% reported that they had been pregnant or gotten someone pregnant.⁴ Approximately 60% of pregnancies among women 20-24 years old are unintended, with higher rates for women 18-19 years old (79%).² According to the CDC, women aged 20-24 years old account for 33% of all abortions.⁴ Although unintended pregnancy has physical, psychological, social, and financial consequences for any woman, younger women have an increased vulnerability to these subsequent challenges.⁵ In the U.S., where approximately 3 in 10 girls become pregnant by the age of 20, knowledge and access to preventive contraceptive methods is an imperative public health issue.⁶ By improving an individual's overall knowledge and access to contraceptive methods, not only will unintended pregnancies be prevented, but also the economic costs of abortions will decrease, and individuals will be better equipped to make informed decisions to in respect to their own reproductive health ideals. One option to prevent an unwanted pregnancy is emergency contraception (EC).

What is Emergency Contraception?

According to the U.S. Food and Drug Administration, EC is a safe and effective way to prevent unintended pregnancy after unprotected vaginal intercourse has occurred.⁷ If taken within 72 hours of sexual intercourse, EC pills have shown to reduce the risk of pregnancy by 75%-89%.⁸ Intercourse is considered unprotected when no contraceptive method is used or when a method fails, or is not used correctly or consistently.⁹ There are many forms of EC, but only two oral methods are approved by the U.S. Food and Drug Administration (FDA) for use: progestin-based pills, and ulipristal acetate pills. Available over-the-counter, progestin-based EC pills work by inhibiting or delaying ovulation, or by preventing implantation of a fertilized egg in the uterus.¹⁰ Ulipristal acetate pills, available by prescription only, work mainly by inhibiting or delaying ovulation.¹¹ Emergency contraception pills do not affect an established pregnancy, and therefore are not medical abortion drugs like mifepristone (RU-486) or methotrexate.¹¹ The progestin-based EC pills have a variety of brand names worldwide, such as *Plan B*®, *NextChoice*®, *Postinor-2*®, *NorLevo*®, *Levonelle*®, and *Escapel-1*®.¹²

Emergency Contraception History in the U.S.

Plan B®, the first emergency contraceptive product available in the U.S., was approved for use by the U.S. FDA in 1999.¹¹ Made of a synthetic progestin, levonorgestrel, the same active ingredient found in many daily birth-control pills, *Plan B*® was at first available only by prescription. *Plan B*® has shown to reduce the chance of pregnancy by 81 to 90% when taken within 72 hours of intercourse.¹³ Recent studies indicate that EC pills can continue to be reasonably effective if taken between 72 and 120 hours after unprotected sex, with one study showing effectiveness ranging from 72 to 87%.¹⁴

The initial need to acquire a prescription to purchase EC coupled with the limited time frame for taking it effectively, made accessing EC quite difficult for young girls in need, especially on the weekends when access to health clinics is limited. The protocol involved first having to make an appointment with a doctor or family practitioner, travel to the doctor's office, explain one's situation, and then travel to a pharmacy to get their prescription filled. Considering that EC can only be taken within 5 days after unprotected sexual intercourse, the need for a prescription procured a large portion of a woman's effective time frame to take the pill. As a result, several states established protocols allowing pharmacies to dispense EC without a prescription.¹⁵ In May 2004, Barr Pharmaceutical's Supplemental New Drug Application to make Plan B® over-the-counter was denied FDA approval due to lack of studies evaluating safety in adolescents under the age of 17.¹⁶ A month later, a revised application was submitted that proposed over-the-counter access be granted for women ≥ 17 years old. On August 23, 2006, the FDA approved that Plan B® be made available over-the-counter for adults ≥ 18 years old, keeping the prescription requirement for minors in place.¹⁷ Due to a federal court ruling in April 2009, the FDA agreed to include 17-year-olds in the over-the-counter access to EC.¹⁸

Plan B® is currently available in two forms, the original two-pill regimen taken 12 hours apart, and the one pill regimen, Plan B One-Step®, approved by the FDA in 2009.¹⁹ Another generic version of Plan B®, Next Choice®, was approved for prescription use for adolescents 17 and younger in June 2009, and two months later was approved for over-the-counter use for individuals ≥ 17 years old.¹¹

After being approved for use in Europe in 2009, a newer form of EC, ella®, was approved for use in the U.S. in August 2010.²⁰ A prescription-only drug, ella® primarily prevents pregnancy by delaying ovulation and is made up of ulipristal acetate (UPA).²¹ UPA can

effectively prevent pregnancy up to five days, 120 hours, after unprotected sexual intercourse or contraceptive failure, giving women more time to prevent an unintended pregnancy as compared to Plan B®.²¹

Access to Emergency Contraception in the U.S.

Some form of dedicated EC product has been available in the U.S. for over a decade, with numerous efforts to further increase women's access to EC due to its small time frame for effectiveness. The use of birth control pills for EC, the Yuzpe method, has been described since the early 70s, and used prior to Plan B® availability. Anti-choice groups have tirelessly fought efforts to expand EC access, claiming that women provided with the pill will be more likely to engage in irresponsible sexual behavior.²⁷ Research has shown, however, that women with an advance prescription or supply of EC are at no increased risk to have unprotected sex or use EC repeatedly when compared to women with no advanced access.²²

Several U.S. states in disagreement with the current national policies have taken the matter into their own hands, creating state-specific EC rules and regulations. Seventeen states require emergency rooms (ERs) to provide emergency contraception-related services for sexual assault victims, 12 states mandate that ERs dispense EC upon request, 9 states allow women to obtain the pills without having to get a prescription, and four states require pharmacies to fill all valid prescriptions.²³ In Pennsylvania, although ERs are required to provide information about EC, a hospital may refuse to dispense EC based on religious or moral beliefs.²³ Should a hospital refuse to dispense EC to a woman who has been sexually assaulted, they must, however, immediately take the woman to the closest clinic that will provide the medication. If a woman

has not been sexually assaulted and is denied access to EC by her PA hospital, she may not have the time to travel to another location to obtain the pill. A woman denied access to EC will not only suffer physical consequences, but also will have to deal with the emotional and social consequences of being rejected by society. Some U.S. states have attempted to further restrict access to EC. By excluding EC from state Medicaid family planning and/or by giving pharmacists the right to refuse to dispense the pill, states are impeding on a woman's right to adequate reproductive services.

Several national attempts to increase access to EC have also begun to take place. In 2010, lawmakers supported the Compassionate Assistance for Rape Emergencies Act, which if passed, would require EC be offered to every sexual assault victim in U.S. hospitals.²⁴ However, anti-choice lobbyists have prevented several lawmakers from signing on, blocking any progress. The Department of Defense finally guaranteed women in the service access to EC at military bases both in the U.S. and overseas in February 2010.²⁵

Lack of awareness and poor access to EC as a backup birth control method have infringed on EC's ability to significantly reduce the rate of unintended pregnancy for young women in the U.S.²⁶ In fact, the National Abortion and Reproduction Rights Action League predicts that EC could annually reduce the number of unintended pregnancies and abortions by half.²⁷ Considering the average cost of EC (\$45) is only 10% of what an average abortion costs, this could have a significant economic impact on U.S. health care expenditure. Despite its increasing availability over-the-counter for women 17 and older, the rate of unintended pregnancies remains high. If EC is available over-the-counter throughout the U.S., why is it so underutilized?

CHAPTER 2

LITERATURE REVIEW

Knowledge of Emergency Contraception

Although numerous public health announcements have been made to increase awareness about EC in the U.S., a significant lack of knowledge exists across study populations. Numerous studies indicate that general knowledge about EC is lacking worldwide among women most at risk for experiencing unintended pregnancies, despite its importance as an effective method of contraception and over a decade of availability.^{5,28}

Before EC was available over-the-counter, various U.S. studies showed that although populations were aware that a post-coital birth control method existed, there also was a general lack of knowledge about EC. A survey of male and female college students' knowledge and attitudes about EC conducted at the University of North Carolina in 2003 revealed that although 86% of the sample 'had heard of EC', the average knowledge level score for students in the sample was 40%.²⁸ More importantly, almost 80% of respondents said that they would not know where to obtain EC should they be out of town.²⁸ The Kaiser Family Foundation conducted a survey in 2004 of over 1,000 males and females between the ages of 15-44. This survey showed that even though 81% of participants reported having heard of EC, only 46% knew that it was a postcoital method of contraception.²⁹ Of all the women surveyed, nearly half confused EC with the 'abortion pill' or 'RU-486' and 39% were unaware of its availability in the United States.²⁹ The following year, a survey at UNC Wilmington showed that 96% of students were aware of EC, however 88% of the participants did not differentiate EC and RU-486.⁵ A survey of women in Boston showed that an EC knowledge disparity exists across race/ethnicity groups. Only half

of Latina women and 75% of African American women surveyed reported having heard of EC as a form of contraception compared with 99% of Caucasian women.³⁰ Also, both Latina and African American women (24% and 35% respectively) were less likely than Caucasian women (64%) to note 72-120 hours post unprotected intercourse as the effective window of time during which EC should be taken to be effective.³⁰

Several studies in Europe showed that even when 81% of young girls reported having heard of EC, many misconceptions often existed in terms of its effective timing, and girls often confused it with ‘the abortion pill.’^{31,32,33} A survey of Nigerian college-aged women in 2003 revealed that only 58% were aware of a postcoital contraceptive product, and only 18% knew the time frame to use it effectively.³⁴ Lack of knowledge in regards to EC is a global issue, affecting individuals raised in both liberal and conservative societies.

Since its availability over-the-counter in 2006, very few studies have further investigated general awareness and knowledge amongst college-age populations. This may be in part due to a feeling of complacency amongst EC advocates after its access was increased. In 2008, a study found that adolescent girls had several misconceptions regarding EC pills, such as mistaking EC for an abortifacient and not knowing how it prevents pregnancy.³⁵ A survey of 7,000 University of Michigan students in 2006 revealed that while 94% of respondents had heard of EC, close to half were misinformed about the time window in which EC can be effective.³⁶ Only 5% of students knew that EC was effective if taken within 120 hours.

One study of female college students in 2009 showed that 95% of respondents knew EC was available in the U.S., and 40% were unsure if EC was the same as RU-486.³⁷ In contrast, a 2009 focus group study of young women 15-21 years old in New York City discovered that although half of the participants interviewed had heard of EC, the majority of respondents said

“no” when asked if there was something to prevent pregnancy after unprotected sexual intercourse.³⁸

Attitudes about Emergency Contraception

Emergency contraception availability and awareness nationwide is directly impacted by how it is viewed by users, policy makers, pharmacists, and politicians. Groups of citizens who have religious or moral objections to EC constantly urge congress and the FDA to keep EC distribution under strict regulations, lobbying that advanced or over-the-counter access for minors promotes promiscuity and could be detrimental to a child’s health. However, research shows that women over the age of 18 with an advanced prescription or supply of EC are no more likely than women without an advanced prescription to have unprotected sexual intercourse or to use EC.^{11,22} Health care providers’ perceptions regarding EC affect their awareness and availability for women seeking the pill. Providers who disapprove of EC will often disregard EC as an option for preventing unwanted pregnancy, indirectly misinforming patients in need. A ten-year follow-up study of college health centers in 2006 found that while the majority of health center staff had positive attitudes about EC, only 49% of schools distributed the pill—religious objections and lack of funding were noted as reasons for not distributing the drug.³⁹

As for university students, general misconceptions about EC coupled with the fear of being embarrassed or judged by health care providers, pharmacists, and fellow students often serve as a barrier to utilization.⁵ In 2005, another UNC study showed that over 60% of respondents thought unintended pregnancy was a major problem in the U.S., and 68% reported no religious or moral objections to using EC.⁵ However, a 2003 survey of students at UNC revealed that of the 48% of respondents who said they felt comfortable using EC, 37% believed

that it should not be available without a prescription.²⁸ Also, over 60% of students surveyed considered EC to fall somewhere between abortion and contraception.²⁸ Vahratian et al. investigated college students attitudes regarding EC approval in 2008, finding that while 93% of students approved of EC in cases of sexual assault, only 68% approved in cases of unprotected sexual intercourse.³⁶ A year later, in 2009, a similar study showed that the majority of students approved the use of EC in cases of rape, 82% approved in cases of failed birth control methods, and 54% approved in cases of unprotected sex.³⁷ These varying statistics show that even though a large proportion of college students think unintended pregnancy is a problem and report no moral or religious objections to using EC, an alarming majority still confuse it with an abortifacient and disapprove of its use in some cases.

Practices regarding Emergency Contraception Use

A study conducted by the National Center for Health Statistics recently showed that EC use doubled among women 15-44 years old in 2006 and 2008 compared to 2002 (10% v. 4%).⁴⁰ In 2006, Corbett et al. found that of nearly 100 college students surveyed, 13.7% of women had used EC, and 8.3% of men reported their partners had used EC.⁵ Corbett et al. also showed that close to half of men and over 60% of women were likely to use EC if they thought their regular form of birth control had failed.⁵ Close to 30% of students surveyed in the Mid-Atlantic region of the U.S. in 2009 reported to have previously used EC, of which only 15% reported having used it only once.³⁷

Women must first know about EC in order to utilize it. Less than 5% of women 15-44 years old reported discussing EC with their healthcare provider in a national survey conducted in 2008.¹¹ Of the students surveyed in the Mid-Atlantic region of the U.S, 62% said they would be

more likely to use EC if they were informed about its availability by their health care provider.³⁷

However, according to a qualitative study conducted in 2010, doctors and healthcare providers of many respondents had never mentioned EC, and those who did, often mentioned it too late.³⁸

CHAPTER 3

METHODS

Study Design

The purpose of this quantitative study was to better understand knowledge, perceptions, and use of emergency contraception among college students in central Pennsylvania. A convenience sample of both undergraduate and graduate students was recruited from a population of male and female college students at a large, northeast, public university with a student population of approximately 45,000.⁴¹

In February 2011, every college within the university was asked to send an email inviting students to participate in a web-based survey on college students' knowledge, attitudes, and practices in sexual and reproductive health through SurveyMonkey (www.surveymonkey.com). Paper copies of the survey were available for students with disabilities or non-English speaking students. Because students must maintain a university email account, an email survey was determined to be the most effective and efficient way to reach a wide range of students. The online nature of the survey also made participation easy for students, as the majority of students spend numerous hours on a computer each day. Every college was invited to encourage their students to participate in the study, to ensure for a more representative sample population. Recruitment letters were also sent to students individually using class listservs by several professors who thought the study was important. Recruitment letters for both colleges and individual students can be found in Appendix A. Over half of the fifteen university colleges sent out the survey email to their students, see Table 1 (n=8, 53% response rate). Some colleges chose not to participate due to strict solicitation rules set forth by their respective college guidelines.

The scripted email students received included a link to the secure site where the survey could be accessed. No financial or academic incentive was offered to avoid coercion and undue influence. To avoid any conflict with obtainment or verification of parental consent, only students over the age of 18 were eligible to participate. The survey was restricted to students aged 18-24 because that is the generalized age-range for college students used in previous studies. Survey recruitment announcements were also sent out via Twitter by the University Park Undergraduate Association (UPUA) and via Facebook groups specific to Penn State students by the researcher. Data was collected from 768 college students (1.7% response rate) who completed the survey within a 6-week period. An email reminder was sent to each college who agreed to send out the survey link every two weeks. Data collection was stopped after 6-weeks because no more responses were being received. The completed survey data were downloaded from SurveyMonkey into a secure folder to which only the researcher had access.

College (n=15)	Sent Recruitment Email Yes (n=8)/ No (n=7)
College of Agricultural Sciences	No
College of Arts and Architecture	No
College of Communications	No
College of Earth and Mineral Sciences	Yes
College of Education	Yes
College of Engineering	No
College of Health and Human Development	Yes
College of Information Science and Technology	No
College of the Liberal Arts	Yes
Eberly College of Science	Yes
School for International Affairs (Graduate)	Yes
School of Law (Graduate)	No
School of Nursing	Yes
Schreyer Honors College	Yes
Smeal College of Business	No

Protection of Human Subjects

Approval to conduct this research was obtained from the Pennsylvania State University's Office for Research Protections Institutional Review Board on November 1, 2011. Signed informed consent was waived because the study used an anonymous, online data collection survey method. Anonymity and confidentiality were guaranteed in the email request for participation as it was noted that no personally identifiable information would be shared in the event of publication or presentation resulting from the research. The survey did not ask for any personal contact information, including the student's name, email, or telephone number. Upon accessing the survey online, participants were immediately directed to a letter of informed consent (see Appendix B) noting complete voluntary participation, and that completion and submission of the survey implied one's consent to participate in the research. The survey system was programmed to allow only one response per computer IP address.

Survey Instrument

The 33 question survey was converted to web-based format after being designed by the authors as a self-administered questionnaire. The survey included questions about the respondents' knowledge, attitudes, and practices surrounding EC. Demographic information was also collected on gender, age, race, sexual orientation, and number of sexual partners in the last 12 months. The demographic data were used to estimate whether a representative study sample was collected. It was estimated to take 10 minutes to complete the survey.

The survey was comprised of 16 items on knowledge, 8 attitudinal items, 7 items examining sexual behavior practices and use of EC, and 5 demographic items. The 16 items related to knowledge contained 4 items discussing sources of information, 7 items on

availability, and 5 items on general knowledge of EC. Questions regarding how participants first learned about EC and when participants believe EC should be used, were adapted from a 2003 Kaiser Family Foundation Survey.²⁹ Questions regarding use and when a woman should take EC for it to work were adapted from a 2004 survey of women in Boston.³⁰ The items on the survey included multiple-choice questions, true-false questions, yes or no questions, open ended response questions, and one four-part approve-disapprove question regarding EC usage. Skip patterns were built into the survey to prevent students with no knowledge of EC from answering true/false questions about EC.

The survey was pilot tested among a group of four faculty advisors who provided suggestions for refining the survey that were incorporated into the final version. Also, input from a representative of the university's Lesbian Gay Bisexual Transgender Association was used to ensure demographic questions regarding gender and sexual orientation were neither biased nor discriminatory towards a certain gender or sex. After the survey was online for a week, a sexual health professor suggested that the demographic question for sex be altered from 'Sex' to say 'Which do you identify with?' This adjustment was made immediately. It was also recommended that 'sexual intercourse' be defined to clarify the survey questions on behavior for respondents of all sexual orientations. The following sentences were immediately added to be displayed before the survey questions regarding sexual health practices: *In this survey, "sexual intercourse" refers to vaginal penile copulation. "Sex" is a short-hand term for sexual intercourse, as defined above.* These modifications could have influenced the responses of participants who completed the survey prior to the adjustments in terms of understanding the nature and specifics of the questions regarding sexual identity, and/or sexual activity. A copy of the survey instrument is provided in Appendix C.

Data Analysis

Descriptive statistics were used to analyze the data collected using the Statistical Package for the Social Sciences (SPSS). Frequency and summary statistics were calculated for all survey items and compared to previous studies of the same nature.

CHAPTER 4

RESULTS

In 2011, there were approximately 44,817 students enrolled at the Pennsylvania State University's University Park campus.⁴¹ Of this pool of nearly 45,000 students, 768 responded to the online survey (1.7% response rate). Of the 768 students who completed the web-based survey, 22 were ineligible for inclusion because they were not between the ages of 18-24 years old. The remaining 746 surveys (97% of total surveyed) were included in the descriptive analyses. Demographic frequencies and distributions are shown in Table 2.

The race/ethnicity distribution of the students in the survey was fairly representative of the general student population enrolled at University Park.⁴¹ However, there was an oversampling of Caucasians (+16.9%) and an undersampling of Hispanic-Latinas and Asian/Pacific Islanders (-2.5% and -1.1% respectively). The average age of participants was 20.25 years. Eighty-three percent of respondents were female, and 17% were male. Most participants (96%) were heterosexual and over 75% reported having one or more sexual partners within the last year.

Knowledge of Emergency Contraception

Responses to knowledge questions can be found in Tables 3 and 4. Nearly all respondents (95%) were aware of a postcoital method to prevent pregnancy, 92% had heard of EC, and over 83% knew one of the mechanisms by which EC has been shown to prevent pregnancy. Also, 99% of respondents knew that EC does not protect against sexually transmitted infections (STIs). Although over half of respondents (65%) rated their knowledge level of EC as 'average' or 'high', a fourth (24.5%) confused EC with the abortion pill RU-486, and only 3%

were aware that EC can be taken up to 5 days after unprotected intercourse. Family/friends and TV were the two primary sources reported for information regarding EC, both holding over 65% of responses. Health care providers were listed as sources of information by only 25% of participants, falling behind magazines, school, and the Internet (34%, 40% and 33%, respectively). Only 37% of respondents had heard about EC in a class from a teacher or nurse, and the majority (83%) of respondents had never discussed EC with a doctor or health professional.

When asked about their knowledge in regards to accessing EC, the majority of respondents (87%) knew that EC was sold in Pennsylvania. However, over half (62%) of respondents did not know if EC was accessible at the University Health Center on campus. Nearly all participants (94%) knew where EC is available off campus, and over 95% knew where to go to access EC when out of town. Only 19% of respondents knew that you can purchase EC without a prescription starting at age 17 years old, with the majority of participants (64%) indicating 18 as the starting age.

Attitudes about Emergency Contraception

The majority of respondents (95%) believed teenage pregnancy to be a problem in the United States, and 84% believed it to be a problem in Pennsylvania. When asked their opinions about EC and its use, 67% of respondents said they would be comfortable using EC to prevent an unwanted pregnancy, see Table 5. Of respondents who reported they would not be comfortable using EC, over half (53%) had religious or moral objections to using the pill. Information on specific religious beliefs was not collected. Despite this, the majority of respondents (81%) reported no religious objections to EC and its uses. Sixty-three percent of respondents approve

the use of EC if a female had sexual relations without protection; 83% approve its use in cases when other contraceptive methods have failed; 89% approve its use in cases when a woman's life will be in danger should she become pregnant, and the majority of respondents (92%) approve the use of EC in cases of violence or incest.

Although only persons over the age of 17 can purchase the pill without a prescription in most U.S. states, over 80% of respondents agreed that equal access to EC is a human right, and 88% indicated that a prescription should not be necessary to buy EC.

Practices regarding Emergency Contraception Use

Over three fourths (76%) of participants reported they have had sex, or anticipate having sex within the next year, of which 73% use some method of contraception 'all the time.' Nine percent of participants reported using contraceptive methods 'only sometimes' or 'never.' Nearly all participants, (91%) indicated they use some form of birth control the majority of the time. Primary methods of birth control were the male condom (82.2%) and birth control pills (71.8%). The third highest ranked form of contraception was EC (9.7%), followed by spermicides (4.7%), rings (3.1%), injections (1.6%), the female condom (1.3%), and diaphragms (0.4%; see Table 6). Over half of respondents (60%) indicated they would be 'very likely' to use EC should their form of contraceptive fail; 20% were 'somewhat likely', and 17% were 'unlikely.'

The majority of respondents (69%) knew someone who has taken EC. Over a fourth (26%) of participants/participant's sexual partners had previously taken EC (n=172), of which 15% reported to have taken the pill three or more times. Sixty percent of respondents who had taken EC had done so only one time, and 24% had taken it twice.

Table 2: Demographic Information (n=746)		
Variable	n	%
Age (years)		
18	62	8.3
19	141	18.9
20	218	29.2
21	228	30.6
22	72	9.7
23	20	2.7
24	5	0.7
Gender		
Female	620	83.1
Male	126	16.9
Race/Ethnicity		
African American	24	3.2
American Indian/Alaskan Native	0	0.0
Asian/Pacific Islander	27	3.6
Caucasian	668	89.5
Hispanic-Latina	14	1.9
Other	13	1.7
Sexual Orientation		
Bisexual	15	2.0
Heterosexual (straight)	717	96.4
Homosexual (gay)	4	0.5
Homosexual (lesbian)	3	0.4
Queer	4	0.5
Questioning	9	1.2
Other	2	0.3
Prefer not to disclose	1	0.1
# Of Sexual Partners (in last yr.)		
None	178	23.9
One	334	44.8
Between 2 and 4	192	25.7
5 or more	38	5.1

Table 3: Knowledge of Emergency Contraception (n=746)		
Topic	n	%
Aware of postcoital method to prevent pregnancy	n=698	93% response rate
Yes	665	95.3
No	23	3.3
Not sure	6	.9
Don't know	4	.5
Heard of EMERGENCY CONTRACEPTION	n=746	100% response rate
Yes	676	90.6
No	58	7.8
How did you learn about EC?*	n=703	94% response rate
TV	462	65.7
Magazines	236	33.6
Radio	32	4.6
Newspapers	45	6.4
Health care provider (doctor, nurse, pharmacist)	177	25.2
Billboards on subways & buses	32	5
Stores/restaurants/hair salons	10	1.4
Community programs and organizations	48	6.8
Family/friends	476	67.7
School	283	40.3
Internet	234	33.3
I don't know/I don't remember	39	5.5
Other	12	1.7
Self-rated Knowledge level of EC	n=710	95% response rate
Nothing	19	2.7
Little	213	30.0
Average	376	53.0
High	102	14.4
EC works by preventing:*	n=711	95% response rate
Ovulation	61	8.6
Fertilization	299	42.1
Implantation	374	52.6
Don't know	149	21.0
When should a woman take EC for it to work?	n=709	95% response rate
1 day BEFORE unprotected sex	6	.8
Up to 1 day AFTER unprotected sex	180	25.4
Up to 72 hours (3 days) AFTER unprotected sex	458	64.6
Up to 120 hours (5 days) AFTER unprotected sex	22	3.1
Up to 1 week (7 days) AFTER unprotected sex	0	.0
I don't know	43	6.1
Is EC approved by the FDA?	n=710	95% response rate
Yes	452	63.7
No	27	3.8
Don't know	231	32.5

*Percentages add to more than 100% because participants could select more than one category.

Table 4: Knowledge of Emergency Contraception Access (n=746)		
Topic	n	%
Are EC pills sold in PA?	n=706	95% response
Yes	612	86.7
No	0	0.0
Don't Know	94	13.3
Is EC available at the PSU University Health Center?	n=707	95% response
Yes	250	35.4
No	15	2.1
Don't know	442	62.5
Where can you get EC off campus?	n=653	87% response
Pharmacy	543	83.2
Doctor's Office	6	0.9
Hospital	11	1.7
Family Planning Clinic	4	0.6
Planned Parenthood	50	7.7
Don't Know	39	6.0
If you were out of town, where would you go to get EC?	n=654	88% response
Pharmacy	587	89.8
Doctor's Office	4	0.6
Hospital	9	1.4
Family Planning Clinic	3	0.5
Planned Parenthood	21	3.2
Don't Know	30	4.6
At what age can you purchase EC at a pharmacy without a prescription?	n=669	90% response
Any age	19	2.8
12	2	0.3
13	2	0.3
14	2	0.3
15	3	0.4
16	49	7.3
17	128	19.1
18	431	64.4
19	1	0.1
21	3	0.4
Never	3	0.4
Don't Know	26	3.9

Table 5: Attitudes about Emergency Contraception n=746		
Topic	n	%
Do you have religious or moral objections to EC?	n=698	93% response
Yes	92	13.2
No	565	80.9
Don't know	41	5.9
Do you think equal access to EC is a human right?	n=698	93% response
Yes	560	80.2
No	80	11.5
Don't know	58	8.3
Do you think a prescription should be necessary to buy EC?	n=697	93% response
Yes	58	8.3
No	616	88.4
Don't know	23	3.3
Would you be comfortable using EC to prevent pregnancy?	n=697	93% response
Yes	466	66.9
No	155	22.2
Don't know	76	10.9
Do you approve the use of EC if a female had sexual relations without protection?	n=699	93% response
Approve	439	62.9
Disapprove	185	26.5
Don't know	74	10.6
Do you approve the use of EC if a female's regular form of birth control did not work?	n=699	93% response
Approve	579	82.8
Disapprove	76	10.9
Don't know	44	6.3
Do you approve the use of EC if the life of a female will be in danger if she becomes pregnant?	n=699	93% response
Approve	622	89.0
Disapprove	29	4.1
Don't know	48	6.9
Do you approve the use of EC in cases of violence or incest?	n=699	93% response
Approve	641	91.8
Disapprove	25	3.6
Don't know	32	4.6

Table 6: Practices regarding Emergency Contraception Use (n=746)		
Topic	n	%
Have had sex, or anticipate having sex within the next year?	n=689	92% response
Yes	528	76.6
No	149	21.6
Other	12	1.7
Frequency of contraceptive usage	n=562	75% response
Never	32	5.7
Only sometimes	19	3.4
Majority of the time	106	18.9
All of the time	405	72.1
Which contraceptive methods do you use?*	n=556	74% response
Male Condom	457	82.2
Female Condom	7	1.3
Diaphragm	2	0.4
Pills	399	71.8
Injections	9	1.6
Rings	17	3.1
Spermicides	26	4.7
Emergency Contraception	54	9.7
Other	20	3.6
If you have had unprotected sex or believe your method of birth control failed, how likely are you to take the EC pill or suggest that your partner take the pill?	n=574	77% response
Very Likely	348	60.6
Somewhat Likely	116	20.2
Somewhat Unlikely	36	6.3
Very Unlikely	64	11.1
Other	10	1.7
Know SOMEONE who has used EC?	n=686	92% response
Yes	474	69.1
No	23	23.2
Don't know	53	7.1
Have you or one of your sexual partners ever taken EC?	n=655	88% response
Yes	172	26.3
No	465	71.0
Don't know	18	2.7
How many times have you or your partner taken EC? (If 'yes' above)	n=172	100% response from 'yes' above
Once	104	60.5
Twice	42	24.4
Three or more times	26	15.1

*Percentages add to more than 100% because participants could select more than one category.

CHAPTER 5

DISCUSSION

Consistent with previous studies conducted amongst college age populations, the study found that 92% of participants in the survey had heard of EC. In a 2006 U.S. university study, 96% of male and female students in had heard of EC,⁵ and in a 2009 study, 98% of college women had heard of it.³⁷ This suggests that the lack of EC utilization by college students is not due to unfamiliarity. Although a fourth (24.5%) of respondents confused EC with the abortion pill RU-486, this finding is almost half the reported amount in previous studies where over 40% of participants confused EC with RU-486.^{5, 37} This decline in confusion could be the result of increased internet use and increased access to EC on college campuses. It should be noted that because our study had a <2% response rate, students more interested in sexual and reproductive health may have been more inclined to respond, potentially resulting in an inflated reflection of the general student body's knowledge of EC.

Despite the inclusion of 17 year olds in over-the-counter access to EC in August of 2009,¹⁸ the majority of respondents (64%) thought the age limit for purchasing EC without a prescription was still ≥ 18 years. This confusion is may be due to a lack in EC education amongst the general public. Minors are often too embarrassed to ask their doctors for a prescription for EC, and too ashamed to ask their parents or another adult to buy EC for them, thus making the need for a prescription a noteworthy barrier to access. If more 17 year olds knew they could purchase EC without an adult over-the-counter, a number of unintended pregnancies could potentially be prevented. In addition, only 3% of respondents were aware that EC has proven effectiveness up to 5 days (120 hours) after unprotected sexual intercourse. The huge lack in awareness regarding the time window in which EC can be effective may contribute to the high

level of unintended pregnancies and abortions seen in college-age women. It is critical that both high school and college-aged students know the facts about EC availability, especially in regards to purchasing age and the effective time window, if the rates of unintended pregnancy and abortion are expected to decrease.

Similar to findings in previous studies, family/friends and TV were the primary sources cited by respondents for information regarding EC.^{5,29} Although TV commercials for EC sponsored by public health campaigns are reliable, some advertisements are biased and give out inaccurate information. To guarantee the success of EC's over-the-counter availability, it is important that public health campaigns utilize TV as an outlet to spread EC awareness amongst the college-aged population. Health care professionals should be equipped to provide the most accurate, up-to-date information in regards to EC effectiveness, availability, and use. Nevertheless, some are reluctant to discuss personal matters of sexual health, especially in regards to EC use, due to religious or moral beliefs. As a result, the majority of respondents had never discussed EC with a doctor or health care professional, and 62% were unaware that EC is available at the University Health Center. These findings are consistent with a 2006 survey of college students, in which only 18% had previously discussed EC with their health care professional.³⁶ Can the rate of unintended pregnancies be expected to decline amongst college-aged populations whilst they receive little or no form of counseling, support, or education about EC from their health care provider?

For college students, high-risk sexual behavior often occurs on large group vacations and 'spring break-type' trips—experiences that increase the need for EC. Our study showed that nearly all respondents knew where to go to get EC if they were out of town, a finding in direct contrast with a 2003 study of university students in which nearly 80% were unaware where to

access EC out of town.²⁸ This increase in knowledge of out of town accessibility may be due to EC's over-the-counter status in 2006 and an increase in general EC awareness among large student groups. A 2006 study examining the availability of EC at pharmacies in Pennsylvania found that only a third of pharmacies carried EC, with additional barriers in rural locations due to fewer pharmacies and limited pharmacy hours.⁴² Because Penn State is located in a rural area of Pennsylvania, it is noteworthy that nearly all participants knew where to access EC off campus. Nevertheless, because the student population surveyed comes from both urban and rural areas of the U.S., respondents from urban areas may have been more likely to assume EC availability off-campus having never sought out EC in their current rural setting. It is essential that college-aged students know where and how to access EC, especially those living in rural communities that may have decreased availability.

A survey of UNC college students in 2003 showed that over a third of respondents thought a prescription should be required to obtain EC, however in contrast, less than 9% of our survey participants deemed the prescription necessary. This difference could be due to EC's change to over-the-counter status in 2006. In this and previous studies, over half of respondents indicated they would be comfortable using or recommending their partner use EC if their regular form of birth control failed.^{5,28,37} Furthermore, over 80% of respondents indicated that equal access to EC is a human right. These findings are significant in terms of overall attitudes regarding EC. If policy makers recognized that the majority of the population utilizing EC thinks the prescription requirement is unnecessary, perhaps they would be more willing to alter national policies and regulations that currently restrict EC availability?

Our study found that 26% of participants/participant's sexual partners had previously taken EC. This finding is comparable to a 2009 study of university students, which was also

conducted after EC's over-the-counter status in 2006.³⁷ Unlike other studies conducted after EC's over-the-counter availability, our study found that of participants who had previously taken EC, close to 40% have taken it more than once, and 15% have taken it three or more times. This finding informs policy makers, pharmacists, and health care providers of the apparent need for sexual and reproductive health education and counseling amongst college-age populations. To prevent girls from having to take EC multiple times, health policy makers should petition that sexual health education occur both earlier in adolescence and more frequently for both girls and boys.

Although numerous studies have examined knowledge, attitudes, and perceptions regarding EC amongst college-aged women, this study is unique in several ways. First and foremost, few studies on EC include both men and women. Men are equally as important in regards to EC education and access as they have an influential role in shaping their partner's knowledge and beliefs about EC, and therefore were included in our study population. Secondly, it is often assumed that EC use only applies to heterosexuals, as no previous studies could be found to mention EC knowledge, use or access among sexual minorities. Not only are sexual minority college-aged women victims of sexual violence, but bisexual women are also at risk for unintended pregnancy. In our study, of the sexual minority women surveyed (n=29), 14% had previously taken EC.

CHAPTER 6

LIMITATIONS

Perhaps the greatest limitation to this study was the non-probability sample. Despite the large sample size (n=746), with a response rate of <2% and the use of a voluntary convenience sample, the results may not be representative of the general student body. Also, because students from every college did not receive a recruitment email, the sample cannot be representative of the entire student body at Pennsylvania State University. Nevertheless, because both the Schreyer Honors College and the School for International Affairs serve students from all colleges, students representing all colleges and majors could have participated in the survey. Because such a large number of surveys were collected, and the demographic statistics of the data closely resembled that of Penn State's student population, not having a randomized sample is not a major flaw in the study. In future studies, researchers would include a section for participants to note their college and major in the survey. Students in sexual health-related classes may have been more likely to respond to the survey since they could have received emails from their college, their department, and their professor. However, to avoid coercion and undue influence, all students were recruited by a scripted email, and professors were not allowed to give extra credit to students who completed the survey. Had more students from health classes completed the survey, the findings in regards to knowledge about EC could have been somewhat inflated compared to the general student body's knowledge. Yet, the majority of students surveyed lacked awareness in terms of EC's effective time frame and age regulations.

Because our study only surveyed students at Pennsylvania State University, the findings may not be generalizable to all U.S. university campuses or populations. Due to the sensitive

nature of the survey topic, participant disclosure could have also affected the findings. To overcome this challenge, an online survey was considered a much more effective survey tool for facilitating participants' sharing of sensitive information as opposed to a face-to-face interview. Although, using email to collect data does not ensure the completion of the survey by the intended respondent, recruitment emails and the survey link were only sent to students with Penn State email accounts currently enrolled as a full-time student at Penn State University.

CHAPTER 7

CONCLUSIONS

Despite the increase in access to EC after becoming over-the-counter in 2006, college-aged students remain misinformed about EC's availability, effectiveness, and regulations. Overall, the participants in this study had favorable views of EC, and the majority reported that the prescription should not be necessary to purchase EC. Even though knowledge of EC was quite high among the survey population, findings from this study suggest a lack of contraceptive counseling and education from healthcare professionals in university settings. Whether this lack in sexual and reproductive services is a result of healthcare professionals' conscientious objection to provide information about EC, or a lack of enforcement from government public health officials, students are being denied the capacity to exercise their individual reproductive health rights according to their own beliefs and ideals. Findings from this study suggest multiple outlets through which university healthcare providers can educate young students about EC, including student-run outreach events, television commercials, and on the Internet. Due to the increasing popularity of social networking sites like Facebook and Twitter among college-aged students, the Internet may serve as an especially important tool for public health officials when targeting the college-aged demographic, as it allows students to not only learn from educational websites, but to also interact and share information with friends and other students who are also learning about EC. More comprehensive methods for preventing pregnancy, including increased awareness about EC and its over-the-counter availability, are important if rates of unintended pregnancy and abortion are expected to decrease among the high-risk college-aged population.

APPENDIX A: Recruitment Letters

Email for College Students:

Dear fellow Penn State student,

In an effort to better understand knowledge, attitudes, and practices in sexual and reproductive health among college students in central Pennsylvania, I, Hillary Darville, am conducting an online research survey of PSU college students as part of my senior honors thesis in Biobehavioral Health. My research is supported by the Schreyer Honors College at the Pennsylvania State University and has been approved by the Pennsylvania State University's Office for Research Protections (IRB#35336).

Your input can help us better understand the realities for college students in central PA surrounding sexual and reproductive health. This can help to increase awareness about reproductive health, as well as promote sexual and reproductive health rights.

It will take you approximately 10 minutes to complete the survey. **You must be 18 years or older to complete the survey. Your decision to participate in this research is voluntary.**

Simply click on the link below, or cut and paste the entire URL into your browser to access the survey:

Survey link: www.surveymonkey.com/bbhonorsthesis

We would appreciate your response by March 18th.

Statement of Confidentiality: *Your participation in this research is confidential.* Your confidentiality will be kept to the degree permitted by the technology being used. No guarantees can be made regarding the interception of data sent via the internet by any third parties. The data will be stored and secured in a locked/password-protected file. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

Right to Ask Questions: If you have any questions complaints or concerns about this research or would prefer to complete a paper survey, please contact Hillary Darville at (501)-551-1990 or hkd5009@psu.edu.

Sincerely,

Hillary Darville

If you experience technical difficulties accessing or submitting the survey please email me.

To be removed from this or any future mailings, please click here or reply to this message and enter "REMOVE" in the subject line.

Email for Academic Colleges:

Dear *respondent*,

My name is Hillary Darville and I am a senior in the Schreyer Honors College, majoring in Biobehavioral Health.

In an effort to better understand knowledge, attitudes, and practices in sexual and reproductive health among college students in central Pennsylvania, I am conducting an online research study with PSU college students as part of my senior honors thesis. My research is supported by the Schreyer Honors College at the Pennsylvania State University and has been approved by the Pennsylvania State University's Office for Research Protections (IRB#35336).

The input of your students in this survey will allow for a much better understanding of the realities for college students in regards for sexual and reproductive health. Completing the survey also helps promote sexual and reproductive health rights.

I estimate that it will take students approximately 10 minutes to complete the survey. **Students must be 18 years or older to participate. The decision to participate in this research is voluntary.**

I would greatly appreciate it if you could send out the link below to your college student listserv. I am trying to collect a representative population sample, so participation from students at each PSU College is very important.

Survey link: www.surveymonkey.com/bbhonorsthesis

All responses should be completed by March 18th.

Statement of Confidentiality *Your students' input is very important to me and will be kept strictly confidential.* Confidentiality will be kept to the degree permitted by the technology being used. No guarantees can be made regarding the interception of data sent via the internet by any third parties. The data will be stored and secured in a locked/password-protected file. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

Right to Ask Questions: If you have any questions complaints or concerns about this research or would prefer to complete a paper survey, please contact Hillary Darville at (501)-551-1990 or hkd5009@psu.edu.

Sincerely,

Hillary Darville

If your students experience technical difficulties accessing or submitting the survey please email me.

APPENDIX B: Informed Consent



Informed Consent Form for Social Science Research

The Pennsylvania State University – Schreyer Honors College- Senior Honors Thesis

Title of Project: The Right to Emergency Contraception:
Knowledge, Attitudes and Practices amongst College Students

Principal Investigator: Hillary Darville, Senior Undergraduate Student BBH
221 S. Barnard St. Apt 28
State College, PA 16801
(501) 551-1990; hkd5009@psu.edu

Advisor: Dr. Lori Francis
315C HHD Building East
University Park, PA 16802
(814) 863-0213; lfrancis@psu.edu

1. Purpose of the Study: The purpose of this research study is to better understand college students' knowledge, attitudes, and practices of sexual and reproductive health in central PA.

2. Procedures to be followed: You will be asked to answer 33 questions on a confidential survey.

3. Benefits: You might learn more about yourself by participating in this study. You might have a better understanding of how important sexual and reproductive health programs are for you.

4. Duration: It will take about 10 minutes to complete the survey.

5. Statement of Confidentiality: Your participation in this research is confidential. Your confidentiality will be kept to the degree permitted by the technology being used. No guarantees can be made regarding the interception of data sent via the internet by any third parties. The data will be stored and secured in a locked/password-protected file. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

6. Right to Ask Questions: Please contact Hillary Darville at hkd5009@psu.edu or at (501)-551-1990 with questions, complaints or concerns about this research.

7. Voluntary Participation: Participants must be 18 years or older to complete the survey. Your decision to participate in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

Completion and submission of the survey implies your consent to participate in this research.
Please print off this form to keep for your records.

APPENDIX C: Online Survey

1. Which do you identify with? Male/ Female/ Intersex
2. Age: 18/ 19/ 20/ 21/ 22/ 23 /24
3. Race/Ethnicity that best describes you:
Caucasian/ African American/ Hispanic-Latina/ American Indian-Alaskan Native/ Asian-Pacific Islander/ Other (please specify)
4. How do you identify your sexual affiliation/orientation? (You may choose more than one)
Bisexual/ Heterosexual (straight)/ Homosexual (gay)/ Homosexual (lesbian)/ Questioning/ Queer/ Other/ Prefer not to disclose
5. Number of Partners in the last 12 months: None/ 1/ Between 2 and 4/ 5 or more

Part I: KNOWLEDGE

1. Do you think that teenage pregnancy is a problem in the U.S.? Yes / No
2. Do you think that teenage pregnancy is a problem in PA? Yes / No
3. If a woman has had sexual intercourse WITHOUT PROTECTION or thinks that her method of contraception has FAILED, does something exist that can allow her to prevent pregnancy in the next few days? (Open- ended) _____
4. Have you ever heard of EMERGENCY CONTRACEPTION (also called ‘the morning after pill’)? Yes / No

If respondent replied ‘No’:

Emergency contraception (EC) refers to contraceptive pills that women can take to prevent pregnancy within 72 hours (3 days) of having unprotected sex.

If the respondent replied ‘Yes’:

5. Are the affirmations below (T) TRUE or (F) FALSE?
T / F Emergency contraceptive pills (ECP) are utilized primarily to prevent a pregnancy from starting.
T / F Emergency contraceptive pills protect against sexually transmitted infections (STIs) like HIV/AIDS.
T / F The emergency contraceptive pill is another name for RU-486, ‘the abortion pill’.
T / F To purchase emergency contraceptive pills at a local pharmacy you must have a prescription.

Definition of EC: Emergency contraception (EC) refers to contraceptive pills that women can take to prevent pregnancy after having unprotected sexual intercourse.

6. How would you rate your knowledge level of EC? Nothing/ Little/ Average/ High

7. If you have heard of EC, how did you learn about it? (choose all that apply):
TV/ Magazines/ Radio/ Newspapers/ Health care provider (doctor, nurse, pharmacist)/
Billboards on subways & buses/ Stores, restaurants, or hair salons/ Community programs
and organizations/ Family or friends / School/ Internet/ I don't know or I don't
remember/ Other (please specify)
8. Have you ever heard about EC in a class or from a teacher or nurse in a school?
Yes / No / Don't know
9. Have you discussed EC with a doctor or other professional? Yes / No / Don't know
10. If you wanted to learn more about EC, WHERE would you go to find more information?
(Open-ended)_____
11. Most experts believe that EC works by preventing: (You may choose more than 1 response.)
Ovulation/ Fertilization/ Implantation/ Don't know
12. Are EC pills approved by the U.S. Food and Drug Administration (FDA)?
Yes / No / Don't know
13. At what age are you allowed to purchase emergency contraceptive pills (ECP) at a pharmacy
without a prescription? (Open-ended)_____
14. Are EC pills sold in Pennsylvania? Yes / No / Don't know
15. Is EC available at the Penn State University Health Center? Yes /No /Don't know
16. Where can you get EC off campus? (Open-ended)_____
17. If you were out of town and in need of EC, WHERE would you go to get it?
(Open-ended)_____
18. WHEN should a woman take EC for it to work?
1 day BEFORE unprotected sex/ Up to 1 day AFTER unprotected sex/ Up to 72 hours (3
days) AFTER unprotected sex/ Up to 120 hours (5 days) AFTER unprotected sex/ Up to 1
week (7 days) AFTER unprotected sex/ I don't know
19. If you are over 18 years old, can you buy EC pills at a pharmacy WITHOUT a prescription?
Yes / No / Don't know

Part II: ATTITUDES

20. Do you think that a prescription should be necessary in order to buy emergency contraception
(EC)? Yes / No / Don't know
21. Do you think equal access to EC is a human right? Yes / No / Don't know

22. Do you have religious or moral objections to EC? Yes / No / Don't know
23. Would you be comfortable using EC pills to prevent pregnancy? Yes / No / Don't know
24. Do you APPROVE (A) or DISAPPROVE (D) of the use of EC to prevent pregnancy if...
- A / D A female's regular form of birth control did not work.
 - A / D A female had sexual intercourse without protection.
 - A / D When the life of a female will be in danger if she becomes pregnant.
 - A / D In cases of violence or incest.

Part III: PRACTICES

The following questions are about your own sexual behavior. Please note that all answers are confidential.

In this survey, "sexual intercourse" refers to vaginal penile copulation. "Sex" is a short-hand term for sexual intercourse, as defined above.

25. Have you ever had sexual intercourse, or do you anticipate to have sex within the next year?
Yes / No (skip to question 5) / Other (please specify): _____
26. If you have had sexual intercourse, with what frequency have you utilized birth control or done things to PREVENT pregnancy?
Never / Only sometimes / The majority of the time / All of the time
27. If you use contraceptive methods, which type do you use? You can choose more than one answer.
Male Condom/ Female Condom/ Diaphragm/ Pills/ Injections/ Rings / Spermicides/
Emergency Contraception / Other (please specify): _____
28. If you had sexual intercourse without using a contraceptive method or believe the regular method of birth control failed and YOU/YOUR PARTNER want to PREVENT PREGNANCY, how likely are you to take the EMERGENCY CONTRACEPTIVE pill or suggest that your partner take the pill?
Very Likely/ Somewhat Likely/ Somewhat Unlikely/ Very Unlikely/ Other (please specify): _____
29. Do you know SOMEONE that has used emergency contraception to prevent an undesired pregnancy? Yes / No / Don't know
30. Have you or one of your sexual partners EVER TAKEN emergency contraception to prevent an undesired pregnancy? Yes / No / Don't know.
31. If respondent replied 'Yes' to Question 6:
How many times have you or your partner used EMERGENCY CONTRACEPTION to prevent an undesired pregnancy? Once/ Twice/ Three or more times

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VITA

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EDUCATION

The Pennsylvania State University, Schreyer Honors College, University Park, PA
B.S. in Biobehavioral Health with High Distinction, Expected May 2011
Dean's List six of six semesters. President's Freshman Award

The School for International Training (SIT), Arica, Chile: Feb.-Jun. 2010
"Public Health, Traditional Medicine, and Community Empowerment"; classes and experiences in Spanish

RESEARCH EXPERIENCE

Schreyer Honors College, Penn State University

Independent Student Investigator, Aug. 2010-April 2011

Honors Thesis: "Emergency Contraception: The Reality behind Knowledge, Attitudes, and Practices amongst College Students"

- Completed IRB approval for social science research, surveyed over 700 college students

Children's Hospital of Pittsburgh of UPMC

Student Research Assistant, Summer 2010

Division of Pediatric Infectious Diseases, Laboratory of Andrew J. Nowalk MD PhD

- Knocked a gene out of a *Borrelia burgdorferi* in 4 weeks using PCR, genetic digests, and yeast transformations

The School for International Training: Chile

Public Health Investigator, Mar. 2010- May 2010

Independent Study Practicum: "Emergency Contraception: The Reality behind the Law in Valparaíso, Chile"

- Conducted interviews and surveys with learned actors in reproductive health in Spanish; to be presented as poster at 8th Annual Unite For Sight Global Health & Innovation Conference, Yale University, April 2011

Children's Hospital of Pittsburgh of UPMC

Student Research Assistant, Jan. 2010- Feb. 2010 and Summer 2008

Division of Pediatric Infectious Diseases, Laboratory of Catherine O'Connell PhD

- Assisted in the study of chlamydial infection in cells and mice, analyzed data using RT-PCR and flow cytometry
- O'Connell CM, Abdelrahman YM, Green E, **Darville HK**, Saira K, Smith B, Darville T, Scurlock AM, Meyer CR, Belland RJ. *TLR2 activation by Chlamydia trachomatis is plasmid-*

dependent and plasmid-responsive chromosomal loci are coordinately regulated in response to glucose limitation by C. trachomatis but not by C. muridarum. Infect Immun. 2011 Jan 3.

University of Pittsburgh Graduate School of Public Health

Student Research Assistant, Summer 2009

Division of Human Genetics, Laboratory of Robert Ferrell PhD and David Finegold MD

- Assisted in the genetic study of primary Lymphedema using PCR and fluorescence-based DNA sequencing

The Family Life Project

Student Research Assistant, Sept. 2008- May 2009

Penn State's Prevention Research Center for the Promotion of Human Development, Laboratory of Mike Coccia

- Coded more than 180 child empathy behavior videos

COMMUNITY INVOLVEMENT

GlobeMed at Penn State, 2007-present

Co-President, 2009-present

- Oversee Penn State chapter operations and fundraising, maintain communication with Mexican health partner
- Organized the 4th Annual PSU Global Health Conference, educating over 200 student and faculty attendees about the "*Possibilities and Limitations in Global Health*"

Penn State Interfraternity Council/Panhellenic Dance Marathon (THON), 2007-2009

- THON raises money and awareness for pediatric cancer.

Vole Penn State Ballet Club

Dancer and Performer, 2007-2008

SKILLS

- Proficient in Spanish speaking and writing
- Small animal model research
- Cell and tissue culture
- Plaque assay
- Real-Time PCR
- Genetic cloning
- Flow cytometry
- Fluorescence-based DNA sequencing
- Behavioral coding
- SPSS