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PATIENTS' EMERGENCY CONTRACEPTION COMPREHENSION, USAGE, AND VIEW OF THE EMERGENCY DEPARTMENT ROLE FOR EMERGENCY CONTRACEPTION

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Abstract

Female Emergency Department (ED) patients were surveyed to determine their comprehension of the concept of emergency contraception (EC), to assess how often they had used EC in comparison to other forms of contraception, and to learn which patients want the ED to provide EC services. Most of the 761 respondents were aged < 35 years (62.1%), never married (42.9%), had been pregnant at least once (70.2%), had never had an abortion (76.1%), had never used EC (90.6%), and had sex with a man within the past month (70.7%). Respondents were 2.5 times more likely to have had an abortion than to have used EC; 85.3% could not correctly answer two questions that assessed comprehension of the concept of EC; 43.1% wanted the ED to offer EC, 55.6% to provide information about EC, and 52.6% to refer patients for EC. Younger patients, those who attended religious services infrequently, patients who had ever used EC, and those at risk of pregnancy were more likely to want the ED to provide EC services.

Keywords

emergency contraception; emergency medicine; contraception; postcoital contraception; emergency services; women's health; contraceptives

INTRODUCTION

Emergency Contraception (EC) is a form of postcoital birth control. The most commonly used method of EC in the United States involves a regimen of birth control pills (BCPs). EC has been shown to have few adverse side effects, and when taken shortly after unprotected vaginal intercourse, is highly effective and considered to be cost-effective in preventing pregnancy (1,2). Despite the enormous potential for EC to reduce unintentional or unwanted pregnancies, only 4% of sexually active women of childbearing age in the United States are estimated to have ever used it (3). The paucity of EC usage likely contributes to the 2.6 million unintended pregnancies and subsequent 1.3 million abortions that occur in the United States annually (4,5). According to Trussell et al., if taken by women when

appropriate, EC could prevent 2.3 million unintended pregnancies in the United States each year (5).

There are several possible reasons why US women do not use EC. These reasons include lack of knowledge about the existence and proper usage of EC, lack of access to EC, and misconceptions about the relationship of EC to abortion (6–8). For example, in a 1999 study of women presenting for pregnancy termination, Jamieson et al. found that 27% had “limited” knowledge of EC, whereas just 3% had “complete and valuable” knowledge (9). In a 1998 study of 1000 women, Delbanco et al. found that although 66% had heard of EC, only 11% had sufficient enough knowledge to be able to use it (10).

Age, marital status, socioeconomic status, and other factors might be indicators of EC knowledge and usage. In a 2000 study of knowledge and attitudes about EC in a military population, lesser knowledge about EC was related to being under 21 years of age, being unmarried, and having fewer years of formal education (11). Lack of willingness to use EC was associated with age > 21 years and being married, but was not associated with years of education. In the California Women’s Health Survey, being non-white, born outside of the United States, older than age 24 years, married, having less than a college education, having an income below the poverty line, and not attending family planning visits were associated with lower levels of knowledge about EC (12).

Given the time-dependent and inherent “emergency” nature of EC after consensual and nonconsensual sex and the Emergency Department’s (ED) frequent role as the venue for sexual assault evaluations, the ED is a likely place where EC is provided. Several studies from the United States and other countries have described EC usage in EDs (13–16). Given this role for the ED, it is important to elucidate the potential factors related to EC comprehension and usage among ED female patients so that it can be provided more effectively to patients who might need or request it. In addition, it would be useful to know which female ED patients are receptive to using the ED as a source for information, referrals, or prescriptions for EC.

In this study, we sought to determine how well women of childbearing age presenting to a large, urban ED understood the concept of EC (as opposed to an “awareness” of EC), to learn whether or not they believed EC is an abortifacient, and to know how often they had used it, particularly in comparison to other forms of contraception. We also aimed to learn whether or not these women believed the ED should offer, supply information about, or provide referrals for EC, and to determine which women were more likely to want the ED to provide EC services. We further wanted to learn if there are demographic and sexual and contraceptive history factors associated with greater usage of EC, better comprehension of the concept of EC, and a belief that EC causes an abortion. We also investigated whether or not the format of questions assessing EC comprehension influenced our assessment of participant comprehension of the concept of EC.

METHODS

Study Design, Setting, and Population

The authors conducted a survey of 18–55-year-old female ED patients awaiting medical care using a self-administered, written, anonymous questionnaire. The study was conducted at an urban US Level I trauma, adult, academic, tertiary referral center ED. The hospital institutional review board approved the study as exempt from review and written informed consent.

Survey Design

The authors created the survey after reviewing the contents, styles of questions, and survey methods of numerous women's contraceptive health studies. The survey included six demographic and 14 health history questions, and seven questions on the respondents' usage, comprehension, opinions, and desire for ED involvement regarding EC. The EC questions were: one about prior usage of EC, two on comprehension of the concept of EC, one on the belief that EC causes abortion, and three on the participant's view of the role of the ED for EC usage. The EC questions are provided in the Results section of the article. One of the EC concept comprehension questions was in a multiple choice format and the other in an agree/disagree format. Both questions tested respondent comprehension of the concept that EC in the form of BCPs is a possible means of preventing pregnancy after unprotected vaginal intercourse. In other words, the questions did not ask if patients were simply "aware" of EC's existence. Instead, they both tested comprehension of the same concept, but differed in the format. The multiple-choice question was placed along with other multiple-choice questions and the respondent could answer "yes," "no," or "I am not really sure." The agree/disagree question was approximately eight questions later in a section of "agree," "disagree," "I am not really sure" questions.

The entire questionnaire was pilot tested using brief cognitive interviews of 20 female ED patients to assess their comprehension of the questions. The final questionnaire was refined using the results of the cognitive interviews. The reading level of the entire survey was at a Flesch-Kincaid grade level of 7.8 (Microsoft Word, Microsoft Inc., Redmond, WA).

Survey Administration

The investigators surveyed 18–55-year-old English-speaking women awaiting medical care in the ED. Women were excluded if they could not read or write in English; were being evaluated in the critical care, psychiatric section, or alcohol abuse holding areas of the ED; were not awake; or could not physically complete the form. Any woman not meeting exclusion criteria was invited to complete a survey. Each participant who completed the survey received a \$2 gift card to a local pharmacy.

Research assistants and trained volunteers administered the questionnaire in three 2-month blocks of 66 8-h shifts in July–August 2002, 32 4-h shifts in October–November 2002, and 32 4-h shifts in April–May 2003. Data collection shifts were scheduled to reflect the time-dependent influx of patients to the ED. In brief, 25% of the shifts were scheduled between 7:00 a.m. and 11:00 a.m., 50% between 11:00 a.m. and 11:00 p.m., and 25% from 11:00 p.m. to 7:00 a.m. This ED's daily volume is essentially the same each day of the week. To reflect this pattern of patient visits, the survey was conducted so that each day of the week was represented equally.

Data Analysis

Trained research assistants entered the data independently into one of two separate Epi Info 2002 (Centers for Disease Control and Prevention, Atlanta, GA) databases. The research assistants used the data comparison feature to detect data entry discrepancies between the two databases, corrected the discrepancies, and then created a final database. Data from the final database were analyzed in Stata 8.2 (Stata Corporation, College Station, TX). Proportions of responses to each of the questions were calculated along with the corresponding 95% confidence intervals (CIs). Differences in proportions were considered significant at the $\alpha = 0.05$ level. The authors also compared the relative frequency of ever having used EC to a history of having an abortion or using other forms of birth control. For this calculation, the proportion of those ever having used EC was divided by the proportion having ever used another form of birth control (e.g., having ever had an abortion).

Univariate regression analyses were conducted for each of the following outcomes: prior usage of EC; being able to correctly answer both EC concept questions; belief that EC causes an abortion; and wanting the ED to offer, to provide information about, or make referrals for EC. Demographic and contraceptive, pregnancy, and sexual history factors were used as potential covariates. Odds ratios (ORs) with corresponding 95% CIs were calculated. Multivariate models were constructed for each outcome using factors from the univariate analysis that were significant at the $\alpha = 0.05$ level.

RESULTS

Survey Respondents' Profiles

Of the 1100 women approached to participate in the survey, 769 answered at least part of the questionnaire. Of the 769 women, eight were not included in this analysis because they self-identified as having a female partner and therefore were not likely to consider using EC. Of the 761 remaining respondents, 73.2% answered all seven EC questions. Missing responses were related to the length of the survey; there were more missing responses for the latter questions chiefly due to patients who quit the study early because they were being discharged from the ED. The number of respondents answering each of the questions in this analysis is noted in the tables. The demographic profile of the women is provided in Table 1. Most were younger than age 35 years (62.1%), white (58.2%), single/never married/no current male partner (42.9%), Catholic (50.6%), rarely attended their place of worship (36.2%), and had private health insurance (51.0%).

The pregnancy, contraceptive, and sexual histories of the respondents are shown in Table 2. Most had been pregnant at least once (70.2%), had never had an abortion (76.1%), did not use any form of non-surgical birth control (besides condoms) (73.5%), had never used EC (90.6%), never used condoms during sexual intercourse (45.9%), and had sex with a man within the past month (70.7%). Of the 707 respondents who provided answers to all of the pregnancy, contraceptive, and sexual history questions, 37.2% were potentially at risk of pregnancy (whether or not by intent) because they were not currently using BCPs, were not using any other form of birth control (excluding condoms), had never had a bilateral tubal ligation (BTL) or hysterectomy, were not currently pregnant, and had reported having sex with men. If consistent condom usage was also considered in determining which women are at risk of pregnancy, 35.1% of the respondents would be at risk of pregnancy because they did not always use condoms during sexual intercourse.

EC Usage

Only 9.4% of the respondents answered yes to the question, "Have you ever taken birth control pills AFTER sexual intercourse in order to prevent pregnancy (emergency contraception)?" Comparing the relative frequency of having used EC to usage of other forms of birth control (Table 2), the respondents were 2.5 times more likely to have ever had an abortion, 1.9 times more likely to be using BCPs currently, 2.7 times more likely to have had a BTL, and 1.6 times more likely to always use condoms than to have ever used EC.

In univariate logistic regression analyses, being of black race (OR 2.27, 95% CI 1.11–4.67), Hispanic/Latina ethnicity (OR 2.19, 95% CI 1.15–4.19), having had an abortion (OR 1.89, 95% CI 1.11–3.13), and not having private health care insurance (OR 0.56, 95% CI 0.33–0.93) were associated with ever having used EC. Having used EC was not related to other demographic (age, partner status, religious identity, or frequency of religious service attendance) or sexual/contraceptive history (current usage of BCPs, ever having been pregnant, recency of sexual intercourse) factors. In a multivariate model including the factors significantly associated with EC usage in the univariate analysis, being Hispanic/

Latina (OR 1.98, 95% CI 1.01–3.87) and having had an abortion (OR 1.82, 95% CI 1.05–3.13) were associated with ever having used EC. If race/ethnicity was not included in this multivariate model, not having private insurance became significantly associated with having used EC (OR 0.56, 95% CI 0.34–0.94).

Responses to EC Survey Questions

EC concept comprehension—Most respondents did not correctly answer the two questions evaluating their comprehension of the concept of EC (Table 3). If “I am not really sure” responses are also considered to be incorrect responses, of the 705 women who answered the multiple-choice-format EC concept comprehension question, 74.9% (95% CI 71.5–78.1) did not answer this question correctly. Likewise, of the 644 women who answered the agree/disagree-format EC concept comprehension question, 80.3% (95% CI 77.0–83.3) did not answer this question correctly. Of the 640 who answered both questions, 85.3% (95% CI 82.3–88.0) did not answer both questions correctly. Of the 640 who answered both questions, 74.1% (95% CI 70.5–77.4) did not answer the multiple-choice-format question correctly and 80.6% (95% CI 77.3–83.6) did not answer the agree/disagree format question correctly. For this analysis, we assumed that patients who could correctly answer both EC concept comprehension questions (the agree/disagree and the multiple-choice questions on the same topic), demonstrated a higher level of comprehension of this topic.

In logistic regression univariate analyses, correctly answering both EC concept comprehension questions was related to having private insurance (OR 2.42, 95% CI 1.51–3.87), having ever used EC (OR 2.66, 95% CI 1.39–5.09), more frequent condom usage (OR 1.23, 95% CI 1.02–1.49), and never having been pregnant (OR 1.75, 95% CI 1.11–2.75); but was not related to other demographic (age, race, partner status, religious identity, or frequency of religious service attendance) or sexual/contraceptive history (current usage of BCPs, ever having had an abortion, recency of sexual intercourse) factors. When the four factors significant in the univariate analyses were placed together into a multivariate model, only two factors remained associated with answering both EC concept comprehension questions correctly: having private insurance (OR 2.64, 95% CI 1.58–4.40) and ever having used EC (OR 4.24, 95% CI 2.07–8.70).

EC and abortion beliefs—Few women (9.8%) believed that EC causes an abortion (Table 3). In univariate logistic regression analyses, only having never been pregnant (OR 1.77, 95% CI 1.03–3.05) was related to believing that EC causes an abortion. The other demographic (age, race, partner status, religious identity, frequency of religious service attendance, insurance status) and sexual/contraceptive history (current usage of BCPs, ever having had an abortion, recency of sexual intercourse, and frequency of condom usage) factors were not related to believing that EC causes an abortion.

ED role in EC provision—More women indicated that they would like the ED to provide information (55.6%) or referrals (52.6%) for EC than offer EC (43.1%) (Table 3). Tables 4 and 5 show the results of the logistic regression analysis examining demographic and sexual/contraceptive history factors associated with ED patients wanting the ED to engage in each of these roles in regards to EC. In the univariate analyses, younger age, being single/never married/not having a male partner, less frequent religious service attendance, having never been pregnant, and ever having used EC were associated with wanting the ED to provide information about, referrals for, or to offer EC. Wanting the ED to engage in any of these roles was not related to race, having private insurance, religious identity, having had an abortion, current use of BCPs, recency of sexual intercourse, or condom usage. In the multivariate regression logistic regression analysis, younger age was related to wanting the

ED to offer EC or give information about EC, but was marginally related to wanting the ED to provide referrals for EC. Having ever used EC was related to wanting the ED to offer and provide referrals for EC and was marginally related to wanting the ED to give information on EC. Less frequent religious service attendance was related to wanting the ED to engage in all three roles.

Women at risk of pregnancy—The topics of EC usage, knowledge, belief that EC is a form of abortion, and the ED's potential role in EC provision were compared by pregnancy risk (women at risk vs. women not at risk of pregnancy—as defined previously). Women at risk of pregnancy were just as likely as women not at risk to have ever used EC (OR 1.34, 95% CI 0.80–2.26), to answer both EC questions correctly (OR 1.44, 95% CI 0.92–2.26), and to believe that EC causes an abortion (OR 1.19, 95% CI 0.69–2.06). Women at risk of pregnancy were more likely than women not at risk to want the ED to offer EC (OR 1.59, 95% CI 1.13–2.22) and provide information about EC (OR 1.51, 95% CI 1.08–2.12), but not more likely to want the ED to provide referrals for EC (OR 1.34, 95% CI 0.96–1.88).

DISCUSSION

Most of the women surveyed were young, single/never married/without a male partner, and had sexual intercourse with a male within the previous month. Few were using condoms on a consistent basis or employing other forms of birth control. Over a third were at risk of pregnancy, whether intended or not. The women surveyed were more likely to have had an abortion, use BCPs, had a BTL, or ever use condoms than to have used EC. Despite the likelihood that EC could be useful for this population of women, it had been underutilized as a method of birth control, which is consistent with findings from studies in other populations (10,17–19).

We observed in this ED population that prior usage of EC was primarily related to ever having had an abortion, not having private health care insurance, and marginally related to non-white race. For other populations, re-searchers have found that being a student, having a regular sexual partner, temporal trends (e.g., weekends, holidays, summer months), younger age, more years of formal education, and never having given birth were related to using EC (15,20–23). Researchers have also observed that younger women, those who are unmarried or not living with a partner, and those who have used EC before, are more likely to be willing to use EC in the future (10,17,19,24). It is likely that women with an investment in remaining not pregnant are more likely to use EC. Although no studies looked at frequency of religious service attendance, several found religious or moral objections to be negatively associated with willingness to use EC (10,17,18). We did not observe an association between frequency of religious service attendance and willingness to use EC. Furthermore, few of the women in our study expressed a belief that EC was a form of abortion. However, women who had never been pregnant were more likely to hold this viewpoint.

Based on their answers to the two EC concept comprehension items, few women in this study understood the concept of EC, i.e., that EC can prevent pregnancy through the taking of BCPs after vaginal sexual intercourse. Prior studies report quite different and a broad range of estimates for the percentage of women who report either being aware of the existence of EC or who understand the concept of EC (17,19,24–26). These widely different estimates are likely due to the demographic composition of the populations studied, the study methods employed and, more importantly, the type, format, and nature of the questions asked. The form of the question being asked about EC can greatly affect the results and the subsequent conclusions about a study on EC knowledge. For example, studies that employ questions to examine “awareness” of EC and that use the term EC or its equivalent in the question test recognition of the term and not understanding of the concept.

It is also likely that respondents in these studies may state that they know of EC so as not to appear unknowledgeable, or may confuse EC with something else.

Studies that report a majority of women to be “aware of EC” found fewer to be knowledgeable about details important in its use (10,18,24). For example, a national telephone survey in 1997 of 1000 18–44-year-old U.S. women investigating the progress of EC awareness, use of, and attitudes toward EC found that 66% of women had heard of EC, but only 11% knew two facts considered critical to getting and using EC, and only 39% answered yes when asked “If a woman has just had sex and thinks she might become pregnant, is there anything she can do in the next few days to prevent the pregnancy?” (10). A more recent, larger, population-based survey of 18–44-year-old women in California asked, “To the best of your knowledge, if a woman has unprotected sex is there anything she can do in the three days after intercourse that will prevent pregnancy?” and “What can she do?” Half of the respondents knew there was something a woman could do, but only 38% could correctly name a method (26). Although this indicates a higher level of knowledge than the 1997 study, it was conducted in California, which the authors described as a site of organized outreach and education campaigns about EC for the prior 7 years. Because these types of programs are not necessarily common practice across the United States, it is reasonable to assume that the results reflect higher levels of knowledge due to these campaigns. Nevertheless, overall comprehensive knowledge of EC was lacking.

To help address this issue, we designed our EC questions to determine if respondents understand the concept of EC, rather than to see if they recognized the term. We also examined if the format of the question impacted responses. A slightly higher percentage of women correctly answered the knowledge question on EC when it was asked in a multiple choice yes/no (25.9%, 95% CI 22.6–29.5) than an agree/disagree (19.4%, 95% CI 16.4–22.7) format. This finding demonstrates that the type or format of the question used in assessing EC knowledge can affect the outcomes observed and helps further explain the variability of results from other studies. Of note, the greater percentage of correct responses occurred on the question that appeared first, so a priming effect based upon question order influencing ability to answer the question correctly was not present.

Understanding the concept of EC was related to having private health care insurance and ever having used EC. It is probable that women with private health care insurance had greater access to regular medical services during which EC could have been discussed as an option and that these women were of higher socioeconomic status, which suggests a greater educational level. Prior experience using EC naturally should confer a greater understanding of EC’s purpose.

To our knowledge, no other study has investigated the patient’s viewpoint on the ED’s potential role in distributing EC information, providing referrals, or offering EC. Despite low levels of understanding the concept of EC, about half of the women seemed to be interested in using or learning more about EC from the ED. We are surprised that more women were not interested in the ED providing this service, but it could be due to a lack of understanding of EC. We did not ask patients their reasons for not wanting the ED to serve in this role or if they preferred an alternative place for EC provision, so we cannot fully explain these findings. It seems that overall, women would prefer to be given educational materials about or receive referrals for EC. Of course, this generalization might apply only to the general distribution of EC in the ED and not to individual usage based upon need or request. Younger patients, patients who infrequently attend religious services, those who had ever used EC, and those at risk of pregnancy were more apt to want the ED to be engaged in EC services. These patients might benefit from targeted programs to increase EC usage.

Our study has some important limitations. The sample included only English speaking women, ages 18–55 years, who were visiting a single urban ED. Therefore, the sample may not be representative of other populations or settings, so the study results may not be generalized to these populations or settings. It is unfortunate that not all women who participated in the study answered every question so there was some loss of sample size and subsequent loss of power to detect differences. Larger sample sizes might have rendered some variables marginally significant to be significantly associated with the outcomes of interest.

CONCLUSIONS

Given the high rates of unintended pregnancy in the United States, not only is it important that women become aware of EC, but also that women understand what it is, how it works, and where they can obtain it. Among ED patients, comprehension of the concept of EC is low and EC is underutilized as a means of preventing pregnancy. In addition to serving as a direct source of EC, the ED can act as a source of information about and referrals for EC, thereby increasing access by educating patients and by linking them to referral sources for EC. ED providers can most efficiently make use of their resources by knowing which women will benefit most from these services and which will be most receptive to them. Women who are young, do not frequently attend religious services, or have used EC before were more likely to want ED involvement and therefore can be considered potential candidates for EC by ED providers.

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REFERENCES

1. Glasier A. Safety of emergency contraception. *J Am Med Womens Assoc.* 1998; 53 Suppl 2(5): 219–221. [PubMed: 9859625]
2. Trussell J, Rodriguez G, Ellertson C. Updated estimates of the effectiveness of the Yuzpe regimen of emergency contraception. *Contraception.* 1999; 59:147–151. [PubMed: 10382076]
3. Mosher WD, Martinez GM, Chandra A, Abma JC, Willson SJ. Use of contraception and use of family planning services in the United States: 1982–2002. *Adv Data.* 2004; 350:1–35. [PubMed: 15633582]
4. Henshaw SK. Unintended pregnancy in the United States. *Fam Plann Perspect.* 1998; 30:24–29. 46. [PubMed: 9494812]
5. Trussell J, Stewart F, Guest F, Hatcher RA. Emergency contraceptive pills: a simple proposal to reduce unintended pregnancies. *Fam Plann Perspect.* 1992; 24:269–273. [PubMed: 1483531]
6. Blanchard K. Improving women's access to emergency contraception: innovative information and service delivery strategies. *J Am Med Womens Assoc.* 1998; 53 Suppl 2(5):238–241. [PubMed: 9859631]
7. Brening RK, Dalve-Endres AM, Patrick K. Emergency contraception pills (ECPs): current trends in United States college health centers. *Contraception.* 2003; 67:449–456. [PubMed: 12814813]
8. Harvey SM, Beckman LJ, Sherman C, Petitti D. Women's experience and satisfaction with emergency contraception. *Fam Plann Perspect.* 1999; 31:237–240. 260. [PubMed: 10723648]
9. Jamieson MA, Hertweck SP, Sanfilippo JS. Emergency contraception: lack of awareness among patients presenting for pregnancy termination. *J Pediatr Adolesc Gynecol.* 1999; 12:11–15. [PubMed: 9929834]

10. Delbanco S, Stewart F, Koenig J, Parker M, Hoff T, McIntosh M. Are we making progress with emergency contraception? Recent findings on American adults and health professionals. *J Am Med Womens Assoc.* 1998; 52:242–246. [PubMed: 9859632]
11. van Royen AR, Calvin CK, Lightner CR. Knowledge and attitudes about emergency contraception in a military population. *Obstet Gynecol.* 2000; 96:921–925. [PubMed: 11084178]
12. Foster DG, Harper CC, Bley JJ, et al. Knowledge of emergency contraception among women aged 18 to 44 in California. *Am J Obstet Gynecol.* 2004; 191:150–156. [PubMed: 15295356]
13. Rovi S, Shimon N. Prophylaxis provided to sexual assault victims seen at US emergency departments. *J Am Med Womens Assoc.* 2002; 57:204–207. [PubMed: 12405238]
14. Amey AL, Bishai D. Measuring the quality of medical care for women who experience sexual assault with data from the National Hospital Ambulatory Medical Care Survey. *Ann Emerg Med.* 2002; 39:631–638. [PubMed: 12023706]
15. Checa MA, Pascual J, Robles A, Carreras R. Trends in the use of emergency contraception: an epidemiological study in Barcelona, Spain (1994–2002). *Contraception.* 2004; 70:199–201. [PubMed: 15325888]
16. Millar JR, Leach DS, Maclean AV, Kovacs GT. The use of emergency contraception in Australasian emergency departments. *Emerg Med (Fremantle).* 2001; 13:314–318. [PubMed: 11554862]
17. Jackson R, Bilma Schwarz E, Freedman L, Darney P. Knowledge and willingness to use emergency contraception among low-income post-partum women. *Contraception.* 2000; 61:351–357. [PubMed: 10958877]
18. Abbott J, Feldhaus K, Houry D, Lowenstein S. Emergency contraception: what do our patients know? *Ann Emerg Med.* 2004; 43:376–381. [PubMed: 14985666]
19. Spence M, Elgen K, Harwell T. Awareness, prior use, and intent to use emergency contraception among Montana women at the time of pregnancy testing. *Matern Child Health J.* 2003; 7:197–203. [PubMed: 14509415]
20. Fox J, Weerasinghe D, Marks C, Mindel A. Emergency contraception: who are the users? *Int J STD AIDS.* 2004; 15:309–313. [PubMed: 15117498]
21. Nanthakumaran H, Sullivan AK, Boag FC. An audit of emergency contraception: a look at patient characteristics and the effects of a consultation proforma. *Int J STD AIDS.* 1998; 9:48–50. [PubMed: 9518016]
22. Mawhinney S, Dornan O, Ashe R. Emergency department post-coital contraception in Northern Ireland. *Ir J Med Sci.* 2004; 173:93–95. [PubMed: 15540711]
23. Perslev A, Rorbye C, Boesen HC, Norgaard M, Nilas L. Emergency contraception: knowledge and use among Danish women requesting termination of pregnancy. *Contraception.* 2002; 66:427–431. [PubMed: 12499035]
24. Van Royen A, Calvin C, Lightner C. Knowledge and attitudes about emergency contraception in a military population. *Am Coll Obstet Gynecol.* 2000; 96:921–925.
25. Harper C, Ellertson C. The emergency contraceptive pill: a survey of knowledge and attitudes among students at Princeton University. *Am J Obstet Gynecol.* 1995; 173:1438–1444. [PubMed: 7503182]
26. Foster D, Harper C, Bley J, et al. Knowledge of emergency contraception among women aged 18 to 44 in California. *Am J Obstet Gynecol.* 2004; 191:150–156. [PubMed: 15295356]

Table 1**Demographic Profile of Survey Respondents**

	%
Age group, years (n = 753)	
18–25	34.5
26–35	27.6
36–45	23.8
46–55	14.1
Racial/ethnic self-identity (n = 747)	
White	58.2
Black	12.1
Hispanic	15.8
Other	13.9
Partner status (n = 759)	
Single/never married/no male partner	42.9
Married	29.8
Male partner	11.1
Formerly married/no current male partner	16.2
Insurance status (n = 752)	
Private	51.0
Governmental (Medicaid/Medicare)	32.9
None	16.1
Religious identity (n = 751)	
Catholic	50.6
Protestant	25.6
Other	7.6
No preference	16.2
Frequency religious service attendance (n = 737)	
Never/this question does not apply to me	22.0
Rarely	36.2
Monthly	11.4
Weekly	30.4

Table 2**Respondents' Pregnancy, Contraceptive, and Sexual History**

	%
Pregnancy history	
Currently pregnant* (n =751)	2.7
Ever pregnant (n =752)	70.2
Ever had an abortion (n =740)	23.9
Contraceptive history	
Currently taking BCPs (n =750)	18.0
Using other birth control (n =741)	11.7
Had a BTL (n =742)	25.5
Had a hysterectomy (n =744)	9.9
Ever used EC (n =744)	9.4
Frequency of condom use (n =731)	
Not having sexual intercourse	7.7
Never	45.9
Sometimes	17.1
Most of the time	13.8
Every time	15.5
Sexual history	
Last time having sex with a male (n =730)	
<1 month	70.7
>1 month	24.0
Never	5.3

* An additional 4.4% were unsure if they were pregnant.

Table 3

EC Concept Comprehension and EC Opinions

	n	% Yes/Agree (95% CI)	% No/Disagree (95% CI)	% Unsure (95% CI)
EC concept				
“If a woman has had vaginal sexual intercourse with a man (without using birth control), can she take birth control pills AFTERWARDS to prevent pregnancy?”	705	25.1 (21.9–28.5)	56.7 (53.0–60.4)	18.2 (15.4–21.2)
“A woman can take birth control pills shortly AFTER having vaginal intercourse with a man to prevent pregnancy”	644	19.7 (16.7–23.0)	63.5 (59.7–67.2)	16.8 (14.0–19.9)
EC as abortion opinion				
“Taking birth control pills AFTER having sexual intercourse with a man causes an abortion”	620	9.8 (7.61–12.5)	90.2 (87.5–92.4)	–
Emergency Department role for provision of EC				
“I would like the Emergency Department to offer me birth control pills after I have had sex in order to prevent pregnancy (the “morning-after pill”)”	613	43.1 (39.1–47.1)	56.9 (52.9–60.9)	–
“I would like the Emergency Department to offer me information I can take home on the “morning-after pill”.”	612	55.6 (51.5–59.5)	44.4 (40.5–48.5)	–
“I would like the Emergency Department to offer me referrals to get the “morning-after pill” from a doctor outside the Emergency Department (at a clinic).”	610	52.6 (48.6–56.6)	47.4 (43.4–51.4)	–

Table 4

ED Role in EC Provision—Univariate Analysis

	Would like the ED to offer EC		Would like the ED to offer info on EC		Would like the ED to provide referrals for EC	
	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)
Age	607	0.67 (0.57–0.78)	606	0.66 (0.56–0.77)	604	0.77 (0.66–0.89)
Racial identity	608		607		605	
Other		1.53 (0.94–2.50)		1.43 (0.87–2.36)		1.21 (0.74–1.98)
Black		1.32 (0.78–2.25)		1.40 (0.81–2.40)		1.23 (0.72–2.10)
Hispanic		1.19 (0.75–1.90)		1.18 (0.74–1.90)		1.05 (0.66–1.68)
Partner status	611		610		608	
Married/male partner		0.38 (0.32–0.62)		0.35 (0.22–0.56)		0.42 (0.26–0.68)
Formerly married/no current male partner		0.66 (0.46–0.94)		0.65 (0.45–0.92)		0.80 (0.57–1.14)
Private insurance	608	1.04 (0.75–1.44)		0.77 (0.56–1.06)		1.10 (0.80–1.52)
Religious identity	609					
Other		1.79 (0.86–3.73)		1.19 (0.56–2.55)		0.89 (0.42–1.88)
Protestant		0.74 (0.45–1.22)		0.67 (0.40–1.13)		0.55 (0.33–0.92)
Catholic		0.76 (0.48–1.19)		0.71 (0.45–1.13)		0.61 (0.38–0.96)
Frequency of religious service attendance	601	0.74 (0.64–0.85)	600	0.78 (0.67–0.90)	599	0.75 (0.65–0.87)
Never been pregnant	613	2.18 (1.54–3.10)	612	1.80 (1.26–2.57)	610	1.69 (1.18–2.40)
Current BCP usage	612	0.71 (0.47–1.08)	612	0.77 (0.50–1.18)	610	0.83 (0.54–1.26)
Ever used EC	610	2.06 (1.17–3.64)	609	1.90 (1.03–3.50)	607	2.23 (1.21–4.10)
Ever had abortion	608	0.95 (0.65–1.39)	607	0.97 (0.66–1.41)	605	0.81 (0.55–1.18)
Recency of sexual intercourse*	573	1.16 (0.95–1.42)	574	1.25 (1.02–1.52)	571	1.17 (0.96–1.42)
Greater frequency of condom use†	562	1.15 (0.99–1.32)	561	1.06 (1.06–1.22)	559	1.06 (0.92–1.22)
Reference groups						
Partner status: single/never married/no male partner						
Race: white						
Religious ID: no preference						

* Recency of sexual intercourse excludes those who responded “Never” to the recency of intercourse question.

† Condom use excludes those who responded “does not apply to me (I don’t have sexual intercourse).”

Table 5

ED Role in EC Provision—Multivariate Analysis

	Would like the ED to offer EC	Would like the ED to offer info on EC	Would like the ED to provide referrals for EC
	n = 593 OR (95% CI)	n = 592 OR (95% CI)	n = 592 OR (95% CI)
Age	0.74 (0.61–0.89)	0.74 (0.61–0.89)	0.85 (0.71–1.02)
Partner status			
Married/male partner	0.75 (0.42–1.33)	0.59 (0.34–1.03)	0.64 (0.37–1.12)
Formerly married/no current male partner	1.12 (0.74–1.71)	0.97 (0.64–1.47)	1.20 (0.79–1.82)
Frequency of religious service attendance	0.74 (0.64–0.87)	0.79 (0.68–0.91)	0.74 (0.64–0.86)
Never been pregnant	1.74 (1.15–2.63)	1.30 (0.85–1.97)	1.50 (0.99–2.28)
Ever used EC	2.09 (1.12–3.87)	1.89 (0.98–3.67)	2.62 (1.35–5.09)
Reference groups			
Partner status: single/never married/no male partner			