

# Attitudes and Beliefs About Emergency Contraception Among Patients at Academic Family Medicine Clinics

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## ABSTRACT

**PURPOSE** The possible mechanisms of action of emergency contraception (EC) include preventing ovulation, fertilization, or implantation of an embryo. Differences in the use of terminology between medical personnel and the general public could be misleading to patients who would use EC. This cross-sectional survey evaluated women's beliefs regarding pregnancy and EC's possible mechanisms of actions.

**METHODS** An anonymous questionnaire was developed and pilot tested for an appropriate reading level and ease of analysis. It collected information on demographics and beliefs about pregnancy and EC. During an 8-week period, the questionnaire was given to a convenience sample of female patients aged 18 to 50 years visiting 2 academic family medicine clinics in the southeastern United States. Descriptive statistics and logistic regression models were used for analysis.

**RESULTS** A total of 178 women completed questionnaires. Nearly one-half (47%) of respondents believed that pregnancy begins with fertilization; however, less than one-third (30%) believed that life begins with fertilization. Thirty-eight percent of respondents stated that they would use EC only if they believed it worked before fertilization or implantation. Generally similar proportions thought that EC works before fertilization (24%) and before implantation (36%), or were unsure about when it works (34%). Younger age was associated with higher odds of believing that EC works before fertilization; none of the other demographic factors studied conferred either higher or lower odds.

**CONCLUSIONS** Many women are uninformed about the possible mechanisms of action of EC, and we found no reliable predictors for those who were better informed. This study raises questions regarding women's understanding of EC and demonstrates the need to better educate them about its possible mechanisms of action.

*Ann Fam Med* 2008;6(suppl 1):s23-s27. DOI: 10.1370/afm.744.

*Conflicts of interest: none reported*

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## INTRODUCTION

Emergency contraception (EC) is defined as any method women can use after intercourse to prevent pregnancy.<sup>1</sup> The differing methods of EC include the use of intrauterine devices and hormone pills, such as the over-the-counter hormonal method known as Plan B.<sup>2</sup> Several mechanisms of action have been suggested in the literature for the effectiveness of EC. One possible mechanism of action is the inhibition or delay of ovulation.<sup>3-6</sup> A second possible mechanism is a histologic or biochemical alteration of the endometrium that impairs endometrial receptivity to implantation of a fertilized egg.<sup>4,7-13</sup> Other studies, however, dispute this claim and suggest that there is no effect on the endometrium.<sup>3,14,15</sup> Despite the other suggested mechanisms of action of EC, prevention of implantation is accepted as a possible mechanism and is listed as such in major drug databases<sup>16</sup> and the Plan B package insert.<sup>17</sup>

**Figure 1. Questionnaire.**

Please read the following explanation of terms.

After intercourse, if conditions are right, a **sperm and egg can join** within the female reproductive tract to form one new genetically unique cell. This cell divides and grows to form a many-celled organism as it progresses toward the womb. Again, if conditions are right, 6 to 7 days after forming, this organism attaches to the inner wall of the womb. The point at which this happens is known as **implantation**. Around 3 weeks after sperm and egg join, the organism's newly formed **heart starts beating**. Normal pregnancy lasts 9 months and is divided equally into first, second, and third trimesters.

Answer the following questions to the best of your ability by circling one option.

- I understand conception to be the point at which:
  - Sperm and egg join within the female reproductive tract.
  - Implantation occurs.
  - The heart starts beating.
  - Unsure
  - Other: \_\_\_\_\_
- Pregnancy begins when
  - Sperm and egg join within the female reproductive tract.
  - Implantation occurs.
  - The heart starts beating.
  - Unsure
  - Other: \_\_\_\_\_
- Life begins when
  - Sperm and egg join within the female reproductive tract.
  - Implantation occurs.
  - The heart starts beating.
  - Birth occurs.
  - Unsure
  - Other: \_\_\_\_\_
- I would consider it an abortion to stop a pregnancy from progressing any time after
  - Sperm and egg join within the female reproductive tract.
  - Implantation occurs.
  - The heart starts beating.
  - Unsure
  - Other: \_\_\_\_\_
- I would consider it wrong to stop a pregnancy from progressing any time after
  - Sperm and egg join within the female reproductive tract.
  - Implantation occurs.
  - The heart starts beating.
  - First trimester starts.
  - Second trimester starts.
  - Third trimester starts.
  - Any time during pregnancy is okay.
  - Unsure
  - Other: \_\_\_\_\_
- It is my understanding that emergency contraception will only work before
  - Sperm and egg join within the female reproductive tract.
  - Implantation occurs.
  - The heart starts beating.
  - Unsure
  - Other: \_\_\_\_\_

- I would use emergency contraception only if it works before
  - Sperm and egg join within the female reproductive tract.
  - Implantation occurs.
  - The heart starts beating.
  - Does not matter to me when it works.
  - Unsure
  - Other: \_\_\_\_\_
- I would use emergency contraception
  - Only if my doctor told me it would not cause an abortion.
  - Only if my doctor told me there was only a small chance it could cause an abortion.
  - Regardless of whether my doctor said there was a chance it could cause an abortion.
  - Unsure
  - Would never use.

Please answer the following confidential questions about yourself.

- Age: \_\_\_\_\_
- Gender:
  - Male
  - Female
- Race:
  - Black
  - White
  - Asian
  - Hispanic
  - Native American
  - Other \_\_\_\_\_
- Highest level of education:
  - Less than high school
  - High school graduate
  - Some college
  - College graduate
  - Some postgraduate studies
  - Postgraduate degree
  - Other \_\_\_\_\_
- In which category would you say your annual household income falls?
  - Less than \$15,000
  - \$15,001-\$25,000
  - \$25,001-\$40,000
  - \$40,001-\$60,000
  - More than \$60,000
- Do you currently have health insurance?
  - Yes
  - No
- If yes, what type?
  - Medicare
  - Medicaid
  - Fee for service (Blue Cross/Blue Shield)
  - HMO/PPO (MUSC Options, HMO Blue, Companion)
  - None
  - Other: \_\_\_\_\_

- What is your religious preference?
  - Christian (which denomination?) \_\_\_\_\_
  - Jewish
  - Muslim
  - No religion
  - Other religion: \_\_\_\_\_
- How strong are your religious beliefs?
  - Very strong
  - Moderate
  - Not very strong
  - Not at all
- How often do you usually attend religious services?
  - At least twice a week
  - Weekly
  - Nearly every week
  - About once a month
  - A few times a year
  - Rarely
  - None
- Marital status:
  - Married
  - Single
  - Significant relationship
  - Divorced
  - Widowed
  - Other
- Number of children:
  - 1
  - 2
  - 3
  - 4 or more
  - None
- Are you presently sexually active?
  - Yes
  - No
- What type of contraception do you use on a regular basis? (circle all that apply).
  - Oral contraceptive pills
  - Condoms
  - Spermicide
  - Diaphragm
  - IUD
  - None
  - Other: \_\_\_\_\_
- Have you ever used emergency contraception (Plan B, Preven, etc)?
  - Yes
  - No

Patient understanding of the terminology surrounding the mechanisms of action of EC has not been previously studied. Differences in the understanding of terminology between patients and physicians could raise questions regarding the quality of informed consent when patients are told that EC will not act as an abortifacient and will not work once a woman is pregnant. One study looked at the acceptance and use of EC with a standardized counseling intervention and found that one-half of the women who received counseling accepted a prescription for EC in advance of a possible need for EC.<sup>18</sup> This counseling did not change their overall use of EC, however.

Additionally, the topic of EC involves moral implications for patients concerning their beliefs about the beginning of life. A public opinion poll of more than 15,000 people showed that almost 50% of the population believe that life begins at conception, or when the sperm and egg join.<sup>19</sup>

In this study, we investigated women's beliefs surrounding conception and the beginning of pregnancy. We also evaluated women's willingness to use EC based on its possible mechanisms of action.

## METHODS

This cross-sectional survey took place in 2 academic family medicine clinics in the southeastern United States. One clinic predominately serves an urban population and is staffed by medical school faculty. The other clinic is in a suburban area and is staffed primarily by family medicine residents. The survey was conducted during an 8-week period (February through April and October through November) in 2006.

We developed and pilot tested a questionnaire for an appropriate (6th-grade) reading level and for ease of analysis. The questionnaire (Figure 1) was approved as exempt research by the Institutional Review Board at the Medical University of South Carolina. It was administered anonymously to a convenience sample of female patients by the clinic registration staff. Participation was restricted to women aged 18 to 50 years.

Some questions asked patients about their beliefs regarding the beginning of life, conception, and pregnancy. Other questions were designed to gain insight into patients' understanding of the possible mechanisms of action of EC. The questionnaire also requested demographic information, including respondents' age, sex, race, education, income, marital status, children, religious affiliation, strength of religious belief, and any use of contraception.

The data were analyzed with SAS software (SAS Institute, Cary, North Carolina) and by the use of descriptive statistics and logistic regression analysis.

## RESULTS

A total of 178 women completed questionnaires. The demographic characteristics of the respondents are shown in Table 1. Compared with clinic patients overall, respondents were younger but of similar races.

Table 2 shows the responses to the questions about conception, pregnancy, and EC. The majority (81%) of respondents agreed that conception occurs when the sperm and egg join. The respondents' beliefs were split, however, regarding when pregnancy begins and when life begins; nearly one-half (47%) believed that pregnancy begins with fertilization, but less than one-third (30%) believed that life begins at that point. There was no majority belief on when a respondent would use EC in the process of fetal development. Thirty-eight percent of respondents stated that they would use EC only if they believed it worked before fertilization or implantation, and a large proportion (42%) of respondents were unsure of how their potential use of EC would change based on a physician's comments about when it worked during fetal development.

Table 3 shows the results from the logistic regression analysis. Women with incomes of less than \$40,000 were more likely to believe that life begins at the joining of sperm and egg than women with higher incomes. Additionally, women aged 25 years or younger were more likely to think that EC works before the egg and sperm join than older women. There were no significant differences in the perception

**Table 1. Demographic Characteristics of Survey Respondents (N = 178)**

Characteristic	No. (%) of Respondents
Age, years	
18-25	38 (21.3)
26-35	64 (36.0)
36-45	61 (34.3)
46-50	15 (8.4)
Race	
Black	73 (41.0)
White	96 (53.9)
Other	9 (5.1)
Education level	
High school graduate or less	56 (31.4)
Some college	64 (36.0)
College graduate or more	58 (32.6)
Yearly income	
<\$25,000	87 (48.9)
\$25,000-\$40,000	54 (30.3)
>\$40,000	37 (20.8)
Strength of religious beliefs	
Very strong	86 (48.3)
Moderate	68 (38.2)
Little or none	24 (13.5)

**Table 2. Respondents' Answers to Questions on Pregnancy and Emergency Contraception (N = 178)**

Question	No. (%) of Respondents	Question	No. (%) of Respondents
Conception is the point when ...		I would only use EC if it works ...	
Sperm and egg join	144 (81)	Before sperm and egg join	36 (20)
Implantation occurs	30 (17)	Before implantation occurs	32 (18)
The heart starts beating	4 (2)	Before heart starts beating	18 (10)
Pregnancy begins when ...		Does not matter when	32 (18)
Sperm and egg join	84 (47)	Would never use	20 (11)
Implantation occurs	78 (44)	Unsure	40 (22)
The heart starts beating	14 (8)	I would use EC only if my doctor told me ...	
Unsure	2 (1)	It would not cause an abortion	60 (34)
Life begins when ...		There was a small chance it could cause an abortion	6 (3)
Sperm and egg join	54 (30)	Regardless of what my doctor said	27 (15)
Implantation occurs	22 (12)	Would never use	11 (6)
The heart starts beating	84 (47)	Unsure	74 (42)
Birth occurs	18 (10)		
Emergency contraception works ...			
Before sperm and egg join	43 (24)		
Before implantation occurs	64 (36)		
Before heart starts beating	11 (6)		
Unsure	60 (34)		

Note: Percentages may not add to 100% because of rounding.

EC = emergency contraception.

of abortion or the use of EC based on age, race, income, education, or strength of religious beliefs (data not shown).

## DISCUSSION

Many of the participants in this study indicated that use of EC would be acceptable to them. Responses suggested, however, that the majority of women surveyed did not know that one possible mechanism of action of EC is to prevent implantation of a fertilized ovum. Although 30% of respondents believed that life begins at fertilization of the egg by sperm, respondents had different beliefs regarding their potential use of EC. These results suggest that women may not fully understand the possible mechanisms of action of EC. This lack of understanding may especially be true for younger women, who may be more likely to use EC.<sup>20</sup>

Debate over the availability of EC has been quite intensive. Its use by prescription led to a call by pharmacists for the concept of "ethical refusal," which would allow them to not fill prescriptions if doing so violated their moral beliefs. Some pharmacists went so far as to hold the prescription so that it could not be taken to another pharmacy to be filled.<sup>21</sup>

**Table 3. Logistic Regression Analysis of Beliefs Regarding Beginning of Life and Emergency Contraception**

Characteristic	Life Begins When Egg and Sperm Join Odds Ratio (95% CI)	EC Works Before Egg and Sperm Join Odds Ratio (95% CI)
Age, years		
18-25	1.04 (0.20-5.50)	5.79 (1.20-27.8)
26-35	1.16 (0.26-5.20)	3.40 (0.96-12.1)
36-45	1.75 (0.39-7.74)	2.24 (0.67-7.48)
46-50	1.00	1.00
Race		
Black	1.51 (0.31-7.42)	0.57 (0.08-4.24)
White	1.14 (0.23-5.58)	1.41 (0.18-11.2)
Other	1.00	1.00
Education		
High school graduate or lower	1.06 (0.41-2.77)	1.87 (0.71-4.89)
Some college	1.16 (0.46-2.95)	2.67 (0.92-7.78)
College graduate or more	1.00	1.00
Yearly income		
<\$25,000	7.73 (2.71-22.0)	0.41 (0.12-1.43)
\$25,000-\$40,000	4.48 (1.57-12.9)	0.39 (0.12-1.24)
>\$40,000	1.00	1.00
Strength of religious beliefs		
Very strong	0.60 (0.18-1.94)	0.50 (0.11-2.40)
Moderate	1.85 (0.59-5.77)	0.78 (0.17-3.50)
Little or none	1.00	1.00

EC = emergency contraception; CI = confidence interval.

In addition, when the Food and Drug Administration (FDA) considered making this an over-the-counter product, a high-level FDA staffer resigned citing the prolonged length of time the product was taking to reach pharmacy shelves because of moral objections of some political entities.<sup>22</sup> Our results are congruent with this controversy and reflect the moral debate currently occurring in the United States regarding various methods of abortion.

There are limitations to this study. First, we interviewed only women between the ages of 18 and 50 years who sought medical care in a family medicine office. Women in the general public or women who have used EC in the past may have different perspectives. Teenagers may also have different views but were excluded from this study because of concerns about informed consent by the institutional review board. We do not know the total number of questionnaires distributed and therefore cannot assess the response rate or potential responder bias. Second, the questionnaire was not used previously and was not tested for intrarater reliability. This shortcoming is evidenced by the different percentages of women stating they would never use EC when asked in separate questions. Although our instrument was pilot tested for readability, the development of a more reliable instrument may have yielded different results.

In conclusion, these results raise questions regarding patients' understanding of issues surrounding EC. Physicians and pharmacists should be careful when discussing contraception, as patients' beliefs differ greatly when discussing this issue. There is also the potential for misunderstanding the possible mechanisms of action of EC; therefore, more appropriate consent processes and patient education materials should be developed so that women can feel confident that their use of EC is consistent with their moral beliefs.

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**Key words:** Emergency contraception; postcoital contraceptives; Plan B; morning-after pill; pharmacology; mechanism of action; unwanted pregnancies; decision making; informed consent; patient education

Submitted March 5, 2007; submitted, revised, July 20, 2007; accepted August 2, 2007.

A version of this paper was presented at the Hickory Knob Family Medicine Research Symposium, April 2006, McCormick, South Carolina; and at the North American Primary Care Research Group, October 2006, Tucson, Arizona.

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