

Knowledge and Practices Regarding Emergency Contraception (EC) among Female Healthcare Professionals (Doctors, Dentists, Pharmacists) in Najaf, Iraq

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ABSTRACT

Background: Emergency contraception (EC) is a method that women can use as a last resort after unprotected sexual activity and before implantation occurs. This may result from consensual intercourse, sexual assault, or the failure or improper use of other contraceptive methods. Each year, approximately 55 million pregnancies are unintended, and 20 million of these result in unsafe abortions. **Objective:** To explore knowledge and practices regarding emergency contraception (EC) among female healthcare professionals (doctors, dentists, pharmacists) in Najaf, Iraq. **Participants and method:** This was a cross-sectional survey carried out over five months, from November 1, 2024, to April 1, 2025. The tool for data collection was an online self-administered questionnaire, chosen because it is easily accessible and convenient. The target population was defined as married female medical professionals of reproductive age who were actively practicing and provided informed consent. This included doctors, dentists, and pharmacists. A full account of the study's purpose was given in the survey link, stressing that participation was voluntary. Four hundred fifty responses were received, and after the incomplete ones were ruled out, 416 complete questionnaires were included in the final analysis. **Results:** The current cross-sectional study aimed to assess knowledge and practice regarding emergency contraception (EC) among 416 married female healthcare providers in Najaf, Iraq. The majority of the participants were doctors (57.5%), while the remaining were pharmacists (30%) and dentists (12.5%). Although self-reported overall knowledge was 72.8%, there was a significant difference among professional categories; dentists showed lower levels (55.8%) compared to doctors and pharmacists, who reported poor knowledge rates of 23% and 23.2%, respectively. Despite the level of knowledge reported, only 41.3% had ever used EC. The most common reason for use among users was found to be the failure of a regular contraceptive method (75%). For non-users, the main barrier to use was said to be ignorance about the method of application and timing of EC (61.5%), thus indicating a wide gap between perceived and actual knowledge. **Conclusion:** This study demonstrates a huge gap between knowledge and practice in emergency contraception (EC) among healthcare providers. Although the theoretical knowledge was generally high, the practical application was mostly hindered by one primary barrier — the lack of proper understanding regarding the use and timing of EC, which ultimately led to overestimation of competence. The disparities found across professional groups highlight the fact that knowledge related to EC is not universal but rather shaped by clinical exposure and training. Unlike in settings with high awareness, here, the main challenge is a basic knowledge gap, not misconceptions about safety.

Keywords: Emergency contraception (EC), Knowledge; Attitudes; Practices; Health care professionals.

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INTRODUCTION

Emergency contraception (EC) is a method that women can use as a last resort after unprotected sexual activity and before implantation occurs. This may result from consensual intercourse, sexual assault, or the

failure or improper use of other contraceptive methods ^{1,2}. Each year, approximately 55 million pregnancies are unintended ³, and 20 million of these result in unsafe abortions. ⁴

Emergency contraception can be taken up to five days after unprotected sex, can significantly reduce the risk of pregnancy.

However, taking it sooner rather than later is optimal for maximum effectiveness.⁵ while progestin-only pills with levonorgestrel are the most common emergency contraceptive, other effective choices exist. These include antiprogestin pills (ulipristal acetate) or high-dose combination estrogen-progestin pills. For medically eligible women, the most effective option is the copper IUD, which can prevent pregnancy with over 99% efficacy if inserted within five days of unprotected sex.⁵⁻⁷ All EC options are very safe, generally well-tolerated, and have minimal adverse effects.^{8,9}

The ways in which various emergency contraceptive methods prevent pregnancy require further clarification, stressing that it prevents pregnancy by inhibiting ovulation or fertilization; it does not terminate an established pregnancy. These methods are ineffective once a fertilized egg has implanted in the uterine lining. ulipristal acetate (UA) and oral levonorgestrel (LNG) function by inhibiting or postponing ovulation and do not interfere with the implantation of a fertilized egg.¹⁰⁻¹³ The copper intrauterine device (IUD) works by impairing sperm activity and function, potentially altering the endometrial cytokine profile, thereby preventing pregnancy.¹⁰ It offers the highest efficacy, with over a 99% success rate when inserted within 120 hours of unprotected intercourse.¹⁴

Using emergency contraceptive pills more than once in a single menstrual cycle

Research indicates that while repeated use of oral emergency contraceptive pills (ECPs) within a single menstrual cycle is generally safe, it may lead to increased side effects such as menstrual irregularities and lower contraceptive effectiveness compared to other modern methods.¹⁵⁻¹⁸

Pregnancy and emergency contraception

Observational studies have demonstrated that exposure to levonorgestrel (LNG) does not negatively impact pregnancy outcomes or the

development of infants. Although data regarding ulipristal acetate (UPA) are more limited, the evidence available has consistently shown no elevated risk of miscarriage, ectopic pregnancy, or congenital abnormalities in infants compared to the general population.^{19,20}

Emergency contraception (EC) for nursing mothers

emergency contraception (EC) is considered safe for nursing mothers. However, it is advised to avoid breastfeeding for 8 hours, but no more than one day, after taking oral levonorgestrel (LNG), and A full day must pass after taking oral ulipristal acetate (UA). It is recommended that during this period, breast milk be pumped and discarded.²¹⁻²³

Starting effective contraception after emergency contraception (EC):

Initiating effective contraception promptly after using emergency contraception (EC) is crucial to reduce the risk of pregnancy if additional unprotected intercourse occurs during the same cycle. Levonorgestrel (LNG) does not interfere with hormonal contraceptives. However, ulipristal acetate (UPA), progesterone receptor modulator, can be affected by starting the progestin-only pill (POP) desogestrel the day after UPA. Recent studies suggest that women should wait at least 5 days after taking UPA before starting hormonal contraception.^{24,25}

The aim of the study to assess the knowledge and practices regarding emergency contraception (EC) among married healthcare professional female (doctors, dentists, pharmacists) in Najaf, Iraq, and to identify factors influencing their understanding and use of EC.

PARTICIPANTS AND METHODS

Study Design: The research was a cross-sectional survey that gauged the knowledge and practices of married medical professionals related to emergency contraception. An online Self-administered questionnaire was used to

collect data, making it very accessible and convenient for the participants. This method allows respondents to answer questions in privacy, which usually results in more honest and accurate responses, especially on sensitive issues like emergency contraception.

Study Population: The target population comprised married medical professionals in reproductive age, including doctors, dentists, and pharmacists, actively practicing in various healthcare settings and willing to provide informed consent for participation.

Exclusion Criteria: unmarried female professionals were excluded.

Incomplete survey responses: Questionnaires with missing or incomplete data were identified during data cleaning and subsequently excluded to ensure the integrity and reliability of the dataset for analysis.

Recruitment and Sampling: The data collection occurred over five months, from November 1, 2024, to April 1, 2025.

The link to the survey was posted on groups for medical professionals on social media platforms like Facebook and WhatsApp. Friends and colleagues working as doctors, dentists, or pharmacists were also contacted and requested to share the link with their professional networks to help increase the number of participants. To avoid bias in the sample, the survey was shared among various professional groups to include doctors, dentists, and pharmacists practicing in different geographical and practice settings. Weekly reminders were sent to the groups and contacts to increase the response rate. The survey link contained information on the purpose of the study and stated that participation was voluntary. A total of 450 responses was collected. After incomplete responses were excluded, 416 complete questionnaires were used for the final analysis..

Data Collection Tool: An online questionnaire was designed and hosted on a secure platform (Google Forms).

The questionnaire included three sections:

- 1. Demographic Information:** Age, Current Marital Status, profession (doctor, dentist, or pharmacist), years of experience, and number of children.
- 2. Knowledge Assessment:** Questions assessing awareness of emergency contraception pills, Sources of information, Knowledge of specific emergency contraceptive pills (open-ended), Understanding of whether it can be used as a sole form of contraception, Knowledge of the appropriate time frame for usage after unprotected intercourse and mechanism of action.

The knowledge assessment section was scored based on criteria established in similar studies^{26,27}. Responses were evaluated, and points (ranging from one to three per question, depending on complexity) were allocated for correct answers. The cumulative knowledge score was calculated out of a maximum of 13 points. The knowledge score was dichotomized for analytical purposes. Using the median score of 7 as a cut-off, participants were categorized into a 'good knowledge' group (score ≥ 7) and a 'poor knowledge' group (score < 7).

Practice Assessment: Questions exploring the use of emergency contraception, types, frequency, side effects, Primary reasons for using emergency contraception and Reasons for not using emergency contraception.

The questionnaire was pretested on clarity, reliability, and validity among 15 medical professionals which included doctors, dentists, and pharmacists. A pilot test was conducted to improve the final version by refining it based on the feedback received from the pilot testing

phase. The anonymity of the survey was meant to encourage honest responses. The questions were stated in neutral, non-leading language. It included Quantitative Questions (closed-ended questions) and Qualitative Questions (Open-ended questions).

Ethical Considerations

The study protocol was approved by the local Medical Research Ethics Committee of Kufa University, Department of Obstetrics and Gynecology. Participation was voluntary, and electronic informed consent was obtained from all participants at the beginning of the survey. To ensure the confidentiality of the participants, the data was stored in an anonymous and secure form.

Statistical Analysis

Data were exported into [statistical software, e.g., SPSS or R] for analysis. Descriptive statistics (frequencies and percentages) summarized demographic characteristics, knowledge, and practices. Chi-square tests were used to assess associations between variables. A p-value <0.05 was considered statistically significant..

RESULTS

Table 1 shows the demographic feature of the study population, The 416 married healthcare female professionals were predominantly doctors (57.5%), pharmacists (30%), and dentists (12.5%). Forty-seven point four percent of them had over 15 years of practical experience, and 0.7% were within their first year of practice.

As for their marital status, 97.6% were married, and only 2.4% were separated or divorced. The high proportion of married people is very much in keeping with cultural norms in Iraq, where pretty much everyone in this age group is married. The larger part of the participants had two children (36.8%), one child followed (23.8%), and three children (17.5%). A small portion was childless (12.5%), and those with four or more children were 9.3%. This distribution is indicative of the cultural and demographic patterns in Iraq, where the average family size is still higher than that of Western countries although it has been decreasing in recent years due to urbanization and the demands of professionalism.

Table 1: Table 1 Demographic features of the study population.

Demographic features		Frequency	Percent	Valid Percent	Cumulative Percent
Years of practical study	: <1 year	3	0.7	0.7	0.7
	5-1	84	20.2	20.2	20.9
	10-6	98	23.6	23.6	44.5
	15-11	34	8.2	8.2	52.6
	more than 15	197	47.4	47.4	100
Marital Status	married	406	97.6	97.6	97.6
	separated	3	0.7	0.7	98.3
	divorced	7	1.7	1.7	100
No. of Children	0	52	12.5	12.5	12.5
	1	99	23.8	23.8	36.3
	2	153	36.8	36.8	73.1
	3	73	17.5	17.5	90.6
	4	32	7.7	7.7	98.3
	5	6	1.4	1.4	99.8
	6	1	0.2	0.2	100

Demographic features		Frequency	Percent	Valid Percent	Cumulative Percent
Profession	doctor	239	57.5	57.5	57.5
	dentist	52	12.5	12.5	70
	pharmacist	125	30	30	100

The results of **Table 2** indicated The information of EC was known by (57.7%) doctors and (30.7%) pharmacists in comparison to only (11.6%) dentists ($p=0.005$) this shows that dentists have the least exposure to information about EC. Colleagues were the most common sources of information for doctors (47.1%) and online resources (64.7%). The heavy reliance of pharmacists on pharmaceutical representatives (79.2%) may bias their knowledge toward marketed products. Dentists had the least participation in structured learning (workshops 27.3%).

Doctors had better awareness of specific products (EllaOne 73.2%; combined pills 72.7%). Plan B was better known to pharmacists (38.8%), which is consistent with their professional exposure to dispensing. Dentists consistently had the lowest recognition in all categories. A majority of doctors got the time frame right (56.7%) while the performance of pharmacists was also fairly good (34.3%). Dentists lagged behind again (9.1%). Most interestingly, it was also doctors who were more aware of the newer, extended 120-hour window (82.9%).

Table 2: Knowledge and practices regarding emergency contraception (EC).

Study groups		Profession			Total	Chi ² -test
Have you heard about emergency contraception	Yes	Doctors	Dentists	Pharmacists		0.005
		57.70%	11.60%	30.70%	100.00%	
	No	50.00%	41.70%	8.30%	100.00%	
From which source did you learn about emergency contraception	Colleagues	47.10%	22.90%	30.00%	100.00%	0.001
	Workshops	72.70%		27.30%	100.00%	
	Online Medical Resources	64.70%	9.00%	26.30%	100.00%	
	Pharmaceutical Representatives	12.50%	8.30%	79.20%	100.00%	
	Other	38.10%	38.10%	23.80%	100.00%	
What are the names of emergency contraceptive pills you know	Ella one	73.20%	5.60%	21.10%	100.00%	0.001
	Plan B	52.70%	8.60%	38.80%	100.00%	
	Combined pills	72.70%	18.20%	9.10%	100.00%	
	IUCD	100.00%			100.00%	
	Other	53.60%	29.80%	16.70%	100.00%	
Which of the following can be used as emergency contraception	Oral contraceptive pill	47.90%	17.20%	35.00%	100.00%	0.009
	plan B	54.50%	4.50%	40.90%	100.00%	
	All the above	64.50%	10.00%	25.50%	100.00%	
What is the time frame within which emergency contraception	From 0 To 48 Hours	52.00%	22.00%	26.00%	100.00%	0.001
	Within 72 hours	56.70%	9.10%	34.30%	100.00%	
	Within 120 hours	82.90%	2.90%	14.30%	100.00%	

Study groups		Profession			Total	Chi ² -test
Have you heard about emergency contraception should be used	Yes	Doctors	Dentists	Pharmacists		0.005
		57.70%	11.60%	30.70%	100.00%	
	No	50.00%	41.70%	8.30%	100.00%	

Table 3 shows a ssessment of the knowledge of the study groups, About 72.8% of all the participant had good knowledge while only 27.2 had poor knowledge. The doctors (77% versus 23%), dentist (44.2% versus 55.8%) and pharmacist (76.8% versus 23.2%) with good versus poor knowledge respectively.

Table 3: Assessment of the knowledge of the study groups

Study groups			Poor Knowledge	Good Knowledge		Chi ² Test
Profession	Doctors	Count	55	184	239	0.001
		% within Profession	23.0%	77.0%	100.0%	
		% within Result of knowledge	48.7%	60.7%	57.5%	
	Dentists	Count	29	23	52	
		% within Profession	55.8%	44.2%	100.0%	
		% within Result of knowledge	25.7%	7.6%	12.5%	
	Pharmacists	Count	29	96	125	
		% within Profession	23.2%	76.8%	100.0%	
		% within Result of knowledge	25.7%	31.7%	30.0%	
	Total	Count	113	303	416	
		% within Profession	27.2%	72.8%	100.0%	
		% within Result of knowledge	100.0%	100.0%	100.0%	

Table 4 Shows the practice of emergency contraception, Of the 416 respondents, less than half (41.3%, n=172) reported having ever used EC pills. Among these users, the predominant reason for use was failure of a regular contraceptive method (75%, n=129), followed distantly by unplanned intercourse (8.1%, n=14) and other reasons (16.9%, n=29).

Regarding frequency, the majority of users (39%, n=67) had used EC only once, while a significant proportion (28.5%, n=49) had used it twice. A combined 32.5% (n=56)

reported using EC three or more times. Notably, more than half of the users (56.4%, n=97) reported experiencing side effects following EC use.

Table 4: The practice of emergency contraception

Study groups		Frequency	Percent	Cumulative Percent	Chi 2 Test
Have you ever used emergency contraception pills	Yes	172	41.3	41.3	0.556
	No	244	58.7	100	
What was your primary reason for using emergency contraception	Failed contraception method	129	75	100	0.773
	Unplanned	14	8.1	25	
	*Other	29	16.9	16.9	
How many times have you used emergency contraception	1 time	67	39	39	0.404
	2 times	49	28.5	67.4	
	3times	31	18	85.5	
	more than 3	25	14.5	100	
Did you face any side effects after using the emergency contraception pill	yes	97	56.4	43.6	0.413
	No	75	43.6	100	

* include reproductive coercion, or lack of routine contraception.

Table 5 provides a critical analysis of the barriers to emergency contraception (EC) use. The main cause of non-use (61.5%, n=150) is attributed to a "Lack of Awareness: Unaware of how or when to use it. other barriers such as fear of side effects (2.9%), embarrassment or

stigma (1.6%), or cultural/religious beliefs (0.4%). A (30.7%, n=75) reported "No Need," indicating successful primary contraception or the absence of pregnancy risk, which is a valid and expected reason for non-use.

Table 5: Why didn't you use emergency contraception?

Valid	Frequency	Percent
Belief that EC may not be effective.	3	1.2
Cultural or Religious Beliefs	1	.4
Difficulty obtaining EC due to limited availability	2	.8
Embarrassment or Stigma	4	1.6
Fear of Side Effects	7	2.9
Lack of Awareness: Unaware of how or when to use it.	150	61.5
No Need: Regular contraception was used effectively, or there was no risk of pregnancy.	75	30.7
Personal or societal beliefs opposing the use of contraception.	2	.8
Total	244	100.0

DISCUSSION

Promoting comprehensive Promoting comprehensive knowledge and access to emergency contraception (EC) is a crucial public health strategy for reducing unintended pregnancy. This is especially critical in regions like ours, where restrictive abortion laws. Empirical evidence strongly supports this approach; for instance, increased utilization of EC by women was a key factor in the 11% decline in abortion rates observed between 1994 and 2000.²⁷ Unfortunately, very little research has been done on this subject in our country.

the present study revealed significant disparities in EC knowledge across health professions. Physicians and pharmacists demonstrated relatively high levels of knowledge (77.0% and 76.8%, respectively), whereas more than half of the dentists (55.8%) demonstrated poor knowledge. This pattern aligns with the findings of Pawar et al.²⁷, who attributed superior knowledge among doctors to greater clinical exposure and among pharmacists to drug-specific familiarity.

The consistently low knowledge among dentists is likely due to the absence of formal reproductive health training in their core curriculum. This support the conclusion that knowledge of EC is strongly influenced by the nature of professional training and direct exposure to reproductive health services, a finding consistent with that of Najafi-Sharjabad et al.²⁸. Furthermore, even among trained physicians, knowledge can be inconsistent, as Aziken et al.²⁹ reported limited knowledge and counseling practices among junior doctors, suggesting that clinical experience also plays a critical role.

despite 72.8% of healthcare professionals in this study being classified with good knowledge of emergency contraception, only 58.7% reported having ever used it. Notably, among non-users, the predominant reason

(61.5%) was a lack of awareness regarding its appropriate application and timing. This finding suggests that healthcare providers may overestimate their competence regarding emergency contraception. Similar results were reported by Oriji et al.³⁰. and Glasier et al.³¹, who found that although awareness of emergency contraception was high, significant gaps remained concerning its mechanisms of action and appropriate use.³²

in this study, the primary reported reasons for using emergency contraception (EC) were contraceptive failure (75%), unplanned or unprotected intercourse (8.1%), and other causes, such as reproductive coercion or lack of routine contraception (16.9%). These findings on the predominance of contraceptive failure as an indication are consistent with those reported by Mishore et al.³³ and Shawe et al.³⁴. However, the distribution of reasons varies across studies; for instance, Biney et al.³⁵ found that a majority of women (59.83%) used EC following unexpected unprotected sex, while a smaller proportion (24.69%) cited contraceptive failure.

The current study highlights that the primary barrier to the use of emergency contraception was insufficient awareness regarding its appropriate application (61.5%), followed by the effective use of regular contraceptive methods or the absence of a perceived pregnancy risk (30%). This pattern, where a knowledge deficit is the most significant obstacle, is consistent with findings from other regions. For instance, a study among university students in Ghana by Biney³⁵ found that lack of knowledge was the most common reason for non-use. Similarly, Mishore et al.³³ reported that unawareness of EC's existence was a major barrier among Ethiopian students. However, the prominence of this barrier appears to be context-dependent. In settings with higher general awareness, other factors may prevail; Glasier et al.³², for

example, identified misconceptions about safety and side effects as more common deterrents than a complete lack of awareness in their study population. Eastham et al.³⁶

argue that Stigma is a powerful barrier to EC use due to the social significance of responsibility and expectations which can discourage individuals from seeking Emergency Contraception whoever this cause reported only by 1.2% of our study participant.

Strengths and Limitations of the Study: Strengths include the diverse sample of health professionals, which allowed cross-professional comparisons, and the focus on married women, which adds a unique socio-cultural dimension often overlooked in prior studies. Limitations include reliance on self-reported data, which may introduce bias, and the restricted geographical scope, which may limit generalizability. Further multi-center research is warranted to validate these findings.

CONCLUSION

This study shows a big gap between what healthcare providers know and what they actually do when it comes to emergency contraception (EC). While most had good theoretical knowledge, the main barrier to their practical application was a lack of specific details about how to use EC and when to use it — which led to overconfidence. The differences between the professional groups show that knowledge on EC isn't the same for everyone — it changes depending on what kind of work you do and what training you have. Unlike in places where most people know about it, here the problem is not wrong ideas about safety; it's that people don't know enough.

RECOMMENDATIONS

Focused Learning: Work with the team to create continuing education modules that zoom in on practical EC (timing, dosage) and fill the very specific gaps among non-primary care

professionals. In the end, boosting the practical skills of healthcare providers becomes a key step toward better EC use and stronger public health outcomes..

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