Knowledge of emergency contraception and acceptability of unplanned pregnancy among married women in reproductive age in Beni-Suef

1 Hala Mohamed Hassan, 2Laila Awadein Ali, 3Aziza Mahmoud Abozied.

1Nurding Specialist, 2&3 Assist. Professor of Community Health Nursing, Beni-Suef University

Abstract

Background: Approximately 25% of pregnancies and births in Egypt are unintended. Emergency contraception (ECC) is a critical tool to reduce unwanted pregnancy after unprotected intercourse. **Aim:** aimed to assess the knowledge and attitude of married women in reproductive age regarding emergency contraception and their acceptability of unplanned pregnancy. **Design:** using a cross-sectional descriptive design.**Subjects;** on a sample of 300 married women in the reproductive age. **Setting:** The study was conducted in Elhadary Health Care Center in Ehnasia village, Beni-Suef governorate **Methods**: A structured interview questionnaire form was used to measure their knowledge of Emergency contraceptive, related attitudes regarding unplanned pregnancy. **Results**: Women's median age was 30.0 years, mostly gravida 2-3 (52.3%), and 27.0% had previous unplanned pregnancies. Only 52.7% had satisfactory knowledge with ECC regarding and 56.0% had a related positive attitude, and in 92.3% of them the pregnancy was unplanned. The scores of knowledge and attitude correlated positively with planned pregnancy (r=0.140 and r=0.682 respectively). Women and husbands' higher education and their good obstetric history positively predicted their scores of knowledge, attitude, and planned pregnancy. **Conclusion:** Women's knowledge of ECC and related attitude are suboptimal, with high rate of unplanned pregnancies. **Recommendations**: Promotion of women's knowledge of unplanned pregnancies and ECC and related attitudes is recommended through counseling and educational programs. Advance study is proposed to examine effect of educational programs on utilization of ECC and on reduction of unplanned pregnancies.

Keywords: Emergency Contraception (ECC), Knowledge, Attitude, Unplanned Pregnancy.

Introduction

Unintended pregnancies are unwanted, unplanned, or mistimed pregnancies at the time of conception. They are always likely to occur since contraceptive methods are not always totally successful **(Eftekhariyazdi et al., 2021)**. Unplanned pregnancy is a prevalent issue, with more than 40 million pregnancies worldwide resulting in abortion annually **(Tenkir et al., 2023)**. Around 55.5 million pregnancies in Low and Middle-Income Countries (LMIC) out of a total of 111 million are estimated to be unplanned, according to (**Awopegba et al. in 2021).** Despite Egypt's extensive track record of implementing family planning programs, approximately 25% of pregnancies and births in the country are unplanned, indicating unmet demands for family planning, as reported by **Mohammed et al. in (2019)**.The use of modern contraceptive methods such as emergency contraception (ECC) could prevent the majority of abortions and many maternal deaths since more than half of unintended pregnancies end up with abortions **(Kwame et al., 2022; Ramanadhan and Jensen, 2024)**. The use of contraception has both health and non-health benefits. The health benefits include birth spacing, less unintended pregnancies and unsafe abortions, along with improved maternal health, and low infant mortality **(Ganle et al., 2021)**. The use of contraceptives also brings about various non-health benefits; these benefits encompass improved educational opportunities and empowerment for women, reduced poverty rates, and the promotion of sustainable population growth and economic development within countries. In order to achieve national health objectives, **Boadu (2022)** emphasizes the importance of ensuring that information about

contraceptives is both accessible and readily available **Cheung et al. (2021).** Traditionally; the concept of "contraception" has primarily been associated with preventive measures taken before pregnancy. However, there is a growing understanding that the definition of primary prevention of unintentional pregnancy should be expanded to include post-hoc contraception, as argued by **Alene et al. (2020).** This expanded definition recognizes the significance of addressing unintended pregnancies after they have occurred. Additionally, **McNamara et al. (2022)** emphasize the importance of not only understanding women's pregnancy intentions but also capturing their thoughts, emotions, and experiences surrounding their pregnancies. This comprehensive approach can contribute to supporting women's mental health and facilitating early bonding between mothers and their babies. Unprotected sexual encounters, whether by choice or involuntarily, can still be mitigated for unintended pregnancies, if women have awareness of and access to emergency contraception (ECC), as discussed by **Ramanadhan et al. (2023).** ECC serves as a critical tool in reducing the incidence of unwanted pregnancies following unprotected intercourse. It is important to note that ECC does not terminate an established pregnancy but rather helps lower the risk of pregnancy. The UN Commission on Life-Saving Commodities for Women and Children recognizes emergency contraceptive pills (ECP) as one of the essential commodities, as emphasized by **Kaller et al. (2020).** ECPs provide women with an opportunity to prevent undesired pregnancies if taken within five days of unprotected sex or contraceptive failure, according to **Lungfiel et al. (2023).**Efficacious practice of ECC necessitates accurate knowledge about its different methods, prescriptions when necessary for attaining ECPs, and access to the different methods by community health nursing and family health providers in primary health care services **(World Health Organization [WHO], 2020; Greil et al., 2023)**.

Effectively utilizing ECC entails accurate knowledge about the various ECC means, obtaining prescriptions when necessary to access ECPs, and ensuring community health nursing and family health providers in primary healthcare services can offer different ECC methods, as highlighted by the **World Health Organization (WHO) and Greil et al. (2023).** ECC methods include combined estrogen and progestin pills, progestin-only pills, and ulipristal acetate (UPA). Accurate use within 72 hours of sexual intercourse, all types of ECC can reduce the risk of unplanned pregnancies and hazardous abortions by 75% to 85%, as outlined by **Genemo et al. (2022).** However, despite ECC's existence for over four decades, its continued underutilization suggests a lack of knowledge among women, as mentioned by **Awopegba et al. (2021).** Furthermore, misinformation about ECC's side effects, including unfounded concerns about infertility, contributes to low awareness and limited access to ECC. This situation may lead to women resorting to dangerous abortions, which significantly contribute to maternal mortality and morbidity, as discussed by **Carlander it al. (2023).**

Significance:

Around for 25% of the total pregnancies in Egypt, in 2020, unwanted or unplanned pregnancies accounted. Unplanned children place more burdens on the community and deplete its resources, community and maternity health nurse has a crucial role in. Introducing the concept and use of ECPs to be administered after unprotected sexual intercourse can have a considerable impact on the occurrence of unplanned pregnancies. Women's knowledge and concerns regarding the use of ECPs play a fundamental role in their utilization. However, there is a paucity of knowledge regarding these issues Community health nurses, as program planners and administrators, have a significant role to play in improving educational opportunities for women, empowering them, and promoting sustainable population growth and economic development, as emphasized by Cheung et al. (2021). However, the lack of comprehensive knowledge regrsding ECC; It is crucial to bridge this gap by ensuring that community health nurses have access to and provide accurate info on contraceptives. This accessibility and availability of contraceptive information are particularly important for Egypt to achieve its national health goals, as highlighted by **Boadu (2022).** Therefore, this

study aims to assess married women`s Knowledge of emergency contraception and acceptability of unplanned pregnancy in reproductive age and contribute to the understanding and promotion of effective contraceptive practices by community health nursing.

Aim of the study

The study aimed to assess knowledge and attitude of married women in reproductive age regarding emergency contraception and their acceptability of unplanned pregnancy.

Research questions

1.Are married women in reproductive age knowledgeable about emergency contraception?

2.What are their attitude regarding emergency contraception?

3.To what extent do they accept unplanned pregnancy while using emergency contraception?

PARTICIPANTS AND METHODS

Design: The cross-sectional descriptive project.

Setting: Conducted in Elhadary Health Care Center in Ehnasia village, Beni-Suef governorate. The center provides Maternal and Childcare services to mothers and children such as antenatal care (ANC), postnatal care, vaccination to mother and child, as well as family planning services.

Participants: Married women in the childbearing age are present in MCH during the time of the study and eligible for inclusion in the study sample, while those with disorders affecting their reproductive functions were excluded.

The sample size: to ascertain the prevalence of satisfactory knowledge and attitude among married women of reproductive age regarding emergency contraception, as well as their acceptability of unplanned pregnancy at a rate of 25% or higher, a sample size calculation was conducted. The calculation aimed for a 95% confidence level, a 2.5 standard error, and a desired sample size for a single proportion. Utilizing the Open-Epi software package, the estimated sample size was determined to be 288 women. To account for potential non-response, the sample size was adjusted to 300 women, considering a non-response rate of approximately 5%. The recruitment of study participants followed a consecutive sampling procedure, adhering to specific eligibility criteria.

.**Data collection tool**: A structured interview questionnaire form was used in data collection, it had sections for:

1- Woman's socio-demographic data, obstetric history including the history of contraception use, unwanted pregnancy, and its outcomes, as well as medical history and previous surgery. The form also had a section to assess woman's knowledge of contraceptive methods, particularly ECC. It covered ECC definition, types, mode of action, effectiveness, indications and contraindications, mode of use, and side effects. This part was built on related literature **Glasier, it al., (2011); Festin, it al., (2017)**.

Scoring: A correct response was scored 1 and the incorrect zero. For each area of knowledge and for the total questionnaire the scores of the items were summed-up and the totals divided by the number of the items, giving mean scores. These scores were converted into percentage scores. Knowledge was considered satisfactory if the percentage score was 50% or more and unsatisfactory if less than 50%.

2-Women's attitude was assessed using the Attitude toward Potential Pregnancy Scale (Paterno and Han, 2014): It consists of five statements such as "How important is it to you to avoid becoming pregnant now?" and "How upset would you be if you were pregnant now?" The items are on a 5-opinion Likert scale extending from "not at all" to "extremely or very." scored from 1 to

five with inverse scoring for negative item. The total score is the sum of the five item. Higher scores correspond to more positive pregnancy attitude. For categorical analysis, the sum was converted into a percentage score. The attitude measured positive if ≥ 60% and negative if <60%.

3-Lastly, the London Measure of Unplanned Pregnancy (LMUP) tool: to identify the current pregnancy state whether planned or unplanned. It has six items asking about the use of contraception, desire, and intention of pregnancy. The items are on a scale from 0 to 2. The six items scores are summed for a total score 0-12, with higher values scores indicating more planned pregnancy. For categorical analysis, scores ≥10 are considered planned pregnancy, and 0–9 considered unplanned. The tool has great cogency and consistency **Barrett et al., (2004)**.

Tool Reliability & Validity: The data collection form was face & content-validated by fifth professionals in CHN nursing; BSU university. The reliability was tested by quantifying internal consistency. The tools validated good reliability: Knowledge (Guttman split-half: 0.783), Attitude (Cronbach's Alpha: 0.904), and Unplanned pregnancy (Guttman split-half: 0.776).

Pilot study: A pilot study was carriedout on a sample of 30 woman representing around 10% of the main study sample. Based on the pilot results, modifications were done, and the tool was finalized. The pilot sample was not included in the main study sample.

Fieldwork: Upon fulfilling all required administrative preparations to conduct the study, the researcher met with the eligible women and invited them to participate after clarifying the study aim and procedures of the study, and after informing them about their rights. The woman who gave her oral consent to participate was then interviewed using the prepared data collection form. This was done independently with full privacy ensured. Data collection was done 2 days/week. The duration of the interview ranged between 20 and 30 minutes. Data collection was completed in six months from June to November 2023.

Ethical considerations: The study was approved by the Scientific Research Ethical Committee at the Faculty of Medicine Beni-Suef University (Approval No: FMBSUREC\07062022). The researcher obtained an oral informed consent from each woman afterward explanation of the study aim & its nature. Voluntary participation and confidentiality were ensured. Women were knowledgeable about their rights to reject participation or to withdraw at any time. Ethics, values, culture, and beliefs were all respected. The study procedures could not entail any maltreatment on participants.

Statistical analysis: The data entry and statistical analysis were conducted using the SPSS 20.0 statistical software package. Descriptive statistics, such as frequencies and percentages for qualitative variables, as well as means and standard deviations for quantitative variables, were used to present the data. The internal consistency and reliability of the developed tools were measured using Guttman split-half coefficients. For comparison of qualitative categorical variables, the chi-square test was employed. Spearman rank correlation was utilized to assess the inter-relationships among quantitative variables and ranked ones. Multiple linear regression analysis was employed to identify the independent predictors of knowledge and attitude scores, and analysis of variance was conducted for the full regression models. To determine the independent predictors of the probability of having a planned pregnancy, multiple logistic regression analysis was employed. Statistical significance was determined at a p-value of less than 0.05.

Results:

The sample involved of 300 women whose age ranged between 18.7 45 yrs., median 30.0 yrs. as shown in Table 1. Only 13.7% of them hadn't formal education. Husbands' age ranged between 22 and 60 years, median 36.0 years. Only 10.7% of them had no formal education, while 40.0% had university level

education, with 59.7% being manual workers. Over a half of the families reported having enough/saving income (60.3%), had a crowding index <2 personnel/room (55.0%), and 90.7% residue in rural area.

Table 2 displays that above half of women were gravida 2-3 (52.3%) and para 2-3 (55.7%). Around one-fifth of them reported having previous abortions (21.7%). The majority (80.3%) had two or more living children. Over one half of them (54.3%) had previous pregnancy complications, and 91.0% had antenatal care. The majority reported use of contraceptives (94.7%). Regarding the history of previous unplanned pregnancy, slightly more than a quarter of them (27.0) had it. The most commonly reported cause was the irregular use of pills (53.1%). The majority reported having completed their unplanned pregnancy (85.2%). Meanwhile, 23.5% of them had related complications, mainly related to health (84.2%), while only one (5.3%) had related social problems. A great majority of them (92.3%) had current unplanned pregnancy.

Table 3 points to a wide variation in women' knowledge of emergency contraception (ECC). The area of highest satisfactory knowledge was that of mode of action (79.7%). On the other hand, the areas of lowest satisfactory knowledge were those of the definition and contraindications (37.7%). Overall, slightly more than one half of them (52.7%) had adequate total knowledge, and 56.0% had a positive attitude toward ECC.

Table4 points to a significant relations between women' knowledge & their education level ($p<0.001$), and job status ($p=0.01$). There were also statistically significant relations with their husbands' education ($p<0.001$), job ($p=0.002$), and crowding index ($p<0.001$). the table noted that the women whose husbands had secondary \ or university degree, working as employees, & having crowding index <2 persons per room had the highest percentages of satisfactory knowledge.

Concerning women' knowledge and obstetric and in relation to health characteristics, Table5, illustrates a significant relations with their gravidity ($p=0.02$), parity ($p=0.01$), previous unplanned pregnancy ($p=0.01$), and previous surgery ($p=0.03$). It is noticed that the percentes of women with satisfactory knowledge were decreasing with increasing gravidity and parity, and higher among those with no history of previous unplanned pregnancy, and no previous surgery.

Table 6 shows a significantly weak positive correlation between women' scores of knowledge and the planned pregnancy ($r=0.140$), and a moderate positive correlation between their scores of attitude and planned pregnancy ($r=0.682$). Women' knowledge scores had statistically significant weak positive correlations with their education and husband education, and negative correlations with their crowding index, gravidity, and parity. Their attitude scores had a statistically significant weak positive correlation with their education, & negative correlations weak to moderate with their age, & husband age, crowding index, gravidity, parity, and numbers of living children. As for their scores of planned pregnancy, they had weak positive correlations with their education, and husband education and income, and negative weak to moderate correlations with their age, husband age, crowding index, gravidity, parity, and numbers of living children.

In multivariate analysis, Table 7 illustrates a statistically significant independent positive predictors for women' knowledge score were their age and husband's educational level. Conversely, the negative predictors were the family income, crowding index, obstetric complications, and previous unplanned pregnancy. The model explains 23% of the knowledge score variance. As for women' attitude score, the table demonstrates that educational level was its only significantly independent positive predictor. On the other hand; previous abortions history, number of living children, and knowledge score were negative predictors. The model explains 27% of variance in the attitude score.

As regards to current pregnancy state, Table 8 shows that the odds of having a planned pregnancy were lower with increased gravidity

and previous use of contraception, and higher with higher attitude score.

Table 1: Demo-graphic characteristics of participant women women (n=300)

Items	Frequency(No)	%
Age:		
<25	**54**	**18.0**
25-	**158**	**52.7**
35+	**88**	**29.3**
Range	18-45	
Mean±SD	30.6±6.5	
Median	30.0	
Education:		
None	41	13.7
Basic	64	21.3
Secondary	77	25.7
University	118	39.3
Job:		
Housewife	193	64.3
Working	107	35.7
Husband age:		
<25	62	20.7
25-	141	47.0
35+	97	32.3
Range	22-60	
Mean±SD	36.2±7.5	
Median	36.0	
Husband education:		
None	32	10.7
Basic	74	24.7
Secondary	74	24.7
University	120	40.0
Husband job:		
Employee	121	40.3
Manual worker	179	59.7
Income:		
Insufficient	119	39.7
Sufficient/saving	181	60.3
Crowding index:		
<2	165	55.0
2+	135	45.0
Residence:		
Rural	272	90.7
Urban	28	9.3

Table 2: Obstetric history of participant women in the study (n=300)

items	(No)	%
Gravidity:		
1	47	15.7
2-3	157	52.3
4+	96	32.0
Parity:		
1	62	20.7
2-3	167	55.7
4+	71	23.7
Living children:		
0	3	1.0
1	56	18.7
2+	241	80.3
Had previous abortions	65	21.7
Previous labor complications	163	54.3
Had pregnancy ANC	273	91.0
Previously used contraception	284	94.7
Had previous unplanned pregnancy:	81	27.0
Causes (n=81):[@]		
Irregular use of pills	43	53.1
Pregnancy on IUD	13	16.0
Failed natural method	12	14.8
Failed local method	8	9.9
Pregnancy completed	69	85.2
Tried to terminate pregnancy	5	6.2
Pregnancy led to problems:[@]	19	23.5
Health	16	84.2
Psychological	4	21.1
Financial	3	15.8
Marital	3	15.8
Social	1	5.3
Current pregnancy status:		
Planned	23	7.7
Unplanned	277	92.3

(@) Not mutually exclusive

Table 3: Knowledge of and attitude towards Emergency Contraception (ECC) among women in the study sample (n=300)

Satisfactory (50%+) knowledge of ECC:	Frequency(No)	%
Definition	113	37.7
Types	179	59.7
Mode of action	239	79.7
Effectiveness	174	58.0
Indications	150	50.0
Contraindications	113	37.7
Mode of use	146	48.7
Side effects	179	59.7
Total knowledge:		
Satisfactory	158	52.7
Unsatisfactory	142	47.3
Attitude:		
Positive	168	56.0
Negative	132	44.0

Table 4: Relations between women's knowledge of emergency contraception (ECC) and their demographic characteristics (n=300)

Items	Knowledge				X^2 test	p-value
	Satisfactory		Unsatisfactory			
	No.	%	No.	%		
Age:						
<25	24	44.4	30	55.6		
25-	84	53.2	74	46.8	2.09	0.35
35+	50	56.8	38	43.2		
Education:						
None	11	26.8	30	73.2		
Basic	28	43.8	36	56.3		
Secondary	52	67.5	25	32.5	20.65	<0.001*
University	67	56.8	51	43.2		
Job:						
Housewife	91	47.2	102	52.8		
Working	67	62.6	40	37.4	6.61	0.01*
Husband age:						
<25	30	48.4	32	51.6		
25-	77	54.6	64	45.4	0.67	0.72
35+	51	52.6	46	47.4		
Husband education:						
None	12	37.5	20	62.5		
Basic	25	33.8	49	66.2	20.98	<0.001*
Secondary	45	60.8	29	39.2		
University	76	63.3	44	36.7		
Husband job:						
Employee	77	63.6	44	36.4		
Manual worker	81	45.3	98	54.7	9.79	0.002*
Residence:						
Rural	142	52.2	130	47.8		
Urban	16	57.1	12	42.9	0.25	0.62
Income:						
Insufficient	60	50.4	59	49.6		
Sufficient/Saving	98	54.1	83	45.9	0.40	0.53
Crowding index:						
<2	104	63.0	61	37.0		
2+	54	40.0	81	60.0	15.80	<0.001*

(*) Statistically significant at p<0.05

Table 5: Relations between women's knowledge of emergency contraception (ECC) and their obstetric and health characteristics (n=300)

Items	Knowledge				X^2 test	p-value
	Satisfactory		Unsatisfactory			
	No.	%	No.	%		
Gravidity:						
1	31	66.0	16	34.0		
2-3	86	54.8	71	45.2	7.43	0.02*
4+	41	42.7	55	57.3		
Parity:						
1	38	61.3	24	38.7		
2-3	93	55.7	74	44.3	8.56	0.01*
4+	27	38.0	44	62.0		
Abortions:						
0	127	54.0	108	46.0		
1+	31	47.7	34	52.3	0.82	0.36
Living children:						
0	3	100.0	0	0.0		
1	32	57.1	24	42.9	3.40	0.18
2+	123	51.0	118	49.0		
Had labor complications:						
No	79	57.7	58	42.3		
Yes	79	48.5	84	51.5	2.53	0.11
Had pregnancy ANC:						
No	10	37.0	17	63.0		
Yes	148	54.2	125	45.8	2.91	0.09
Used contraception:						
No	11	68.8	5	31.3		
Yes	147	51.8	137	48.2	1.75	0.19
Previous unplanned pregnancy:						
No	125	57.1	94	42.9		
Yes	33	40.7	48	59.3	6.33	0.01*
Have chronic diseases:						
No	145	54.5	121	45.5		
Yes	13	38.2	21	61.8	3.20	0.07
Had previous surgery:						
No	97	58.4	69	41.6		
Yes	61	45.5	73	54.5	4.96	0.03*

(*) Statistically significant at p<0.05

Table 6: Correlation matrix of women's knowledge scores, attitude, and planned pregnancy with their characteristics (n=300)

items	Spearman's rank correlation coefficient		
	Knowledge	Attitude	Planned pregnancy
Knowledge	1.000		
Attitude	.002	1.000	
Planned pregnancy	.140*	.682**	1.000
Characteristics:			
Age	.066	-.264**	-.207**
Education	.198**	.164**	.209**
Husband age	.001	-.252**	-.228**
Husband education	.257**	.109	.157**
Income	-.032	.121*	.124*
Crowding index	-.272**	-.269**	-.380**
Gravidity	-.134*	-.455**	-.382**
Parity	-.116*	-.481**	-.417**
No. of living children	-.096	-.492**	-.407**

(*) Statistically significant at p<0.05 (**) Statistically significant at p<0.01

Table 7: Best fitting multiple linear regression model for women's knowledge score (n=300)

items	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Knowledge score							
Constant	45.73	4.06		11.255	<0.001	37.73	53.73
Age	0.48	0.10	0.28	4.779	<0.001	0.28	0.68
Husband education	2.61	0.66	0.24	3.984	<0.001	1.32	3.90
Income	-5.08	1.09	-0.27	-4.659	<0.001	-7.23	-2.94
Crowding index	-5.35	1.13	-0.30	-4.735	<0.001	-7.58	-3.13
Obstetric complications	-2.20	1.20	-0.10	-1.824	0.069	-4.57	0.17
Previous unplanned pregnancy	-2.29	1.36	-0.09	-1.686	0.093	-4.97	0.38
r-square=0.23 Model ANOVA: F=12.47, p<0.001 Variables entered and excluded: residence, education, job, gravidity, parity, abortions, living children, use of CC, ANC							
Attitude score							
Constant	89.37	8.43		10.600	<0.001	72.78	105.97
Education	2.89	1.32	0.11	2.193	0.029	0.30	5.49
Previous abortions	-2.39	1.43	-0.08	-1.663	0.097	-5.21	0.44
No. of living children	-10.23	1.14	-0.46	8.999	<0.001	-12.47	-7.99
Knowledge score	-0.26	0.13	-0.11	2.097	0.037	-0.51	-0.02
r-square=0.27 Model ANOVA: F=22.02, p<0.001 Variables entered and excluded: age, residence, job, husband education, gravidity, parity, use of CC, ANC, obstetric complications, previous unplanned pregnancy							

Table 8: Best fitting multiple logistic regression model for women's planned state of their pregnancy (n=300)

items	Wald	Df	P	OR	95.0% CI for OR	
					Upper	Lower
Constant	11.581	1	.001	.00		
Gravidity	3.899	1	.048	.60	.36	1.00
Previous abortions	3.345	1	.067	1.64	.97	2.78
Previous CC use	8.803	1	.003	.10	.02	.46
Attitude score	18.821	1	.000	1.09	1.05	1.13
Nagelkerke R Square: 0.47						
Hosmer and Lemeshow Test: p=0.382						
Omnibus Tests of Model Coefficients: p<0.001						

Discussion

Unplanned non-intended pregnancies constitute a significant community & public health problem, being associated with many risks for the women, infants, and society **(Bakhtari-Aghdam ital., 2023)**. A main associated health problem is unsafe abortion which is estimated to lead to millions of preventable deaths among women **(Ayalew et al., 2022)**. The problem is mainly due to unprotected sexual intercourse and/or failure of contraceptive methods. Emergency contraception (ECC), as a post-coital preventive method, could thus be an important useful means for in the prevention of unplanned pregnancies **(Khin Wai, 2020; Rudzinski et al., 2023)**.

The study was aimed to assess the knowledge and attitude of married women in reproductive age regarding emergency contraception (ECC) and their acceptability of unplanned pregnancy. The findings indicate in general low levels of knowledge & related positive attitude amongst them. The majority of them had unplanned pregnancies. Their personal and family characteristics have significant relations on their knowledge, attitude, and unplanned pregnancy.

Current study's women' knowledge of ECC was widely variable. It was lowest regarding its definition and contraindications. Thus, only around one-third knew that ECC can help after unprotected sex, and about contraindications. In disagreement with this, a study in Mansoura, Egypt, found that only around one-fourth of the participant women had a correct definition of ECC, while about one third had satisfactory knowledge of ECC contraindications **(Hassan et al., 2020)**. Meanwhile more than three-fourth of women in the current study had satisfactory knowledge related to mode of action of ECC. In congruence with **Ibrahim et al. (2022)** in Saudi Arabia reported that only a small minority of women had adequate knowledge of ECC mechanism of action. This incongruity could be attributed to differences in the knowledge provided to them.

Meanwhile, only around three-fifth of women in the study had correct knowledge regrading types of ECC, thus knowing that IUDs are considered one of the types of ECC methods. These results are in line with the study of **AbdElmoniem and Abdelhakam (2018)** about the influence of ECC guidelines intervention on women's knowledge & attitude where more than half of women did not know the meaning of ECC, more than three-quarters had poor knowledge about the types and indications of ECC, and the majority had poor knowledge about timing started ECC after sex whether pills or IUD.

Generally, slightly more than a half of the women had satisfactory total knowledge of ECC. This might be considered as low indicating these women's need to acquire better knowledge of ECC given its critical role in the prevention of unplanned pregnancies. This highlights the urgent need for more awareness-raising efforts about ECC through targeted educational campaigns and training programs for community health nursing through maternity health program in primary health care settings. These present study results are in promise with those **Tenaw (2022)** in a study in Ethiopia where more than half of them had good knowledge of ECC. Meanwhile, a slightly lower rate of adequate knowledge was stated by **Roy, ital. (2018)** in North India, where only around two-fifth of women had satisfactory knowledge of ECC. Surprisingly, a modern study in the United States reported that only about one-third of pharmacy students had satisfactory knowledge of ECC **(Blake et al., 2024)**. This may be attributed to the level of knowledge tested.

Regarding factors influencing women's knowledge of ECC, the bivariate analyses revealed significant positive impacts of women' educational level, and their work, in addition to their husbands' educational level, and working as employees. Meanwhile, the multivariate analysis confirmed the positive effect of husband's educational level on the knowledge score, and negative effect of high crowding index. This underscores the importance of inclusion of husbands in the educational programs concerning family planning and ECC. In line with our study findings, **Hassan et al. (2020)** in Mansoura, Egypt, demonstrated a significant positive association between women' knowledge of ECC & their educational level and working status. Correlated results were also reported by **Ibrahim et al. (2022)** in Saudi Arabia.

The current study also revealed that women satisfactory knowledge of ECC are significantly influenced by their obstetric history. Thus, the multivariate analysis identified previous obstetric complications and history of previous unplanned pregnancy as negative predictors of the knowledge score. This is quite expected since these untoward obstetric characteristics could be due to lack of knowledge regarding ECC. These factors must be considered in interventions to improve knowledge about ECC. The results are in agreement with those of **Ibrahim ital. (2022)**,

whose study in Ethiopia showed a significant relations between women knowledge and their gravidity and parity. On congruence with, **Saleh et al. (2023)** in Assiut, Egypt, stated a significantly higher knowledge scores among the women with only 2-3 previous deliveries and two living children. This could be attributed to the low or no desire to have any more children among these women who consider their families to be completed in size.

Agreeing to the present study, slightly more than half of the women had a positive attitude towards planned pregnancy reflecting their desire to be pregnant, how it is important, and the associated feeling of anxiety and stress, anger, or happiness. These would influence women's decision to use ECC or complete their pregnancies. Incongruence with **Yeboah et al. (2022)** in a study in Ghana, claimed more than half of them had a positive attitude towards ECC. Conversely, lower positive attitude towards ECC was reported by **Hassan ital. (2020)** in a study in Mansoura, Egypt, and by **Ibrahim et al. (2022)** in Ethiopia, where the majority of the women had negative attitudes towards ECC. These discrepancies could be attributed to differences in the distribution of the prevailing factors that could influence women's attitude.

Concerning factors that influencing women's attitude, the bivariate analyses validated that positive attitudes significantly declined with women's and husbands' age and increased with their educational level and decreased with crowding index. However, the multivariate analysis, revealed that only the level of education was a significant positive predictor of attitude score, which is expected the positive impact of education of healthiness-seeking behaviors. Thus, highly educated women are more likely to be keen to care for pregnancy, to practice antenatal care, and to ask for medical advice during and after delivery. Hence, the finding draws attention to the importance of education for girls in modulating their attitude towards ECC and family planning. A similar confident association amongst women's attitude towards ECC & their level of education was reported in a study in Puerto Rico **Cárdenas-Suárez et al. (2022)**.

Furthermore, in multivariate analysis, the history of previous abortions, and the number of living children were negative predictors of their attitude score. Given the study's cross-sectional design, the temporality of the relations between attitude and these characteristics cannot be judged. Thus, these untoward obstetric characteristics could be the result of negative attitudes, or reciprocally could underlie it. The findings are quite plausible since the women who had good family planning would have a positive attitude with a tendency to limit their numbers of children and family size. Similarly with the current study results, **Ekhtiari ital. (2018)** in a study in Tehran, Iran, found more positive attitudes among women with only 1 and 2 children.

Regarding the nature of the current pregnancy among participant women using the London Measure of Unplanned Pregnancy (LMUP) by **Barrett et al. (2004)**. The results revealed that in a great majority of the women, the pregnancy was unplanned. The finding is quite alarming and reflects the urgent need for multi-sectorial interventions to deal with the problem at the national level. In conguarance with this, a projecr in Peru reported that the majority of the women from a convenience sample had unplanned pregnancies **Ticona et al., (2023)**.

Unplanned pregnancy in the current study was also significantly increasing with higher gravidity, parity, and number of living children, and among those who used contraception, and those who had a history of previous unplanned pregnancy. The findings are quite plausible except for that related to those using contraception. This might be explained by the fact that the majority of these users reported irregular use, which is riskier than non-use in having unplanned pregnancy. Similarly; a study in Ethiopia found a significantly association between unplanned pregnancy & women's parity **(Zimmerman et al., 2023)**.

Lastly, the correlation analyses acknowledged a significantly positive correlation between women'scores of knowledge & planned pregnancy, revealing a positive impact of women's knowledge on their avoidance of unplanned pregnancy. Meanwhile,

women's attitude scores had astronger positive correlation with their planned pregnancy scores, indicating that attitude has a more important preventive role in the risk of getting unplanned pregnancies compared with their knowledge. In fact, the attitude score was the factor that continued in the multivariate analysis as a positive predictor of planned pregnancy. A similar positive effect of women's attitude on their antenatal care & unplanned pregnancy was reported in a systematic review **Okedo-Alex et al., (2019)**.

Conclusion:

The women generally had low knowledge of emergency contraception and associated positive attitude, with a high rate of unplanned pregnancy. Their knowledge, attitude, and unplanned pregnancy are positively inter-correlated and are affected by their own individual and family characteristics.

Recommendations:

An educational sessions in primary and family health care centers to promote awareness of unplanned pregnancies, and emergency contraception at the encounter with every woman attending the settings is recommended. Husbands should also be involved. Access to ECC should be made easier, with more acceptances among health care providers. Advance research is suggested to inspect the effect of learning programs on the use of ECC and unplanned pregnancies.

References

AbdElmoniem S., and Abdelhakam E. (2018): Effect of Emergency Contraception Guidelines Intervention on Women's Knowledge and Attitude. Maternal and Newborn Health; 5: 1-28.

Alene M., Yismaw L., Berelie Y., Kassie B., Yeshambel R., and Assemie M.A. (2020): Prevalence and determinants of unintended pregnancy in Ethiopia: A systematic review and meta-analysis of observational studies. PLoS One.;15(4):e0231012. doi: 10.1371/journal.pone.0231012. PMID: 32255774; PMCID: PMC7138300.

Awopegba O.E., Chukwudeh O.S., Owolabi E.O., and Ajayi A.I. (2021): Trends in emergency contraception awareness among women and girls in 28 sub-Saharan countries. BMC Public Health.;21(1):1987. doi: 10.1186/s12889-021-12067-y. PMID: 34732160; PMCID: PMC8567620.

Ayalew H.G., Liyew A.M., Tessema Z.T., Worku M.G., Tesema G.A., Alamneh T.S., Teshale A.B., Yeshaw Y., and Alem A.Z. (2022): Prevalence and factors associated with unintended pregnancy among adolescent girls and young women in sub-Saharan Africa, a multilevel analysis. BMC Womens Health.;22(1):464. doi: 10.1186/s12905-022-02048-7. PMID: 36404306; PMCID: PMC9677641.

Bakhtari-Aghdam F., Abedini S., Nourizadeh R., Mehrabi E., Havizari S., and Nikkhesal N. (2023): The effect of counseling on women's coping with unplanned pregnancy. J Reprod Infant Psychol.;41(2):183-192. doi: 10.1080/02646838.2021.1979197. Epub 2021 Sep 12. PMID: 34510966.

Barrett G., Smith S.C., and Wellings K. (2004): Conceptualisation, development, and evaluation of a measure of unplanned pregnancy. J Epidemiol Community Health.;58(5):426-33. doi: 10.1136/jech.2003.014787. PMID: 15082745; PMCID: PMC1732751.

Blake B.N., Bookbinder S., Lazenby G., Marshall A., Weed E., and Meglin M. (2024): Knowledge of Oral Emergency Contraception Among Pharmacy Students. Womens Health Rep (New Rochelle).;5(1):40-45. doi: 10.1089/whr.2023.0175. PMID: 38288390; PMCID: PMC10823165.

Boadu I. (2022): Coverage and determinants of modern contraceptive use in sub-Saharan Africa: further analysis of demographic and health surveys. Reprod Health.;19(1):18.

doi: 10.1186/s12978-022-01332-x. PMID: 35062968; PMCID: PMC8781110.

Cárdenas-Suárez N., Ramirez-Santiago C., Zamora-Olivencia D., Romaguera J., Garcia Rivera E.J., and Vale Moreno Y. (2022): Telehealth as a potential tool for outreach among women in Puerto Rico. AJOG Glob Rep.;3(1):100156. doi: 10.1016/j.xagr.2022.100156. PMID: 36691398; PMCID: PMC9860148.

Carlander A., Hultstrand J.N., Reuterwall I., Jonsson M., Tydén T., and Kullinger M. (2023): Unplanned pregnancy and the association with maternal health and pregnancy outcomes: A Swedish cohort study. PLoS One.;18(5):e0286052. doi: 10.1371/journal.pone.0286052. PMID: 37216351; PMCID: PMC10202275.

Cheung T.S., Goldstuck N.D., and Gebhardt G.S. (2021): The intrauterine device versus oral hormonal methods as emergency contraceptives: A systematic review of recent comparative studies. Sex Reprod Healthc.;28:100615. doi: 10.1016/j.srhc.2021.100615. Epub 2021 Mar 23. PMID: 33799166.

Eftekhariyazdi M., Mehrbakhsh M., Neamatshahi M., and Moghadam M.Y. (2021): Comparison of pregnancy complications in unintended and intended pregnancy: A prospective follow-up study. Biomedicine (Taipei).; 11(4):51-56. doi: 10.37796/2211-8039.1192. PMID: 35223419; PMCID: PMC8823483.

Ekhtiari A., Amirkhani Z., Esfahani A., Bayesh S., Najibpour R., and Saghafi M. (2018): Survey of knowledge and attitude toward emergency contraceptive method among married women in reproductive age group. Jundishapur Journal of Health Sciences; 10(1).

Festin M.P., Peregoudov A., Seuc A., Kiarie J., and Temmerman M. (2017): Effect of BMI, and body weight on pregnancy rates with LNG as emergency contraception: analysis of four WHO HRP studies. Contraception.;95(1):50-54. doi: 10.1016/j.contraception.2016.08.001. Epub 2016 Aug 12.

Ganle J.K., Baatiema L., Ayamah P., Ofori C.A.E., Ameyaw E.K., Seidu A.A., and Ankomah A. (2021): Family planning for urban slums in low- and middle-income countries: a scoping review of interventions/service delivery models and their impact. Int J Equity Health.;20(1):186. doi: 10.1186/s12939-021-01518-y. PMID: 34412647; PMCID: PMC8375135.

Genemo E.S., Korsa A.T., and Bayisa H.G. (2022): Emergency Contraceptive Pill Use and its Impact on Condom Utilization Among University Students: A Cross-Sectional Study. Int J Womens Health.;14:1115-1126. doi: 10.2147/IJWH.S375841. PMID: 36004382; PMCID: PMC9394664.

Glasier A., Cameron S.T., Blithe D., Scherrer B., Mathe H., and Levy D. (2011): Can we identify women at risk of pregnancy despite using emergency contraception? Data from randomized trials of ulipristal acetate and levonorgestrel. Contraception.;84(4):363-7. doi: 10.1016/j.contraception.2011.02.009. Epub 2011 Apr 2.

Greil A.L., Shreffler, Tiemeyer S.M., and McQuillan J. (2023): Prospective K.M. Attitude about the Importance of Planning Pregnancies Is Associated with Retrospective Attitude toward a Specific Pregnancy. Socius: Sociological Research for a Dynamic World; 9: 1–14. DOI: 10.1177/23780231231153619.

Hassan S., El-Kurdy R., Yousef M.A., and Lamadah M.S. (2020): The effect of educational guidelines on childbearing women's knowledge, attitude, and their intention regarding emergency contraceptive use. Egyptian Journal of Health Care; 11(4): 816-831.

Ibrahim W., Maklof M.E., and Mohamed R. (2022): Effect of educational program on knowledge and attitude of childbearing

women about the intrauterine copper device as an emergency contraceptive method. Egyptian Journal of Health Care; 13(1): 99-113.

Kaller S., Mays A., Freedman L., Harper C.C., and Biggs M.A. (2020): Exploring young women's reasons for adopting intrauterine or oral emergency contraception in the United States: a qualitative study. BMC Womens Health.;20(1):15. doi: 10.1186/s12905-020-0886-z. PMID: 31992295; PMCID: PMC6986082.

Khin Wai W.H. (2020): Emergency contraceptive pill use among women of reproductive age in Pathein, Myanmar. The current issue and full text archive of this journal is available on Emerald Insight at: Received 7 July 2018 Revised 18 September 2018, Accepted 10 January 2019.

Kwame K.A., Bain L.E., Manu E., and Tarkang E.E. (2022): Use and awareness of emergency contraceptives among women of reproductive age in sub-Saharan Africa: a scoping review. Contracept Reprod Med.;7(1):1. doi: 10.1186/s40834-022-00167-y. PMID: 35039074; PMCID: PMC8762930.

Lungfiel G., Mandlmeier F., Kunow C., and Langer B. (2023): Oral emergency contraception practices of community pharmacies: a mystery caller study in the capital of Germany, Berlin. J Pharm Policy Pract.;16(1):68. doi: 10.1186/s40545-023-00565-w. PMID: 37237301; PMCID: PMC10215052.

McNamara J., Risi A., Bird A.L., Townsend M.L., and Herbert J.S. (2022): The role of pregnancy acceptability in maternal mental health and bonding during pregnancy. BMC Pregnancy Childbirth.;22(1):267. doi: 10.1186/s12884-022-04558-6. PMID: 35351015; PMCID: PMC8966290.

Mohammed S., Abdulai A.M., and Iddrisu O.A. (2019): Pre-service knowledge, perception, and use of emergency contraception among future healthcare providers in northern Ghana. Contracept Reprod Med.;4(1):1. https://doi.org/10.1186/s40834-018-0082-9.

Okedo-Alex I.N., Akamike I.C., Ezeanosike O.B., and Uneke C.J. (2019): Determinants of antenatal care utilisation in sub-Saharan Africa: a systematic review. BMJ Open.;9(10):e031890. doi: 10.1136/bmjopen-2019-031890. PMID: 31594900; PMCID: PMC6797296.

Paterno M.T., and Han H.R. (2014): Development and psychometric testing of the attitude toward potential pregnancy scale. J Obstet Gynecol Neonatal Nurs.;43(6):710-8. doi: 10.1111/1552-6909.12511. Epub 2014 Oct 14. PMID: 25316218; PMCID: PMC4258109.

Ramanadhan S., and Jensen J. (2024): The Levonorgestrel-Releasing Intrauterine Device as Emergency Contraception: Re-examining the Data. Obstet Gynecol.;143(2):189-194. doi: 10.1097/AOG.0000000000005466. Epub 2023 Nov 21. PMID: 37989139.

Ramanadhan S., Goldstuck N., Henderson J.T., Che Y., Cleland K., Dodge L.E., and Edelman A. (2023): Progestin intrauterine devices versus copper intrauterine devices for emergency contraception. Cochrane Database Syst Rev.;2(2):CD013744. doi: 10.1002/14651858.CD 013744.pub2. PMID: 36847591; PMCID: PMC9969955.

Roy R.K., Roy D.K., Bist A., and Ghimire S. (2018): Knowledge and Prevalence of Family Planning Measures among Community People of Chisapani, Banke. Journal of Nepalgunj Medical College; 16(2): 82-87.

Rudzinski P., Lopuszynska I., Pazik D., Adamowicz D., Jargielo A., Cieslik A., Kosieradzka K., Stanczyk J., Meliksetian A., and Wosinska A. (2023): Emergency contraception - A review. Eur J Obstet Gynecol Reprod Biol.;291:213-218. doi: 10.1016/j.ejogrb.2023.10.035. Epub ahead of print. PMID: 37922775.

Saleh M.A.K., Asham M.A., and Ismail T.A.A.M. (2023): Awareness and use of emergency contraception among women attending Kidwany MCH center, Assiut City. The Egyptian Journal of Community Medicine; 41(3): 175-185.

Tenaw L.A. (2022): Practice and determinants of emergency contraceptive utilization among women seeking termination of pregnancy in Northwest Ethiopia-A mixed quantitative and qualitative study. PLoS One.;17(2):e0263776. doi: 10.1371/journal.pone.0263776. PMID: 35148342; PMCID: PMC8836300.

Tenkir L., Mamuye A., Jemebere W., and Yeheyis T. (2023): The magnitude of precancerous cervical lesions and its associated factors among women screened for cervical cancer at a referral center in southern Ethiopia, 2021: a cross-sectional study. Frontiers in Global Women's Health, p. 4.

Ticona D.M., Huanco D., and Ticona-Rendón M.B. (2023): Impact of unplanned pregnancy on neonatal outcomes: findings of new high-risk newborns in Peru. Int Health. 21:ihad018. doi: 10.1093/inthealth/ihad018. Epub ahead of print. PMID: 36942842.

World Health Organization [WHO], (2020): Report of a technical consultation on birth spacing. WHO. http:// www.who.int/maternal_child_adolescent/documents/birth_spacing05/en/. Accessed 12 Oct 2020.

Yeboah D.S., Appiah M.A., and Kampitib G.B. (2022): Factors influencing the use of emergency contraceptives among reproductive age women in the Kwadaso Municipality, Ghana. PLoS One.;17(3):e0264619. doi: 10.1371/journal.pone.0264619. PMID: 35239714; PMCID: PMC8893659.

Zimmerman L.A., Karp C., Magalona S., Shiferaw S., Seme A., and Ahmed S. (2023): Exploring Multiple Measures of Pregnancy Preferences and Their Relationship with Postpartum Contraceptive Uptake Using Longitudinal Data from PMA Ethiopia. Stud Fam Plann.;54(3):467-486. doi: 10.1111/sifp.12251. Epub 2023 Aug 17. PMID: 37589248.