

Utilization of Emergency Contraceptive Pills as a Backup for Lactational Amenorrhea Method of postpartum contraception and Nursing Implication

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Abstract

Background: Lactational amenorrhea is a normal postpartum physiological phenomenon. It offers specific biologic advantages for both the mother and the baby. Nature appears to protect the mother from an immediate second pregnancy through the natural contraception method. **Aim:** Assess the utilization of emergency contraceptive pills as a backup for lactational amenorrhea methods of postpartum contraception among women and evaluate the effectiveness of an educational program on nurses' knowledge toward the utilization of emergency contraceptive pills as a backup for lactational amenorrhea methods of postpartum contraception. **Subjects & methods: designs:** a cross-sectional descriptive survey for women and a quasi-experimental intervention for nurses. Two main convenient samples were recruited in the study: women's attending family planning clinics, or pediatric clinics for immunization of children (260), and family planning nurses (20). **Tools** used for data collection were a structured interview questionnaire for the women's and a self-administrated questionnaire for the nurses'. **Results:** A great majority of women don't know the criteria for lactational amenorrhea and start sexual intercourse more than 40 days after labor. More than one-quarter of women had unintended pregnancies. The great majority of women weren't aware of the emergency contraceptive pills. Statistically significant improvement was revealed at both the post- and follow-up phases. Despite some decline, the level at the follow-up phase was still statistically significantly higher than the pre-program levels. **Conclusion:** Women did not depend on emergency contraceptive methods as an effective method and did not use emergency contraceptive methods after labor. Implementation of the educational program was associated with statistically significant improvements in nurses' knowledge regarding ECPs. **Recommendation:** Maternity nurses should increase women's awareness and knowledge about the criteria of the lactational amenorrhea method and the importance of using emergency contraceptive pills to support the lactational amenorrhea method in cases of unprotected intercourse until a more effective contraceptive method is used.

Key word: Lactation amenorrhea, Emergency contraception, unplanned pregnancy, Nursing Implication

Introduction

Egypt is still facing a high total fertility rate and should be prepared to deal with the problem and address the issue of women's autonomy or empowerment, which could affect the high fertility rate (Radwan et al., 2009; Hassan et al., 2015; Hassan, 2016; Gamel et al., 2019). Birth spacing is an important element of making pregnancy safer, and so the World Health Organization recommends a minimum birth-to-pregnancy interval of 2 years in order to reduce the incidence of maternal and fetal risks in each pregnancy (Hassan, 2020; Nasr & Hassan, 2016; Shaaban, 2013). The postpartum period is crucial, as it is marked by psychological changes

and the stabilization of hormones (Farag & Hassan 2019). The majority of women, especially in urban areas, do not refer to public health centers after delivery, so data about postpartum contraception use is limited, making it risky for both mothers and husbands to use unfavorable contraceptives (Yee & Simon, 2011). Selecting appropriate contraceptives is a major concern in the postpartum period. The choice of postpartum contraceptive method depends on many factors, including the need for a temporary versus a permanent method, the extent to which informed consent is made prior to delivery, and the infant feeding choice. Lactation is an age-old method of

contraception. In developing countries, mostly birth control is still being monitored by natural lactation, and the contraception effect provided by breastfeeding is greater than that provided by all other reversible family planning methods (Mosher & Jones, 2010).

Attempts to provide a fertility awareness-based method of family planning to breastfeeding women led to the development of the lactation amenorrhea method (LAM) of contraception during the first 6 months postpartum, which is the practice of using breastfeeding to prevent pregnancy. There is a growing amount of evidence that, when used perfectly, The efficiency and effectiveness of LAM are affected by correct usage and the three criteria: (a) postpartum amenorrhea; (b) fully or nearly fully breastfeeding, which is defined practically as breast feeding the infant at least every 4 hours during the day and at least every 6 hours during the night, and not feeding the infant other foods or liquids that replace breastfeeding; and (c) an infant aged less than six months postpartum. Provide 98 to 99% protection from pregnancy for 6 months postpartum (Berens & Labbok, 2015; Hassan et al., 2020). When LAM criteria are met, the pregnancy rate is less than 2% during the first 6 months. Speroff & Mishell (2008) reported a widespread use of "passive LAM". Passive LAM is defined as women who (a) satisfied the three elements of LAM; (b) did not report using another method; and (c) did not report relying on prolonged breastfeeding (PBF) as a method of family planning.

Once the baby is 6 months old or when supplementary feeding has been started or the menses have resumed, LAM no longer provides reliable protection against pregnancy, and another family planning method should be introduced (Shaaban et al., 2011). The risk of pregnancy is increased if breast feeding decreases, particularly stopping night feeds, or with the introduction of formula or solids, and where pumping rather than nursing occurs, menstruation resumes, and the woman is more than 6 months postpartum. However, much of the efficacy data is based on women living in non-industrialized countries (Amin et al., 2009).

The expiration of LAM requirements can occur unexpectedly at a time when the woman is not ready to visit a clinic to initiate another contraceptive. The extent of use of LAM as a

sole method of contraception has not been evaluated in many settings. A previously published study about LAM use in Egypt showed that while breastfeeding and lactational amenorrhea are common, intentional use of LAM for contraception is not frequent (Afifi, 2007).

A previous study in Egypt, which aimed at analyzing the acceptance of LAM, proved that the overall post-acceptance satisfaction with LAM was nearly 84%. Moreover, LAM provides at least equal protection against pregnancy during the first 12 months postpartum compared to typical modern contraceptive methods (Horta et al., 2008). Therefore, pregnancy during breastfeeding may result in unplanned, mistimed, and sometimes unwanted childbirth. Unintended pregnancy, which continues to childbirth, is often associated with delays in the initiation of prenatal care and shorter interpregnancy intervals and may negatively influence child health, development, and survival, U.S. Department of Health and Human Services (2013)

The lack of knowledge about the proper use of contraceptives is a major reason for unintended pregnancy, which is a global problem and has a negative social impact, leading some women to seek induced (illegal) abortion. Nearly 4 in 10 pregnancies around the globe are unplanned, and about 2 in 10 end in abortion (Trussell & Wynn, 2008). About 70% of U.S. women in childbearing years are at risk of unintended pregnancy and could become pregnant if women and partners fail to use a contraceptive method correctly and consistently (The Alan Guttmacher Institute, 2014). Most women (62%) of reproductive age are currently using a contraceptive method. However, only 11 percent of women at risk of unintended pregnancy are currently using any contraceptive method (Jones et al., 2013).

Emergency contraceptive pills (ECPs) are hormonal methods that can be safely and successfully used for a long time by women to prevent pregnancy by 75%–85% after unprotected sexual intercourse. ECPs, or when a regular contraceptive method fails. Promotion and use of ECPs at an appropriate time will definitely reduce unwanted pregnancies, morbidities and mortalities, and pregnancy complications (Hassan, 2020; Hassan 2020).

The knowledge and practice of emergency contraception pills (ECPs) in Egypt are quite low. Thus, if awareness and availability of backup

methods can be provided during the postpartum period, it may act as an alarm to women to initiate the use of regular methods of contraception. Emergency contraception pills (ECPs) may also decrease the incidence of unplanned pregnancy during breastfeeding (Shaaban et al., 2013).

Significance of the study:

Prolonged breastfeeding is an encouraging tradition in Egypt. Although breastfeeding is associated with variable degrees of amenorrhea and infertility, there is a risk of resumption of fertility and, therefore, of conception during lactation. However, many Egyptian women don't feel comfortable relying on breastfeeding as a form of birth control; perhaps women know another woman who became pregnant during breastfeeding. Maternity nurses play a key role in family planning counseling as a source of information and reassurance. Maternity nurses' usage of regular contraception during lactation to avoid unplanned pregnancy may increase women's trust in LAM as an effective method of birth control as well as upgrade women's awareness about the use of ECPs as a temporary backup of LAM (Nasr & Hassan, 2016; Hassan, 2020).

Aim of the Study

Assess the utilization of emergency contraceptive pills as a backup for lactational amenorrhea methods of postpartum contraception among women and evaluate the effectiveness of an educational program on nurses' knowledge toward the utilization of ECPs as a backup for lactational amenorrhea methods of postpartum contraception.

Specific objectives:

1. Describe the pattern of LAM for contraception and influencing factors.
2. Estimate the incidence of unwanted pregnancies and describe the causes and consequences.
3. Assess women's awareness of the utilization of ECPs in cases of suspected LMP failure.
4. Evaluate the effectiveness of an educational program on nurses' knowledge toward the utilization of ECPs as a backup for the lactational amenorrhea method of postpartum contraception.

Research hypothesis:-

1. The nurse's level of knowledge will improve after attending the educational program.
2. Women's level of awareness increases towards the utilization of ECPs, as in the case of suspected failure of LMP after nurses training.

Subject and Method:

Design: Two research designs were used: *the first was a cross-sectional descriptive survey. The second is a quasi-experimental intervention study.*

Research Setting:

This study was conducted at family planning clinics and pediatric clinics for the immunization of children during the study period and in health care centers representing Beni-Suef City, Egypt, during the study period (6 months) from July 1, 2023, to the end of December 2023.

Subjects:

Two samples were selected for this study, namely a sample of lactating women and another sample of nurses.

The First: A random sample of married lactating women who used lactational amenorrhea as a method of contraception for at least 6 months and more, delivered a viable, healthy newborn, and agreed to participate in the study from the previously mentioned settings during the study period were included in the study.

Second: All nurses working in family planning clinics in the previously mentioned settings who agreed to participate in the study were recruited for this study.

Exclusion criteria

lactating women who are pregnant at the beginning of the study. sterilized, had a hysterectomy, or used another contraceptive method in addition to LAM. Lactating women whose infant was born less than six months ago

Sample size:

- All lactating women attended the previously mentioned family planning clinics or pediatric clinics for the immunization of their children during the study period.
- All nurses working in family planning clinics in the previously mentioned settings

Sample type

- purposeful sample for lactating women's
- A convenience sample for all nurses in family planning clinics in the previously mentioned settings

Sample Technique

All nurses in family planning clinics in the health care centers were recruited in the study (20 nurses).

With regard to the lactating women (260 women), the data were collected through the working days of the week from Saturday to Thursday. There were two days for each center to reach the estimated number of samples.

Tools for data collection

Two main tools were used for data collection.

1. A structured interview questionnaire for the women:

This questionnaire sheet was developed based on current related literature (Abd Elmoniem, 2018). It included personal, menstrual, obstetrical, medical, history of current pregnancy and labor, history of breast feeding, questions related to women's knowledge about LAM criteria, effectiveness, causes and consequences of unwanted pregnancy, and prevention measures for unwanted pregnancy, as well as questions related to women's knowledge about emergency contraceptive pills and unintended pregnancy.

Scoring: For the knowledge items, a correct response was scored (1) and an incorrect response was scored (0). The items were summed up and the total divided by the number of items, giving a mean score for the part. These scores were converted into a percent score, and means and standard deviations were computed. Knowledge will be considered satisfactory if the percent score is 60% or more and unsatisfactory if it is less than 60%.

2: Self-administrated questionnaires for the nurse:

This questionnaire sheet was developed based on current related literature (WHO, 2019). It includes socio-demographic data such as age, education level, training courses, and year of experience. Knowledge questionnaire to assess nurses' knowledge as regards lactation amenorrhea as a method for contraception criteria and effectiveness and emergency contraceptive pills as: types, indications, and

contraindications. Program booklet: The summary of the educational program that was prepared for nurses to improve their knowledge included information about breast feeding, lactational amenorrhea as a method of contraception, time of use, criteria, and mode of use. Information about using emergency contraceptive pills (ECPs) to support LAM (definition of ECPs, component, types, mode of action, indication, and efficacy, time of use, mode of use, side effects, and contraindication)

Scoring: For the knowledge items, a correct response was scored (1) and an incorrect response was scored (0). The items were summed up and the total divided by the number of items, giving a mean score for the part. These scores were converted into a percent score, and means and standard deviations were computed. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if it was less than 60%.

Administrative design:-

An official letter from the dean of the faculty of nursing was sent to the director of the selected area of the study. The director of each clinic was contacted and informed in order to obtain permission to include the nurses' and women's research. Participants were reassured about the strict confidentiality of any obtained information.

Operational design:

Field of work

The study was carried out through six phases:

Phase I (Preparation): Aim to complete the preparation of tools and the educational program. Tools were reviewed by a jury of three experts in the fields of obstetrics and gynecological nursing. A pilot study was carried out over a period of two months. It was conducted on 10% of the total sample size, involving women and nurses; to evaluate the content validity, time required to fill each tool, and feasibility of the tools of the study. The necessary modifications were carried out as revealed by the pilot study. The field work lasted 6 months, from July 1, 2023, to the end of December 2023.

Phase II (baseline assessment): During this phase, the data was collected from the women's and nurses using the tools designed in the previous phase. The data collected at this stage was considered pre-program database information.

Phase III (program development): an educational program for the nurse's was designed based on the baseline data collection in phase II. The program was aimed to improving the knowledge and practice of nurses' attitudes toward lactational amenorrhea as a method of contraception and emergency contraceptive pills to support the lactational amenorrhea method. In designing the program, different and suitable teaching methods were considered.

Phase IV (Program Implementation): Implementation of an educational program for study nurses was carried out during that phase. The program was conducted through a booklet, group discussions, role-playing, and demonstrations. Also, audio-visual materials, such as data shows and videos, were used in addition to program handouts. The investigator started to implement the program sessions for the intervention group. The investigator was available three days a week in the study settings. The total number of sessions was eight sessions for theoretical knowledge; each session took about one hour, including a period of answering the questions and discussing the booklet with the nurses. Sessions started at 12 p.m., the best time for nurses as they were busy with patients from 8.30 to 11 a.m. The number of nurses in each session was between three and four. At the end of this phase, knowledge (posttest) was assessed using a questionnaire sheet.

Phase V (follow-up evaluation): Three months after phase IV, the investigator evaluated the effect of the educational program on nurses' knowledge and attitudes about lactational amenorrhea as a method of contraception and emergency contraceptive pills that support the lactational amenorrhea method. Using the same tools previously used in pre- and post-test assessments to find out the retention of the information given.

Phase VI: Testing the results and writing the final report

Ethical consideration

Ethical approval was obtained from the Research Ethics Committee at the Faculty of Medicine at Beni-Suef University. All ethical considerations were considered for privacy and confidentiality. Written consents were obtained from the women participating in the study after a brief explanation of the study's aim and they were

reassured that the information obtained would be private and used only for the study, with the right to withdraw at any time without any consequence. The subject of this study will not address religious, ethical, moral, or cultural issues among women.

The researcher explained the aim of the study to each nurse and woman's to have their written consent after a brief explanation of the study to the nurse's and women's to assure them that the information obtained was confidential and used only for the purpose of the study and to maintain their privacy.

As for the limitation of the study, it was difficult to collect all the nurses together at the same time to attend the session of the program due to working circumstances. This was overcome by implementing the program for nurses at an appropriate time for the researcher and the nurses.

Statistical Design: Statistical Analysis:

SPSS for Windows version 20.0 was used for statistical analysis. With continuous data, all variables had a normal distribution and were reported as mean \pm standard deviation (SD). Numbers and percentages were used to present the categorized data. For variables with continuous data, the comparisons were made using the t test. For comparing variables using categorized data, the Chi-square and McNemar tests were used. P-values less than 0.05 were considered statistically significant.

Results

Table 1 shows the socio-demographic characteristics of the studied women's and reports that women's ages ranged between 18 and 43 years with a mean age of 28.19 ± 5.9 years, with the highest percentage (39.6%) being less than 25 years. The highest percentage lived in rural areas and had a secondary level of education (60.0% and 51.5%, respectively), while 14.6.0% had a university level of education. The majority of women were housewives (82.7%), and the family income was sufficient for most of them (75.4%).

Table 2 points that more than half (54.6%) of women had one to two gravida and about one sixth of the women's (65.4%) multipara with a mean 2 ± 1 . Only 14.6% of women suffered from pregnancy complications; most of these were bleeding (47.4%), anemia (26.3%), and others (5.3%), such as gestational diabetes.

Table 3 demonstrates the pattern of lactational amenorrhea in the studied women and shows that more than three-quarters (78.1%) of women's use of lactational amenorrhea is less than 6 months, and about one-quarter (17.7%) use of lactational amenorrhea from 6 to 24 months. A great majority of women didn't know the criteria for lactational amenorrhea and started sexual intercourse more than 40 days after labor (97.7% and 92.7%, respectively), while 6.2% started sexual intercourse at 40 days of labor.

Figure 1 shows the distribution of the studied women according to the resumption of menstruation. The majority of women (89.2%) had resumed their menstruation before 6 months, and nearly one tenth (10.8%) had resumption of the menstruation after 6 months of delivery.

Table 4 shows factors that affect the use of lactational amenorrhea as a contraceptive method for more than 6 months after labor among the studied women's. As indicated from the table, return of menstruation, regularity of menstruation, and use of contraception have statistically significant differences and have the most positive effect on LAM. Compared to awareness about ECPs, the number of feedings and the time of start weaning have a negative influence on LAM.

Table 5 demonstrates the distribution of the studied women according to their planning for contraception use and shows that the majority of women's (83.1%) use of contraception after menses is mainly pills (42.1%) and IUD (30.6%), compared to only 16.9% of women's not using any contraceptive methods. More than half of women's not use contraceptive methods due to reliance on breast feeding (56.8%), while a small proportion of women's not use contraceptive methods because they want to get pregnant again or have fears from methods (27.3%, 15.9%, respectively).

The table also shows that more than one-quarter of the women (28.8%) had unintended pregnancies, mainly 1-2 years after labor. The high incidence of women having unintended pregnancies was due to missing pills (41.3%), followed by failure of contraceptive methods (34.7%), and not using contraceptive methods (24.0%). The majority of women's (84.0%) saving pregnancy until labor compared to only 12.0% induced abortion. Also, the table demonstrates that all women did not depend on

emergency contraceptive methods as an effective method and did not use emergency contraceptive methods after labor. As regards reasons for not using ECM, the great majority of women have not heard about it (92.3%), while a minority of them fears it (7.7%).

Figure 2 shows the distribution of the studied women's according to their awareness about ECPs. The great majority of women (95.4%) are not aware of the ECPs, compared to only 4.6% who are aware of them. For those who were aware of ECPs, the main sources of information were doctors or nurses, the Internet, relatives or friends, and mass media (41.7%, 25.0%, and 8.3%, respectively).

Table 6 shows that the age of the studied nurses ranged between 23 and 46 years, with a mean±SD of 34.6±7.9 years; the majority were more than 30 years old (60.0%). Also, more than two-thirds (70.0%) had five or more experience years, with a mean±SD 10.2±8.5 years. The great majority of nurses (85.0%) had training about ECPs. Only 35.0% of nurses had previously prescribed ECPs to women's

Table 7 shows that their statistically significant improvement was revealed at both the post- and follow-up phases in all areas of tested knowledge ($p < 0.001$) except the knowledge about the definition, types, effectiveness, criteria, and lactational amenorrhea method. At the follow-up, only knowledge about the criteria and types of LAM did not decline. Although all the other areas have demonstrated some decline, they were still statistically significantly higher than the pre-program levels.

Figure 3 points to statistically significant improvement revealed at both the post- and follow-up phases. Despite 10.0% of nurses having unsatisfactory knowledge at follow-up; the level at the follow-up phase was still statistically significant higher than the pre-program levels.

Table (1): Socio-Demographic characteristics of the studied women (n=260)

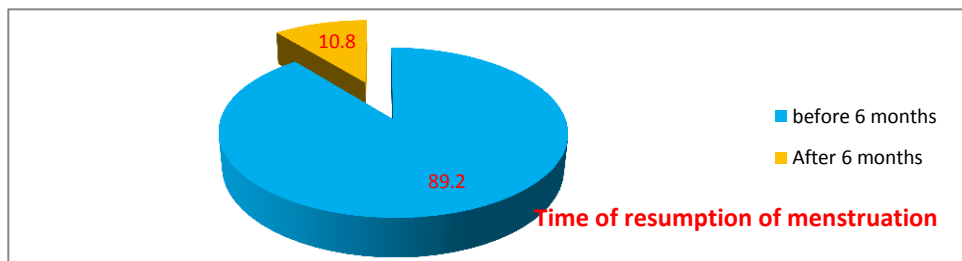
Items	N = (260)	% (100%)
Age /years		
- Less than 25 year	103	39.6
-25-35 year	76	29.2
- more than 35 year	81	31.1
Min-Max	18.0-43.0	
Age mean \pm SD	28.19 \pm 5.9	
Residence		
- Urban	104	40.0
- Rural	156	60.0%
Level of education		
-Illiterate and read write	72	27.7
-Primary school	16	6.2
-Secondary school	134	51.5
-University	38	14.6
Job status		
House wives	215	82.7
Working	45	17.3
Family income		
Sufficient and saving	8	3.1
Sufficient	196	75.4
In sufficient	56	21.5

Table (2): Distribution of studied women according to their obstetrics history, the mode of last delivery, and pregnancy complications (n=260)

Items	N = (260)	% (100%)
Gravidity		
1- 2	142	54.6
3- 6	86	33.1
More than 6 gravida	32	12.3
Mean \pmSD	3\pm2	
Parity		
Primipara	90	34.6
Multipara	170	65.4
Min-Max	1-7	
mean \pm SD	2 \pm 1	
Mode of the last delivery		
Normal	71	27.3
C.S	189	72.7
Occurrence of pregnancy complications		
Yes	38	14.6
No	222	85.4
Type of complications [n=38]		
Bleeding	18	47.4
Anemia	10	26.3
Preeclampsia	8	21.0
Others	2	5.3

Table 3 Distribution of the studied women according to the Pattern of lactational amenorrhea

Items	N = (260)	% (100)
Duration of use (months)		
<6	203	78.1
6-12	46	17.7
>12	11	4.2
Min-Max	1-21	
Mean±SD	4.5±4.3	
Use the criteria of lactational amenorrhea		
Menstruation have not returned	0	0.0
Infant feeding exclusive or almost exclusive	0	0.0
Infant age not exceed 6 months	0	0.0
Women uses 3criteria for LAM	6	2.3
Not known	254	97.7
Time of start of intercourse (days)		
<40	3	1.1
40	16	6.2
>40	241	92.7
Min-Max	1-60	
Mean±SD	46.35±11.05	

*Figure 1* Distribution of the studied women according to resumption of menstruation (n=260)**Table 4** Binary Regression Model for factors that affect use of Lactational Amenorrhea as contraceptive method for more than first 6 Months after labor among the studied women (n=260)

Variables	B	S.E.	Wald	Sig.
Positive factors				
Number of gravidity	0.5	0.4	1.3	0.207
Family income	0.3	0.3	0.9	0.351
Number of parity	0.1	0.4	0.1	0.637
Return of menstruation	0.9	0.4	3.9	0.05*
Use of contraception	3.0	0.4	141.7	<0.0001*
Regularity of menstruation	0.9	0.4	6.4	0.012*
Negative factors				
Awareness of ECPs	-0.1	0.6	0.2	0.618
Number of feeding	-0.3	0.4	0.5	0.502
Time of start weaning	0.0	0.4	0.0	0.836
Suffering from chronic diseases	-0.4	0.4	1.3	0.253

Chi-Square of the model=262.43

 $p < 0.0001^*$ Cox and Snell $R^2 = 0.236$

B= Beta coefficient of regression

S.E. =Standard error

Wald= Nane test of significant

Table 5 Distribution of the studied women according to their planning for contraception use, current unintended pregnancy and previously used emergency contraceptive methods.

Items	No.	%
Use of contraception after menses return (n=260)		
Yes	216	83.1
Not used	44	16.9
Contraceptive methods [n=216]		
Pills	91	42.1
IUD	66	30.6
Injections	26	12.0
Condom	13	6.0
Implanon	8	3.7
Mixed method	12	5.5
Causes for not using contraceptive methods [n=44]		
Fears from methods	7	15.9
Wants to get pregnant again	12	27.3
Reliance on breast feeding	25	56.8
Occurrence of unintended pregnancy (n=260)		
Yes	75	28.8
No	185	71.2
Causes o of occurrence of unintended pregnancy (n=75)		
Missing pills	31	41.3
Failure of contraceptive method	26	34.7
Not using contraceptive method	18	24.0
Consequence of unintended pregnancy (n=75)		
Induced abortion	9	12.0
Saving pregnancy until the labor	66	88.0
Previously used emergency contraceptive methods after the labor (n=260)		
Yes	0	0.0
No	260	100.0
Reasons for not using emergency contraceptive methods(n=260)		
Not hear about ECM	240	92.3
Fear from ECM	20	7.7

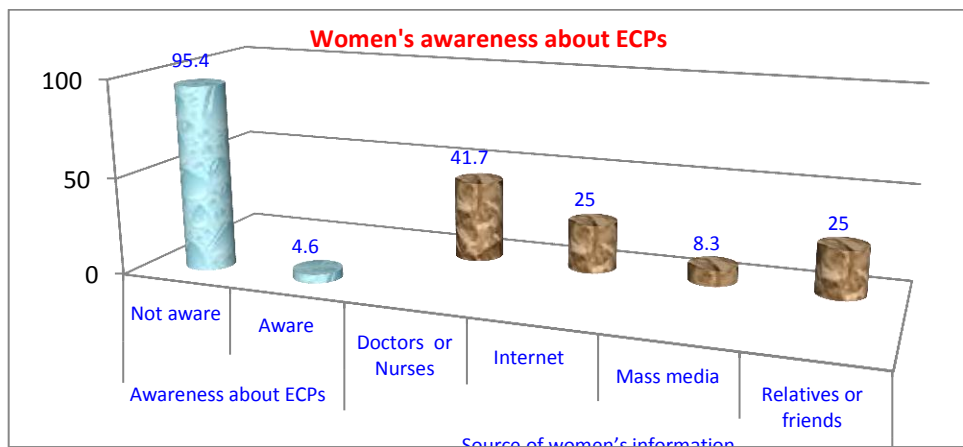
**Figure 2** Women's awareness about ECPs

Table 6 Distribution of the studied nurses according to their Socio-Demographic characteristics and previous training about ECPs (n=20)

Items	Studied nurses	
	No.	%
Age (years)		
<30	8	40.0
>30	12	60.0
Range	23.0-46.0	
Mean±SD	34.6±7.9	
Experience (years):		
<5	6	30.0
5 +	14	70.0
Range	1.0-26.0	
mean±SD	10.2±8.5	
Previous training on ECPs		
No	3	15.0
Yes	17	85.0
Previous prescribe ECPs to women		
Yes	7	35.0
No	13	65.0

Table 7 Distribution of nurses according to satisfactory knowledge about ECPs throughout the Program Phases (n=20)

Areas of knowledge	Satisfactory knowledge of nurses (n=20)						Sig1	Sig2
	Before		After		Follow up			
	No.	%	No.	%	No.	%		
Definition of emergency contraceptive pills (ECPs)	18	90.0	18	90.0	17	85.0	1.0	1.0
Types of ECPs	17	85.0	20	100.0	20	100.0	0.25	0.25
Mode of action of ECPs	3	15.0	17	85.0	12	60.0	<0.0001*	<0.0001*
Time of ECPs	6	30.0	17	85.0	16	80.0	<0.0001*	<0.0001*
Effectiveness of lactation amenorrhea method (LAM)	10	50.0	17	85.0	16	80.0	0.037*	0.06
Criteria of LAM	15	75.0	19	95.0	19	95.0	0.123	0.216
Components of ECPs	2	10.0	15	75.0	11	55.0	<0.0001*	0.006*
Effect of ECPs	3	15.0	19	95.0	13	65.0	<0.0001*	0.001*
Indications of ECPs	4	20.0	18	90.0	16	80.0	<0.0001*	<0.0001*
Contraindications of ECPs	6	30.0	17	85.0	14	70.0	0.001*	0.001*
Mode of use of ECPs	0	0.0	16	80.0	12	60.0	<0.0001*	<0.0001*
Side effects of ECPs	4	20.0	18	90.0	11	55.0	<0.0001*	0.021*

Sig1: P-value for Mac Nemar test for Significance between before/after

Sig2: P-value for Mac Nemar test for Significance between before/follow up

*significant at $P \leq 0.05$

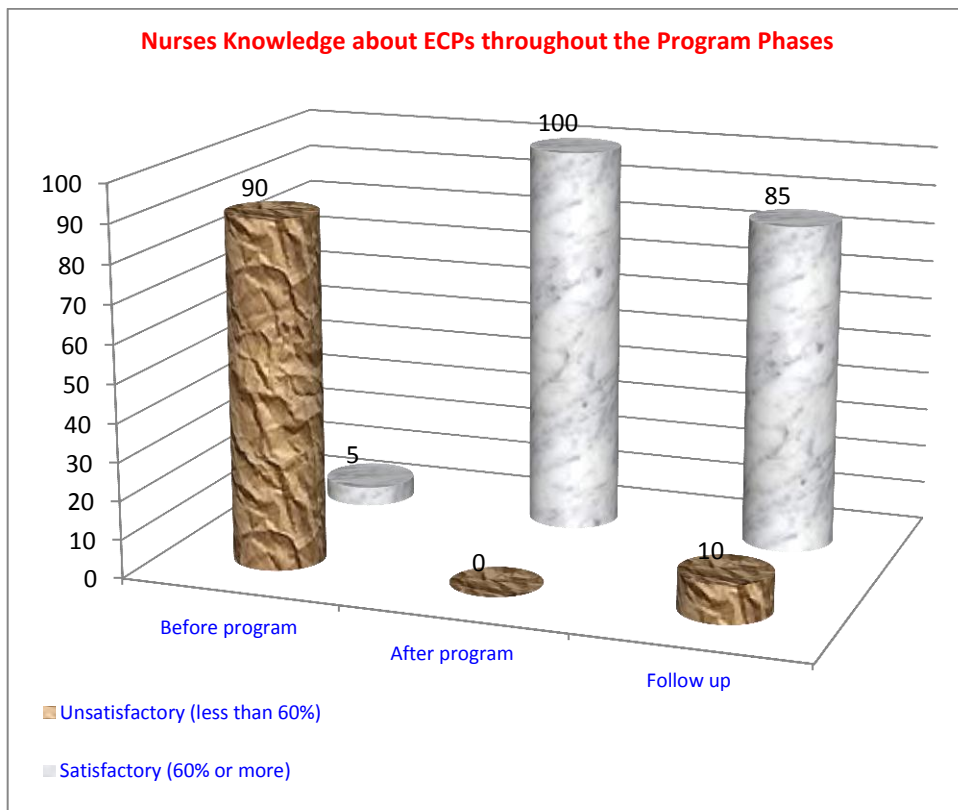


Figure (3) Nurses Knowledge about ECPs throughout the Program Phases (n=20)

Discussion:

Unintended pregnancies pose a major challenge to the reproductive health of young adults. Unintended pregnancies affect 74 million women in low- and middle-income nations each year, resulting in 25 million unsafe abortions and 47,000 maternal deaths (WHO, 2019). This could be attributed to the inappropriate use or failure of the birth control methods of choice. Epidemiological studies suggest that postpartum women are among the most highly vulnerable to unintended pregnancy, probably because many of them worldwide lack access to or do not wish to use hormonal contraceptive methods for fear of transmission of exogenous hormones to the infant (Huang et al., 2012).

The present result shows that more than three-quarters of women's use of lactational amenorrhea is less than six months, and less than one-quarter uses lactational amenorrhea from six to twelve months. The great majority of women don't know the criteria for lactational amenorrhea

and start sexual intercourse more than 40 days after labor. Also, the majority of women had resumed their menstruation before 6 months, and only 10.7% had resumption of the menstruation after 6 months and had exclusively breastfed their children up to six months of age.

Similarly, Black et al. (2013) found that practicing exclusive breastfeeding (EBF) in the first 6 months of life and continuing breastfeeding from 6 to 11 months was identified as one of the single most effective preventive interventions in reducing child mortality by the Bellagio Child Survival Study Group (2003), with the potential of saving 1.3 million lives annually. Moreover, suboptimal breastfeeding is responsible for 11.6 percent of the deaths of children under 5 worldwide.

Despite the high prevalence of breastfeeding, the correct use of LAM is suboptimal due to inadequate LAM knowledge. Lack of understanding of LAM leads to misperceptions that breastfeeding prevents pregnancy, which can also lead to the early introduction of complementary foods to infants. Findings from a study conducted

in Turkey of postpartum women documented that although 34.0 percent of the sample reported using LAM, only 17.2 percent of LAM users actually met the three LAM criteria, such as amenorrhea, exclusive or almost exclusive breast feeding, and infant age not exceeding six months (Turk et al., 2010). Similarly, in Niger, more than half of breastfeeding women were using LAM, but less than one quarter of these women used LAM correctly (Sipsma et al., 2013).

Also, a 2013 study that used data from 75 departments of human services (DHS) datasets from 45 countries found that while the average reported LAM use was 0.8 percent, an average of 3.7 percent of respondents met the three LAM criteria. These researchers also found that only 25.1 percent of self-reported LAM users actually met the three LAM criteria. This is supported by the findings of the present study. Only very few women actually met the three criteria for LAM (Fabic & Choi, 2013).

Concerning the factors that may have a negative and positive influence on the pattern of LAM in the present study, return of menstruation, regularity of menstruation, and use of contraception have statistically significant differences and have the most positive effect on LAM. Compared to awareness about ECPs the number of feedings and the time of start-weaning have a negative influence on LAM.

These results are supported by Ekpenyong et al. (2013), who reported that the duration of breastfeeding seems to be the most significant variable in explaining the resumption of menses among urban Bolivian women. In addition to the relationship between breastfeeding and amenorrhea, other factors, such as the use of contraception and especially women's education, also play an important role in the return of menses. Women who receive prenatal care and attend prenatal educational classes are more likely to have breastfeeding duration levels closer to those recommended by the WHO than women who do not receive prenatal care.

Many studies suggest that contraceptive method choice is a leading cause of unintended pregnancy. In 2002, more than half of contraceptive users in the USA relied on short-acting methods that required them to be used repeatedly, such as contraceptive pills, male condoms, or 3-month injectables. The effectiveness of these methods is limited by their relatively high failure and continuation rates

under typical use. Further, many unintended pregnancies occur in women as a result of using these methods inconsistently, incorrectly, or both (Sabahelzain et al., 2014).

This is supported by the findings of the present study, where more than one quarter of women were exposed to unintended pregnancy due to missing pills, failure of contraceptive methods, and not using contraceptive methods.

Regarding the consequences of an unintended pregnancy, the majority of them kept the pregnancy until delivery, compared to a small proportion of them who induced abortions. In my opinion, a procedure that, in a setting like Egypt, is legal only on very restricted grounds is often unsafe. In addition, unintended pregnancies also have a higher likelihood of resulting in low birth weight for children and unsafe abortions compared with planned pregnancies (Hull & Mosley, 2009).

The present study reveals that all the women did not depend on emergency contraceptive methods as an effective method and did not use emergency contraceptive methods after labor due to a lack of knowledge about ECM and fear of ECM, as well as the fact that 4.6% of women were aware of ECPs. While the great majority of them are not aware of ECPs, These results agree with Marafie et al. (2007), who reported that awareness among women in the Arab world regarding emergency contraception methods was very low. However, it disagrees with Tesfa et al. (2015), who mentioned that 40.5% of the total respondents had heard about EC, and 77.4% of those who had ever heard of EC mentioned pills.

The differences in the level of awareness of women about ECPs among various studies might be attributed to differences in community culture and traditions. Regarding the main source of information about ECPs, it was a doctor or nurse. These results agree with Vanphanom et al. (2013), who pointed out almost the same results. However, disagree with Agrawal & Agrawal (2013), who reported that the majority of the sources of information mentioned were from mass media TV (radio). The possible reasons may be due to more mass media access in the communities.

The results of the present study have demonstrated that the great majority of nurses had training about ECPs. Only one-third of them counsel women about ECPs. Similarly, Obiechina et al. (2010) reported that 38.1% of participating students were

aware of emergency contraception, while only 8.5% of them had ever practiced it.

Despite all nurses being aware of ECPs in the present study sample, their baseline knowledge about them was very low. Thus, at the pre-planning phase of the educational program, none of the nurses had satisfactory knowledge about the components of the EC pills, mode of action, indication, time, mode of use, and side effects. These findings are in agreement with Sharawy (2014), who similarly documented poor knowledge among nurses about ECPs. In my opinion, these might be attributed to the fact that ECPs are a relatively new method, poor utilization of ECPs, and the fact that nurses are not included in the basic and ongoing training curricula of health care providers. On the other hand, the media in Egypt do not apparently provide any information about emergency contraceptive pills.

According to the results of the present study, the training program developed and implemented for study nurses was successful in improving their knowledge regarding ECPs. Hence, at the post-test, all the study nurses had satisfactory knowledge. However, some decline was revealed at the three-month follow-up, which was most obvious in knowledge. Nonetheless, the level at the follow-up was still significantly higher compared to the pre-program levels. Thus, there is a need for booster sessions for the nurses to retain the gains from the program. These findings agree with those of the study conducted by Zaghaloul (2011), which almost had the same results.

Conclusion

According to the findings, it can be concluded that:

Women did not depend on emergency contraceptive methods as an effective method and did not use emergency contraceptive methods after labor. The reasons for not using ECM are that a great majority of women are not aware of ECPs. The main sources of information were doctors or nurses, the Internet, relatives or friends, and mass media.

Nurses had deficient knowledge about ECPs at the pre-planning phase of the educational program. Implementation of the educational program was associated with statistically significant improvements in nurses' knowledge regarding ECPs. However, some decline was revealed at the three-month follow-up, which

was most obvious in knowledge. Totally, the level at the follow-up was still significantly higher compared to the pre-program levels.

Recommendations:

On the basis of the most important findings of the study, the following recommendations are suggested:

- Family planning counseling by the nurse midwife, including LAM, must be emphasized as an integral part of any family planning activities and programs.
- There is a great need to increase women's awareness and knowledge about the criteria of LAM and the importance of using ECPs to support LAM in cases of unprotected intercourse through both informal and peer channels and also through formal channels such as mass-media *advertising* brochures, audio, or videocassettes.
- The importance of continuous refresher courses about ECPs for nurses; including newly appointed nurses, as well as regular supervision and evaluation of nurses' performance. This is to avoid misinformation, wrong teaching, and misbeliefs.
- Hotlines should be developed to provide information about emergency contraceptives and referrals to clinics that provide these services.
- LAM must be properly taught, and women should be encouraged to start using effective contraception as soon as any of the prerequisites for LAM expire.

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