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The Effect of Instructional Guidelines Regarding Puerperal Sepsis Prevention on the Knowledge and Practice of Postpartum Mothers

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Abstract:

Background: Puerperal sepsis is a genital tract infection occurring within the rupture of membrane or labor until 42nd days of the post - partum period. **The aim of this study**: was to evaluate the effect instructional guidelines regarding puerperal sepsis prevention on the knowledge and practice of postpartum mothers. **Design:** A Quasi experimental design (one group pre and post-test) was used in this study. **Sample:** The sample size was consisted of (120) postpartum mothers. **Setting**: This study was conducted at Obstetrics and Gynecology Department in Tamia General Hospital at Fayoum city. **Tools:** three tools were used in data collection in the present study: Structured Interviewing Questionnaire, Knowledge of postpartum mothers regarding puerperal sepsis, and Practice of postpartum mothers regarding puerperal sepsis prevention. **Results:** the findings of the present study revealed that there was a highly statistical significant difference improvement in total satisfactory knowledge and practices of postpartum mothers regarding puerperal sepsis after applying the instructional guidelines. **Conclusion:** According to the findings of the present study, the knowledge and practices of postpartum mothers regarding puerperal sepsis improved after applying the instructional guidelines and there were highly statistical significant differences pre, post and follow-up program. **Recommendations:** The study can be replicated on a larger sample in different settings and increase public awareness regarding puerperal sepsis throughout mass media and internet advertising.

Keywords: Instructional guidelines, Knowledge, Practice, Puerperal sepsis

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Introduction:

According to the World Health Organization definition, puerperal sepsis is a genital tract infection occurring within the rupture of placental membranes or labor until 42nd days of the post - partum period**.** This disease is characterized by two or more of such symptoms as pelvic pain, fever (i.e., oral temperature of 38.5°C or higher on any occasion), abnormal vaginal discharge and delay in the reduction of the uterus size **(WHO, 2015).**

Puerperal sepsis arises from several causes. A woman's susceptibility to developing an infection is related to such factors as caesarean section, prolonged labor, and obesity, anemia and poor prenatal nutrition (**Lalitha, 2016).** In developing world, it has been reported that puerperal sepsis is the second most cause of maternal mortality. Puerperal sepsis is a serious type of septicemia contracted by mothers during or soon after childbirth, miscarriage or unsafe abortion (**Sultana et al., 2018)**.

Physicians and nurses are involved in the prevention, diagnosis, and treatment of puerperal infections. Good prenatal care is essential for avoiding the risk of infection after childbirth. Postpartum nurses assess mothers for signs and symptoms of infection and educate them about these signs and symptoms prior to discharge. Also the nurses play an important role to develop multidisciplinary approach and intervention plans to cover the postpartum mother, qualifies the care given to contribute decisively to prevent and reduce the rates of puerperal infection. Thus, the postpartum period is a period of risk, which makes the essential skilled nursing care that is based on the prevention of complications. In turn, nursing heath education based on scientific principles, which is highlighted the importance of practices and knowledge sharing among the staff nurses and postpartum mothers. (**Lalitha, 2016).**

Significance of the study

Puerperal sepsis accounts for 15% of maternal deaths worldwide. In Africa, puerperal sepsis is the second leading cause of maternal morbidity and mortality. On the other hand, the rate of puerperal sepsis has declined significantly in high-income countries. For example, in the United States puerperal sepsis occur in only 5.5% of vaginal deliveries and 7.4% of caesarean section deliveries (**Kiponza, 2019).**

WHO estimates that the global prevalence of maternal sepsis is 4·4% among live births, that represent more than 5·7 million cases per year. Important variations exist between regions, with higher incidence in low-income and middle-income countries (up to 7%) compared with high-income countries (1–2%). Despite the relative low prevalence and the availability of interventions for its prevention and treatment, maternal sepsis remains a life-threatening condition and one of the leading direct causes of maternal mortality worldwide, accounting for up to 10% of maternal deaths **(Bonet et al., 2015).**

The postpartum period is the most vulnerable period for the mother and newborn. Puerperal sepsis still one of the causes for deaths in developing countries, mainly in Egypt postnatal infection is the fourth direct leading cause of maternal death **(WHO, 2014).** The inadequate access to skilled care during and after childbirth, or neglect to provide the mother with adequate knowledge and practice to prevent the puerperal sepsis, that can put the mother at risk for infection. Since puerperal sepsis is a preventable factor of maternal morbidity and mortality **(Masoud & Saber, 2016).** Therefore, the researcher felt the need to educate the postpartum mothers about puerperal sepsis and the steps of precaution to prevent this issue by

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using the instructional guideline to improve the knowledge and practices regarding puerperal sepsis and its prevention**)**.

Aim of the study:

This study aimed to:

Evaluate the effect of instructional guidelines regarding puerperal sepsis prevention on the knowledge and Practice of postpartum mothers.

This aim was attained through:

- Assess knowledge and practice of postpartum mothers regarding prevention of puerperal sepsis.
- Implement the instructional guidelines regarding prevention of puerperal sepsis.
- Evaluate the effectiveness of instructional guidelines regarding prevention of puerperal sepsis on knowledge and practice postpartum mothers.

Research Hypotheses:

The instructional guideline has a positive effect on postpartum mother knowledge and practice regarding prevention of puerperal sepsis.

I. Technical Design:

The technical design includes**;** research design, setting, sampling and tool for data collection.

A. Research design**:**

A quasi experimental research design (one group pre and post test) was used in this study.

B-Setting:

The study was conducted at the postpartum ward in Obstetrics and Gynecology Department in Tamia General Hospital at Fayoum city which is affiliated to the Ministry of Health and Population (MOHP) it provide free services for rural and urban areas at El Fayoum City.

C. Sampling:

Type of the sample:

A purposive sample was used in this study.

Sample size:

The sample size was consisted of (120) postpartum mothers included in the present study. The total participants were selected according to the following statistic formula:

$$n = \frac{Z^2 pq}{e^2}$$

Where:

- e is the desird level of precision (i.e. marginal error).
- P is the estimated proportion of the population, which has the attribute in question.
- q is 1- p. e
- Z=1.96

Sample criteria:

Inclusion criteria:

- Primiparous and multiparous postpartum mothers
- Who delivered normally or by cesarean section
- Willing to participate in the study

Exclusion criteria:

- Postpartum mothers who are diagnosed with infectious diseases.

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Tools for data collection:

Three tools will be used in data collection:

Tool (1) Structured Interviewing Questionnaire.: This tool will be developed in Arabic language by the researcher based on local and international literature review, consists of Two parts:

Part (1): Socio-demographic characteristics of mothers such as; (age, residence, occupation, level of education, income, member support of mother, parity status, if mothers have knowledge regarding puerperal sepsis and the sources of this knowledge).

Part (2): data related to obstetrical history of mothers such as (number of pregnancy, parity, abortion, the number of living children, amount of neonatal deaths, regularity of antenatal care follow-up, pregnancy complications, mode of delivery, place of delivery, duration of labor, number of vaginal examination, labor complications, health problems in the previous birth and health problem during the previous puerperium).

Tool (2): Knowledge of postpartum mothers regarding puerperal Sepsis: It will be contained questions related to mother's knowledge regarding puerperal sepsis and its prevention.

Tool (3) Practices of Postpartum Mothers regarding Puerperal Sepsis Prevention: This tool is adopted from **(Sultana et al., 2018)** and it will be used to evaluate the practice of postpartum mothers to prevent puerperal sepsis.

Validity and reliability of content:

Revision of the tools were done by a panel of expertise composed of three experts in the maternal and neonatal health nursing field to measure the content validity of the tools. Each of the experts was asked to examine tools for content coverage, clarity, wording, length, format and overall appearance. Modifications were done accordingly to the comments "rephrasing for three questions". Regarding the reliability; Cronbach Alpha coefficient test was used to measure the internal consistency of the tools used in the current study, the result as the following; 1st tool (0.80), 2nd tool (0.86).

Ethical consideration

- The approval was obtained from a scientific, ethical committee of the faculty of nursing at Helwan University before starting the study.
- The researcher obtained written consent from postpartum mothers.
- The researcher clarified the objectives of the study of mothers included in the study.
- The researcher assured anonymity and confidentiality of the subject's data.
- Mothers were informed that they are allowed to choose to participate or not in the study and that they have the right to withdraw from the study at any time.

II) Operational design:

Preparatory phase:

It included reviews of related literature and theoretical knowledge of various aspects of the study using books, articles, internet and magazines to develop tools for data collection.

Pilot study:

A pilot study was conducted on 10% (12) selected from previous mentioned setting under study, evaluate the reliability and to check the practicability of data collection tools and find out the possible obstacles or problems that might be faced by the researcher and interfere with

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data collection. The needed modification was incorporated accordingly and those subjects were excluded from the actual study sample.

Supportive material:

An informational booklet was developed after reviewing literature to inform mothers about puerperal sepsis that help to improve the level of her knowledge and practice regarding prevention of puerperal sepsis. This material was in a simple Arabic language and included simple pictures for clarification.

Field of work:

The process of data collection was carried out in the period from the beginning of 1 March and completed by the 30 June. The researcher attended the pre-mentioned setting 3 days/week from 9.00 a.m. to 2.00 p.m. to collect data until the sample size reached the pre-determined number. The researcher filled the tools to educated and non-educated mother.

The research formulated in three phases: assessment, implementation, and evaluation.

1. **Assessment phase:**
   - The researchers visited the postpartum ward to evaluate the place and determine the rate of postpartum mothers. Explain aim of the study to staff nurses to facilitate the conduction of this study.
   - The researchers select mothers who fulfilled the study criteria, then explained the purpose of the study and obtained their consent. Then the researcher was conduct the assessment process sometimes individually and another time in groups.
   - All primiparous and multiparous postpartum mothers in the postpartum ward were interviewed to collect their socio-demographic data. Then the researcher used the tool I (structured interviewing questionnaire) to assessing socio-demographic characteristics such as; (age, residence, and occupation…..) and obstetric history of postpartum mothers such as; (number of pregnancy, parity, and number of abortion…..) that may affect the outcomes of the postpartum period.
   - Then the researcher used tool II that consisted of fourteen items to assess the mother's knowledge regarding puerperal sepsis and its prevention, such as; (benefits breastfeeding, definition uterine involution, and definition puerperal sepsis (pretest).
   - Then the researcher used tool III that consisted of twenty items to assess the mother's practice regarding puerperal sepsis prevention, such as; (I maintain a healthy hemoglobin level, by eating rich iron food liver and honey, and I take plenty of warm fluids……) (pretest).

- **Implementation phase:** These phase include the following:
  - The researcher was conduct an orientation training session in patient room in the postpartum ward in Obstetrics and Gynecology Department about prevention of puerperal sepsis.
  - It included the discussion of the following items: introduction, definition of puerperal sepsis, anatomy of the female reproductive system, benefits of breastfeeding, types of puerperal infection, causes, signs, symptoms, diagnosis, complications, prevention and management of puerperal sepsis.
  - Then the researcher summarizes essential points.

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- After explaining the booklet's content, the researcher answered mother's questions, and took the telephone number to follow them up. The researchers made discussion based on the level of understanding.
- At the end of the session every mother took one of guided booklets which aimed to provide accurate knowledge and practice regarding puerperal sepsis and it is prevention in Arabic language.
- The researcher was taking the phone number of all mothers to facilitate contact with them for post and follow up test and ensure continuity of intervention application. Then the researcher gave her phone number to each mother and told them to call her at any time if any problem appeared.

2. Evaluation phase:

- Post intervention; after 15 days, posttest was done for each mother for assessing level of knowledge and practice regarding puerperal sepsis and it is prevention through a phone call. It contained the same questions as in the pre intervention.
- Follow up**;** after 42 days, another posttest was done after post intervention through a phone call to ensure that each mother follows nursing guideline correctly.
- The researcher was having a regular phone contact with mother to ensure continuity of intervention application. The researcher told the mothers to call her if any problem appeared.

III) Administrative design:

Approval to carry out this study was obtained from Dean of Faculty of nursing, Helwan University. An official letter from the responsible authorities at the Faculty of Nursing Helwan University was directed to the heads of the pre-mentioned Hospital for conducting the study.

IV) Statistical design:

The collected data was scored, tabulated and analyzed by personal computer using Statistical Package for the Social Sciences (SPSS) program version 18. Descriptive as well as inferential statistics were utilized to analyze data pertinent to the study. Level of significance was set at P≤0.0.

Results

Table (1): This table showed the socio-demographic characteristic of the studied mothers. It was found that the mean age of the studied mothers was (27.3±4.5) and more than three quarters (80.8%) of them from rural area. Regarding mothers' level of education; more than one third (40%) of studied mothers were secondary education and the majority (87.5%) of them were housewife. Regarding family income, the current results revealed that slightly more than half (51.7%) of them were not enough. Concerning member support of family, the results revealed that less than one third (30.0%) of them reported that, the member support of the family was the husband and approximately three quarters (74.2%) of them hadn't knowledge regarding puerperal sepsis.

Table (2): This table reveals that there was a highly statistical significant difference between pre, post and follow up test score with all answers regarding mother knowledge regarding

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puerperal sepsis; In pre intervention (90%, 96.6%, 69.2, and 72.5%,) of the studied mothers had wrong or no answer regarding definition of uterine involution, definition of puerperal sepsis, diagnosis, and management of puerperal sepsis respectively, compared to (23.3%, 36.7%, 3.3%, and 1.6%,) and (27.5%, 35%, 6.7%, and 3.4%) at post and follow up test respectively.

Table (3) This table shows that there was a highly statistically significant difference between mothers total satisfactory knowledge about puerperal sepsis pre, post and follow up implementation of the instructional guidelines program with ($p < 0.001$).

Table (4) This table illustrates that there was a highly statistical significant difference between the practices of postpartum mothers regarding general precautions to prevent puerperal sepsis pre, post and follow up instructional guidelines with ($p<0.001$), except in point of Keep the environment free of dust, it represent only significant.

Table (5) This table shows that there was a highly statistical significant difference between all the practices point of postpartum mothers regarding specific precautions to prevent puerperal sepsis pre, post and follow up instructional guidelines ($p<0.001$) except initiate breastfeeding immediately after birth and planning to continue breastfeeding of the baby during the postpartum period.

Table (6) This table presents that there was a highly statistically significant difference between postpartum mothers total satisfactory practice regarding puerperal sepsis pre, post and follow up implementation of the instructional guidelines program with ($p < 0.001$).

Table (7) This table showed a highly statistically significant relation between mother's knowledge regarding puerperal sepsis and their age, educational level, occupation, and mother's knowledge regarding puerperal sepsis with ($p <0.001$) in pre-intervention.

Table (8) This table revealed that there was a highly statistically significant relation between practices of postpartum mothers regarding puerperal sepsis prevention and their educational level, mothers who had university education were more practicable and had more satisfactory practices. In addition, there was a significant relation between the practices of postpartum mothers regarding puerperal sepsis prevention and their age, family income, and mother's knowledge regarding puerperal sepsis.

Table (9) This table represented a highly significant positive correlation between total knowledge score and a total practice score of postpartum mothers with ($p <0.001$& $p <0.001$) post and follow up respectively, while respresent significant difference at pre intervention point (0.046).

Discussion

In developing world, it has been reported that puerperal sepsis is the second most cause of maternal mortality. Puerperal sepsis is a serious type of septicemia contracted by mother during or soon after childbirth, miscarriage or unsafe abortion. Puerperal sepsis arises from several causes. Mothers susceptibility to developing an infection is related to such factors as caesarean section, prolonged labor, and obesity, anemia and poor prenatal nutrition (**Sultana et al., 2018**).

Regarding socio-demographic characteristics of the studied sample, the present study result revealed that slightly more than half of the studied sample was in the age group of 15-25 year. This finding is in agreement with **(Atlaw, Seyoum, Woldeyohannes & Berta, 2019)** who

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reported in a published study conducted in University of Gondar Referral Hospital, Ethiopia, entitled as" Puerperal sepsis and its associated factors among mothers in University of Gondar referral hospital, Ethiopia, 2017" that the majority of the studied sample was aged between 18 and 29 years.

Also, this finding is in agreement with **(Chepchirchir, Nyamari, & Keraka, 2017)** who studied the " Associated Factors with Puerperal Sepsis among Reproductive Age Women in Nandi County, Kenya" and found that nearly two third of the studied sample was aged between 20-25 years.

In relation to the total knowledge score of postpartum mothers regarding puerperal sepsis, the results of the current study indicated that less than two third of the studied sample reported that they had unsatisfactory knowledge regarding puerperal sepsis in pre intervention, where in post and follow up test most of them had satisfactory knowledge after receiving the instructional guidelines program with a highly statistical significant difference. These findings are supported by **(Gamel, Genedy & Hassan, 2020)** who studied the" Impact of Puerperal Sepsis Self-Care Nursing Guideline on Mothers Knowledge and Practices" in Egypt, he found that less than two third of the studied sample had unsatisfactory knowledge regarding puerperal sepsis in pretest and he reported improvement in mothers total knowledge about puerperal sepsis at post and follow-up intervention of the program. While, this finding not in the same line with **(Sarkar, Ahalawat & Kumari, 2019).** Who reported that less than two thirds of the studied sample had an average level of knowledge.

The researcher believes that this improvement may be related to that all mothers in the sample share in the program and become more equipped by the important information about puerperal sepsis and the instructional guidelines included the needed information about puerperal sepsis in simple, concise and clear language as well as the written booklet supported with pictures which they considered as a reference at any time even the illiterate mothers.

Regarding the relation between knowledge of postpartum regarding puerperal sepsis and socio-demographic characteristics, the result of the current study showed that there was a highly significant relation between knowledge of postpartum regarding puerperal sepsis and their age, mothers who were more than 35 years old were more knowledgeable and had more satisfactory knowledge than mothers who were under 35 years old. This finding comes in the same line with a study by **(Hassan, Mohamed & Solimen, 2021)** who reported the same result.

According to the statistical relation among study variables: the current study showed that there was a highly significant relation between knowledge and practice of postpartum mothers regarding puerperal sepsis and their educational level, the postpartum mothers who had university education were more knowledgeable than mothers who had secondary education, read and write or illiterate. This result supported by a study by **(Beraki et al., 2020)** who reported that the secondary educated have more knowledge and awareness about puerperal sepsis, than illiterate female.

Concerning the correlation between knowledge and practice of postpartum mothers regarding puerperal sepsis and it is prevention, this present study showed that there was a highly significant positive correlation between the mother's total satisfactory knowledge and their total satisfactory practices. This result supported by a study by **(Hassan, Mohamed & Solimen, 2021).** Who studied the" Knowledge and Practices of Postnatal Mothers Regarding

Prevention of Puerperal Sepsis " in Egypt, who reported that there is positive correlation between the knowledge and practice of postnatal mothers regarding prevention of puerperal sepsis

Also, this finding is in disagreement with **(Indra, 2015)** that entitled" A Study to Assess the Knowledge and Practice on Prevention of Puerperal Sepsis among Postnatal Mothers in Selected Hospital, Puducherry with a View to Develop an Information Booklet" who reported that there is no correlation between the knowledge and practice and, unfortunately, there is no association between the knowledge scores with selected demographic variables.

Conclusion

The present study concluded that there was a highly statistical significant improvement in mothers knowledge and practices regarding puerperal sepsis after applying the instructional guidelines and this evidence that these guidelines were effective in raising mothers knowledge regarding puerperal sepsis and improving their practices regarding puerperal sepsis prevention.

Recommendations: Based on the results of the present study the following can be recommended: -

- Puerperal sepsis guidelines can be introduced to the antenatal mothers.
- Increase public awareness about puerperal sepsis throughout mass media and internet advertising and should be under control of professional specialist in this field.
- The study can be replicated on a larger sample in different settings.
- A similar study can be conducted to develop health education guidelines or pamphlets on other postpartum complications.

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Table (1): Distribution of the study group according to their sociodemographic characteristics (N= 120).

Items	N	%
Age:		
15-25	61	50.8
26-35	49	40.8
36-45	10	8.4
Mean±SD	27. 3±4. 5	
Residence:		
Rural	97	80.8
Urban	23	19.2
Education:		
Illiterate	27	22.5
Read and write	36	30.0
Secondary education	48	40.0
University education	9	7.5
Occupation:		
Housewife	105	87.5
Employee	15	12.5
Family income		
Enough	58	48.3
Not enough	62	51.7
Member support in family		
Husband	36	30.0
Mother	24	20.0
Sisters	6	5.0
Mother in law	27	22.5

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No one	27	22.5
knowledge regarding puerperal sepsis		
Yes	31	25.8
No	89	74.2

Table (2): Distribution of the study group according to their knowledge regarding puerperal sepsis pre, post and follow up instructional guidelines (N=120).

Items of knowledge	Complete, correct answer		Incomplete, correct answer		Wrong or no answer		Chi-square		
	N	%	N	%	N	%		X^2	P-value
5- Definition of uterine involution.									
Pre	12	10	0	0	108	90			
Post	92	76.7	0	0	28	23.3	P1	108.597	<0.001**
Follow up	87	72.5	0	0	33	27.5	P2	0.550	0.459
6-Definition of puerperal sepsis.									
Pre	4	3.3	0	0	116	96.6			
Post	76	63.3	0	0	44	36.7	P1	97.200	<0.001**
Follow up	78	65	0	0	42	35	P2	0.072	0.788
7-Risk factors of puerperal sepsis.									
Pre	5	4.2	51	42.5	64	53.3			
Post	81	67.5	35	29.1	4	3.4	P1	123.081	<0.001**
Follow up	77	64.2	37	30.8	6	5	P2	0.557	0.757
8-Signs and symptoms of puerperal sepsis.									
Pre	2	1.7	52	43.4	66	54.9			
Post	92	76.7	28	23.3	0	0	P1	159.370	<0.001**
Follow up	86	71.7	34	28.3	0	0	P2	0.783	0.376
9-Diagnosis of puerperal sepsis.									
Pre	3	2.5	34	28.3	83	69.2			
Post	78	65	38	31.7	4	3.3	P1	141.402	<0.001**
Follow up	76	63.3	36	30	8	6.7	P2	1.413	0.493
10-Complication of puerperal sepsis.									
Pre	2	1.7	45	37.5	73	60.8			
Post	84	70	27	22.5	9	7.5	P1	132.637	<0.001**
Follow up	85	70.8	29	24.2	6	5	P2	0.677	0.713
11- Prevention of puerperal sepsis.									
Pre	5	4.2	47	39.2	68	56.6			
Post	97	80.8	20	16.7	3	2.5	P1	153.368	<0.001**
Follow up	95	79.2	24	20	1	0.8	P2	1.384	0.500
12-Management of puerperal sepsis.									
Pre	0	0	33	27.5	87	72.5			
Post	74	61.7	44	36.7	2	1.6	P1	156.751	<0.001**
Follow up	71	59.1	45	37.5	4	3.4	P2	0.740	0.691
13-Factors increase uterine involution.									

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Pre	5	4.2	40	33.3	75	62.5			
Post	76	63.3	32	26.7	12	10	P1	108.744	<0.001**
Follow up	75	62.5	37	30.8	8	6.7	P2	1.169	0.557
14- Factors decrease uterine involution.									
Pre	5	4.2	43	35.8	72	60			
Post	80	66.7	31	25.8	9	7.5	P1	117.122	<0.001**
Follow up	75	62.5	34	28.3	11	9.2	P2	0.500	0.779

P1= Pre& post, P2= Post& Follow up

Table (3): Distribution of the study group according to their total knowledge score regarding pre, post and follow up instructional guidelines (N=120).

Total knowledge	Satisfactory knowledge		Incomplete, Satisfactory knowledge		Unsatisfactory knowledge		Chi-square		
	N	%	N	%	N	%	X^2		P-value
Pre	3	2.5	43	35.8	74	61.7			
Post	106	88.3	14	11.7	0	0	P1	186.085	<0.001**
Follow up	102	85	18	15	0	0	P2	0.577	0.448

P1= Pre& post, P2= Post& Follow up

Table (4): Distribution of the study group regarding their general precautions to prevent puerperal sepsis (N=120).

Items of practice	Done		Not done		Chi-square		
	N	%	N	%	X^2		P-value
Maintain a healthy hemoglobin level, by eating rich iron food (liver and honey).							
Pre	74	61.7	46	38.3			
Post	102	85	18	15	P1	16.705	<0.001**
Follow up	100	83.3	20	16.7	P2	0.125	0.724
Ensure a balanced diet that help to improve body immunity.							
Pre	69	57.5	51	42.5			
Post	99	82.5	21	17.5	P1	17.857	<0.001**
Follow up	99	82.5	21	17.5	P2	0.000	1.000
Take plenty of warm fluids							
Pre	52	43.3	68	56.7			
Post	107	89.2	13	10.8	P1	56.371	<0.001**
Follow up	94	78.3	26	21.7	P2	5.174	0.023*
Get immediate medical care for any wounds or even seasonal diseases.							
Pre	66	55	54	45			
Post	97	19.2	23	80.8	P1	18.376	<0.001**
Follow up	95	79.2	25	20.8	P2	0.104	0.747
Measure body temperature daily.							
Pre	35	29.2	85	70.8			
Post	97	80.8	23	19.2	P1	64.714	<0.001**

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Follow up	91	75.8	29	24.2	P2	0.884	0.347
Keep the environment free of dust, by frequent mopping and restricting visitors.							
Pre	78	65	42	35			
Post	93	77.5	27	22.5	P1	4.577	0.032*
Follow up	101	84.2	19	15.8	P2	1.721	0.190
Avoid appearances in crowded and unhygienic places, to prevent respiratory diseases.							
Pre	69	57.5	51	42.5			
Post	110	91.7	10	8.3	P1	36.948	<0.001**
Follow up	98	81.7	22	18.3	P2	5.192	0.023*
Take enough rest and sleep.							
Pre	55	45.8	65	54.2			
Post	89	74.2	31	25.8	P1	20.069	<0.001**
Follow up	96	80	24	20	P2	1.156	0.282

P_1= Pre& post, P_2= Post& Follow up

Table (5): Distribution of the study group regarding their specific precautions to prevent puerperal sepsis (N=120).

	Done		Not done		Chi-square		
	N	%	N	%	X^2		P-value
Initiate breastfeeding immediately after birth.							
Pre	54	45	66	55			
Post	54	45	66	55	P1	0.000	1.000
Follow up	54	45	66	55	P2	0.000	1.000
Planning to continue breastfeeding of the baby during the postpartum period							
Pre	118	98.3	2	1.7			
Post	118	98.3	2	1.7	P1	0.000	1.000
Follow up	115	95.8	5	4.2	P2	1.324	0.250
Avoid sexual intercourse during the postpartum period.							
Pre	120	100	0	0			
Post	120	100	0	0	P1	0.000	1.000
Follow up	93	77.5	27	22.5	P2	30.423	<0.001**
Follow up the involution process every day until the 10 postpartum days.							
Pre	29	24.2	91	75.8			
Post	93	77.5	27	22.5	P1	68.286	<0.001**
Follow up	93	77.5	27	22.5	P2	0.000	1.000
Follow up color, odor and the amount of lochia.							
Pre	38	31.7	82	68.3			
Post	98	81.7	22	18.3	P1	61.086	<0.001**
Follow up	96	80	24	20	P2	0.108	0.743
Follow any signs and symptoms of puerperal sepsis.							

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Pre	70	58.3	50	41.7			
Post	103	85.8	17	14.2	P1	22.549	<0.001**
Follow up	101	84.2	19	15.8	P2	0.131	0.718

P1= Pre& post, P2= Post& Follow up

Table (6): Distribution of the study group according to their total practice score regarding pre, post and follow up instructional guidelines (N=120).

Total practice	Satisfactory practice		Unsatisfactory practice		Chi-square		
	N	%	N	%	X^2		P-value
Pre	44	45	66	55			
Post	111	92.5	9	7.5	P1	71.983	<0.001**
Follow up	107	89.2	13	10.8	P2	0.801	0.371

P1= Pre& post, P2= Post& Follow up

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Table (7): Relation between pre, post knowledge score and sociodemographic characteristics.

	Pre knowledge score								Post knowledge score					
	unsatisfactory		incomplete		complete		Chi-square		incomplete		complete		Chi-square	
	N	%	N	%	N	%	X^2	P-value	N	%	N	%	X^2	P-value
Age														
15-25	52	85.2	9	14.8	0	0	40.686	<0.001**	9	14.8	52	85.2	1.987	0.37
26-35	19	38.8	29	59.2	1	2			5	10.2	44	89.8		
36-46	3	30	5	50	2	20			0	0	10	100		
Residence														
Rural	64	66	31	32	2	2.1	4.035	0.133	11	11.3	86	88.7	0.052	0.819
Urban	10	43.5	12	52.2	1	4.3			3	13	20	87		
Educational level														
Illiteracy	18	66.7	9	33.3	0	0	28.003	<0.001**	5	18.5	22	81.5	2.57	0.463
Read and write	27	75	9	25	0	0			2	5.6	34	94.4		
Secondary education	29	60.4	18	37.5	1	2.1			6	12.5	42	87.5		
University education	0	0	7	77.8	2	22.2			1	11.1	8	88.9		
Occupation														
Housewife	70	66.7	34	32.4	1	1	14.247	<0.001**	13	12.4	92	87.6	0.416	0.519
Employee	4	26.7	9	60	2	13.3			1	6.7	14	93.3		
The family income														
Enough	31	53.4	24	41.4	3	5.2	5.4	0.067	6	10.3	52	89.7	0.19	0.663
Not enough	43	69.4	19	30.6	0	0			8	12.9	54	87.1		
Member support in the family														
Husband	25	69.4	10	27.8	1	2.8	10.115	0.257	2	5.6	34	94.4	6.972	0.137
Mother	16	66.7	8	33.3	0	0			6	25	18	75		
Sisters	4	66.7	2	33.3	0	0			0	0	6	100		
Mother in low	19	70.4	7	25.9	1	3.7			4	14.8	23	85.2		
No one	10	37	16	59.3	1	3.7			2	7.4	25	92.6		
knowledge regarding puerperal sepsis														
yes	11	35.5	17	54.8	3	9.7	17.473	<0.001**	1	3.2	30	96.8	2.89	0.089
no	63	70.8	26	29.2	0	0			13	14.6	76	85.4		

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Table (8): Relation between pre, post practice score and socio-demographic characteristics.

	Pre practice score						Post practice score					
	unsatisfactory		satisfactory		Chi-square		unsatisfactory		satisfactory		Chi-square	
	N	%	N	%	X^2	P-value	N	%	N	%	X^2	P-value
Age												
15-25	41	67.2	20	32.8	8.222	0.016*	7	11.5	54	88.5	3.026	0.22
26-35	22	44.9	27	55.1			2	4.1	47	95.9		
36-46	3	30	7	70			0	0	10	100		
Residence												
Rural	55	56.7	42	43.3	0.592	0.442	8	8.2	89	91.8	0.408	0.523
Urban	11	47.8	12	52.2			1	4.3	22	95.7		
Educational level												
Illiteracy	24	88.9	3	11.1	25.022	<0.001**	5	18.5	22	81.5	6.72	0.081
Read and write	23	63.9	13	36.1			1	2.8	35	97.2		
Secondary education	17	35.4	31	64.6			3	6.3	45	93.8		
University education	2	22.2	7	77.8			0	0	9	100		
Occupation												
Housewife	61	58.1	44	41.9	3.252	0.071	8	7.6	97	92.4	0.017	0.896
Employee	5	33.3	10	66.7			1	6.7	14	93.3		
The family income												
Enough	26	44.8	32	55.2	4.693	0.030*	4	6.9	54	93.1	0.059	0.808
Not enough	40	64.5	22	35.5			5	8.1	57	91.9		
Member support in the family												
Husband	17	47.2	19	52.8	5.054	0.282	3	8.3	33	91.7	9.423	0.051
Mother	17	70.8	7	29.2			5	20.8	19	79.2		
Sisters	4	66.7	2	33.3			0	0	6	100		
Mother in low	16	59.3	11	40.7			0	0	27	100		
No one	12	44.4	15	55.6			1	3.7	26	96.3		
knowledge regarding puerperal sepsis												
yes	11	35.5	20	64.5	6.432	0.011*	0	0	31	100	3.389	0.066
no	55	61.8	34	38.2			9	10.1	80	89.9		

<0.001* means highly statistically significant.

Table (9): Correlation between total knowledge score and total practice score of postpartum mothers pre, post, and follow up the instructional guidelines.

Total practice score	Total knowledge score	
	r	P-value
Pre	0.183	0.046*
Post	0.375	<0.001**
Follow up	0.397	<0.001**

<0.001* means highly statistically significant.