

# Effect of Implementing Evidence-Based Nursing Practices Guidelines Related to Post-Partum Care on Maternity Nurses' Performance

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## ABSTRACT

**Context:** Delivering high-quality care that improves patients' health outcomes necessitates using evidence-based nursing practice (EBNP).

**Aim:** This study aimed to evaluate the effect of implementing evidence-based nursing practice guidelines related to postpartum care on maternity nurses' performance.

**Methods:** One group (pre/post-test) is studied in a quasi-experimental study. The study was carried out at the postnatal unit of the Obstetrics and Gynecology department of Benha University Hospital. A convenient sample included all maternity nurses working in the previously mentioned setting. Three tools are used for data collection: A self-administered questionnaire includes an assessment of socio-demographic characteristics of the studied maternity nurses, an assessment of maternity nurses' knowledge regarding evidence-based practices about postpartum care, an observational checklist regarding evidence-based nursing practice during the postpartum period, and barriers scale of nurses in implementing evidence-based practices.

**Results:** The study revealed a mean nurses' age of  $33.6 \pm 9.867$ , and 55.4% had baccalaureate degrees in nursing sciences. 60% of them depend on the internet as a source of information. The present study findings a highly statistically significant difference between pre-intervention, immediate post-intervention, and follow-up ( $p < 0.0001$ ) regarding nurses' knowledge and practice concerning postpartum evidence-based nursing practice. The barriers assessment revealed that 84.5% of the nurses agreed they did not have time to read the research.

**Conclusion:** Maternity nurses' performance in postpartum care significantly improved after implementing evidence-based practice guidelines. The study recommended encouraging continuous educational training programs and workshops for nurses regarding evidence-based nursing in obstetrics and gynecological unit.

**Keywords:** Evidence-based nursing practices, nurses' performance, and postpartum care

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## 1. Introduction

The World Health Organization (WHO) defines postpartum care (PPC) as care for the woman provided in the postpartum period, that is, from complete delivery of the placenta to 42 days after delivery (WHO, 2015). It is a crucial stage in the lives of mothers and newborns, but it also receives the least attention. Most maternal and newborn deaths occur in the first month following birth: 66% of postnatal maternal deaths occur during the first week and nearly half during the first 24 hours. The first month of a newborn's life recorded 2.8 million deaths. On the first day, a million of these babies died (Nour, 2008).

Three separate but overlapping periods make up the postpartum period. The first 6 to 12 hours postpartum is the first or acute stage. This stage carries a chance for urgent emergencies such as postpartum hemorrhage, uterine inversion, amniotic fluid embolism, and eclampsia during this period of rapid change. The sub-acute postpartum phase lasts between two to six weeks. The body is going through significant changes at this point in terms of hemodynamics,

genitourinary healing, metabolism, and emotional state. The third stage is the delayed postpartum phase, which continues for up to six months. During this period, the connective tissue and muscles return to pre-pregnancy states. It behooves carers to remember that a woman's body is not totally returned to prepregnant physiology until around six months after birth, even though alteration is slight during this phase (Timilsina, & Dhakal, 2016.).

The competent standard of care in each stage of the nursing process is referred to as a guideline. It represents a desirable and attainable standard of performance that can be used to assess a nurse's actual performance. The primary goal of guidelines is to maintain safe and clinically effective nursing practice (Nageshwar et al., 2015). It must be routinely incorporated into evidence-based practice (EBP). Guidelines are important tools in EBP that can reduce healthcare variation and improve patient outcomes. Moreover, guidelines summarize the latest evidence to help all members of the clinical multidisciplinary team to provide the best possible treatment strategies for typical patients suffering from a given disease (Martin, 2016).

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Evidence-based nursing practice (EBNP) is a problem-solving method for delivering clinical care that considers a clinician's experience, the preferences of their patients, and the strongest evidence from carefully planned research. Moreover, it is the conscientious and judicious use of the current best evidence to guide healthcare decisions (Melnyk, & Fineout-Overholt, 2019). Health facilities usually implement best practice guidelines that reflect the most recent research to enhance patient outcomes and save hospital costs. Therefore, to improve patient outcomes, many organizations look for nurses to use EBN in their practices (Hendy et al., 2019).

Evidence-based practice (EBP) incorporates clinical knowledge, the most recent and superior research evidence, and the patient's particular values and circumstances. This practice provides many advantages and is crucial for nurses and the nursing profession. It facilitates the development of nurses' bodies of knowledge, reduces the chasm between nursing research, education, and practice, and harmonizes nursing procedures (Emparanza et al., 2018). It also optimizes clinical patient outcomes, raises healthcare standards and reduces healthcare expenses. As a result, nurses' clinical decisions should be supported by the greatest and most recent research evidence (Abu-Baker et al., 2021).

Many studies have applied an evidence-based practice and found a significant improvement in patients' outcomes as Kim et al. (2019) studied the effects of an evidence-based practice education program using multifaceted interventions: A quasi-experimental study with undergraduate nursing students and concluded that the EBP education program was effective in improving the knowledge, skills, attitudes, competencies, and future use of EBP among nursing students.

Nurses who implement EBNP need skills such as conducting literature searches and evaluating evidence. Knowledge, skills, attitudes, and practice are the keystones of implementing EBP. Findings from previous studies indicated that nurses' knowledge, attitudes, and beliefs about EBP can play a crucial role in the extent to which EBP is implemented. Consequently, knowledge and attitudes can predict future behavior regarding EBP implementation (AbuRuz et al., 2017).

The American Nurses Association (ANA) standards of nursing practice recommended implementing EBP for nursing skills to improve performance. Individual nurses are in a position that provides optimal care by acquiring competencies for evidence-based practice. The nurse can generate researchable questions, communicate with researchers, and use and promote evidence-based practice (Shokry & Saleh, 2019).

## 2. Significance of the study

According to a report from the Centers for Disease Control and Prevention's National Vital Statistics System (National Vital Statistics System, 2018), the maternal mortality rate was 17.4 maternal deaths per 100,000 live births, which means 658 women died during pregnancy at birth, or within 42 days of birth in 2018. The main direct causes of maternal deaths, accounting for up to 80 percent of cases in Africa, are obstetric hemorrhage, puerperal sepsis, pregnancy-induced hypertension (including eclampsia),

obstructed labor and ruptured uterus, and complications of unsafe abortion.

Postpartum hemorrhage is responsible for approximately 27% of all maternal deaths, with poor obstetric management cited as the most frequent avoidable factor, contributing to 43% of maternal deaths globally; ending preventable maternal deaths continues to be one of the most important goals (Murray, 2021). According to a report from the World Health Organization in 2013 (WHO, 2015), deaths from postpartum hemorrhage (PPH) are concentrated in developing countries, and slightly more than 43% of them occur in Northern and Sub-Saharan Africa. In Egypt, the maternal mortality ratio stood at 45 deaths per 100,000 live births.

Nursing staff in Egypt are an important health professional group. Most nurses work in the direct care of patients, assessing patients' needs and making decisions on nursing intervention. Evidence-based nursing practice has a major impact on patients' outcomes and safety. Hence, there is an essential need to enhance nurses' practice that is evidence-based to improve the quality of care and patient safety. EBNP enables nursing care guides to be more effective and efficient, more individualized, and to increase the effects of clinical judgment. The educational intervention has been designed for nursing to improve EBP attitudes, skills, and knowledge. So, infusion of the knowledge and skills related to evidence-based practice through educational guidelines is required to promote quality patient care and improve clinical practice. EBP contributes to developing critical thinking among nurses through the combination of best evidence, patient values and preferences, and clinical experience.

So this study aimed to evaluate the effect of implementing evidence-based nursing practice guidelines related to postpartum care on maternity nurses' performance. Nurses' performance and barriers have been studied to facilitate the implementation process of EBP to achieve this goal.

## 3. Aim of the study

This study aimed to evaluate the effect of implementing evidence-based nursing practice guidelines related to postpartum care on maternity nurses' performance. This aim was achieved through the following:

- Assessing maternity nurses' performance (knowledge & practices) regarding evidence-based postpartum care.
- Assessing barriers of nurses in implementing evidence-based practice.
- Designing and implementing evidence-based nursing practices guidelines regarding evidence-based nursing practices related to postpartum care.
- Evaluating the effect of implementing evidence-based nursing practice guidelines regarding postpartum care on maternity nurses' performance.

### 3.1. Research Hypothesis

The maternity nurses' performance regarding evidence-based nursing practices related to postpartum care would show significant improvement after implementing evidence-

based nursing practice guidelines compared to pre-intervention.

## 4. Subjects & Methods

### 4.1. Research Design

A quasi-experimental design was used for conducting the study. One group (pre/post-test) was studied, which is a type of research design that researchers most often utilize to determine the effect of a treatment or intervention on a given sample (Maciejewski, 2020).

### 4.2. Study setting

The study was carried out at the postnatal unit of the Obstetrics and Gynecology Department of Benha University Hospital, Benha City. This unit is on six floor and consists of three rooms; its total capacity is fifteen beds, providing free medical and nursing services for postnatal women in the Qalubeya governorate and its surrounding villages.

### 4.3. Subjects

A non-probability sampling method (Convenient sample) (Nikolopoulou, 2022). The sample size includes all maternity nurses who worked in the previously mentioned setting (110 nurses at the time of data collection).

### 4.4. Tools of data collection

Three tools were utilized for data collection, developed by the researchers after reviewing related literature and tested by a panel of experts for content validity.

#### 4.4.1. A Self-Administered Questionnaire

This tool was developed by researchers after reviewing the literature, translated into Arabic language, and includes three parts:

Part 1 assessed the socio-demographic characteristics of the studied maternity nurses, including age, experience, educational level, previous educational program related to the studied topic, and source of information (5 Multiple choice questions)

Part 2 assessed the maternity nurses' knowledge regarding evidence-based practices in postpartum care. It included two main sections:

Section 1 is concerned with nurses' knowledge of Postpartum care. It consists of 12 open end questions distributed equally on the following: Definition of the postpartum term and care, phases, physiological changes in the mother, definition of episiotomy and REEDA scale assessment, nursing care of episiotomy based on EBNP, common complications during the postpartum period, (Definition, types, causes, clinical picture of postpartum hemorrhage) and nursing management of PPHge based on EBNP.

Section 2 concerns nurses' knowledge of the evidence-based nursing practice (EBNP). It included ten open end questions about EBNP (definition, benefits, needs, sources, advantages and disadvantages, barriers and facilitators, process, components of PICOT, strategies to promote evidence-based nursing practice during postpartum care, and

competent nursing care in postpartum unit). This section of the tool has been based on Fitzpatrick et al. (2011); Nguyen (2008); Panagiari (2008) and measured before and after guidelines implementation.

#### Scoring system

The questions were scored as follows: A score of one was given for the correct answer and zeroed for the incorrect or did not know the answer. The total knowledge score was classified as the following:

- Good knowledge:  $\geq 75\%$
- Average knowledge:  $60 - < 75\%$
- Poor knowledge:  $< 60\%$

#### 4.4.2. An Observational Checklist of EBNP During the Postpartum Period

It was adapted from Jacobson (2019). It assessed nurses' practices regarding evidence-based nursing practices in the postnatal unit and included 12 practices. This tool was supported by a guidelines booklet for nurses about evidence-based nursing practice regarding postpartum care procedures, e.g., abdominal examination for assessing fundus involution, fundus and lochia assessment, perineal care, assessment of bladder and bowel, assessment of REEDA scale.

#### Scoring system

Score "one" given for each correct step and "zero" if the nurses' practices were incorrectly done or not done. The total score of observation checklists was summed (equal to 100%). Accordingly, the total score of nurses' practices was converted into percentages and categorized into  $\geq 85\%$  considered competently performing EBNP and  $< 85\%$  considered incompetently performing EBNP, which reflected the quality of nursing care.

#### 4.4.3. Barriers to EBNP Assessment Scale

The barriers facing nurses in implementing EBNP were assessed using the barriers scale, which was modified and validated by Kajermo et al. (2013). The scale is composed of 19 items (for example, the nurse does not have time to read the research, the administration will not allow implementation, and the other staff is not supportive of implementation). The studied nurses were asked to rate to which extent they perceived each item as a barrier to using research findings.

#### Scoring system

Three points Likert scale was used. The respondents rated the items on a 3- point where "3" indicated "Agree," scored "2" for "Neutral"; and scored "1" for "Disagree."

### 4.5. Procedures

The data collection tools were tested and reviewed for content validity by panels of three maternity and newborn health nursing experts at the Faculty of Nursing, Benha University, to test face and content validity. Their opinions were elicited regarding the tool's format layout, consistency, and scoring system. The experts reviewed the tools for clarity of sentences, consistency, appropriateness of the content, the sequence of items, accuracy, relevance, comprehensiveness, simplicity, and applicability of tools.

No modifications were done. The tools' reliability was done by Cronbach's Alpha coefficient test, which revealed that each tool consisted of relatively homogenous items, as indicated by the moderate to high-reliability values. The tools' internal consistency was as follows: A self-administered questionnaire was 0.89, an EBP Barrier scale was 0.89, and an observational checklist regarding evidence-based nursing practice during the postpartum period was 0.92.

Ethical aspects were considered before starting the study. The present study was conducted under the approval of the Faculty of Nursing Ethical Committee, Benha University then official permission was obtained from the directors of the previously mentioned setting. Official permission from the selected study setting was obtained for the fulfillment of the study. The aim of the study was explained to each nurse before applying the tools to gain their confidence and trust. Data collection tools did not include items that hurt human dignity, culture, human rights, and ethical issues. Each nurse has been informed of her right to withdraw from the study at any phase.

The study included three phases (preparatory phase, implementation phase, and evaluation phase).

The first phase (preparatory phase): During this phase, the researchers reviewed the recent national and international literature and then designed data collection tools. Finally, the researchers conducted a pilot study to ascertain the content validity of the tool used. During this phase, official approval to conduct the study was obtained.

A pilot study was carried out on 10% of the total sample size, which was (8) nurses, before starting data collection to test the clarity, arrangement of the items, the feasibility of the research process, and applicability of the tools as well as to estimate the needed time to fill questions and to make sure that items are understood. No modifications were done, and the nurses in the pilot study were included in the main study sample.

Fieldwork (implementation phase) was carried out from the beginning of September 2020 to the end of May 2021, covering nine months. The researchers attended the previously mentioned study setting after taking official permission three days per week, starting from 9.00 A.M to 2.00 P.M. At first, the researchers started by pretesting the self-administered questionnaire in order to assess nurses' socio-demographic characteristics, knowledge regarding EBNP in the postpartum unit, and nurses' barriers in implementing EBNP to determine the needs of nurses to implement EBNP through interviewing a group of eight nurses/day. The researchers were provided an appropriate separate place for the participant during the interview, the duration of each interview taking about 20 minutes.

The nurses' practical skills were assessed using the observational checklist for evidence-based nursing practice during the postpartum period to assess nurses' practices regarding evidence-based nursing practices in the postnatal unit, five or more nurses were assessed each day according to the allowed time, and the score for each nurse was obtained which was used pre-intervention, immediately post-intervention and three months after intervention for comparative evaluation.

Then a pre-structured supportive guideline was implemented, which included four sessions duration of each session was 20 minutes. The number of attending participants was five nurses for each session. Teaching methods were lectures, bedside teaching, demonstration/re-demonstration, and role play. The teaching strategies were group discussion, PowerPoint and videos presentation, and maternal and fetal models. At the end of the sessions, the implemented supportive guideline was distributed, and each nurse obtained a copy of the supportive guideline.

The third phase (Evaluation phase): Data collection tools were utilized pre-intervention, immediately post-intervention then three months post-intervention to assess nurses' knowledge and their practices regarding evidence-based nursing practices related to postpartum care.

#### 4.6. Data analysis

The collected data were organized, tabulated, and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 25 SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. Qualitative data describes a categorical set of data by frequency, percentage, or proportion of each category. A comparison between two groups and more was done using the Chi-square test and correlation coefficient between the total score of knowledge and practice. Significance was adopted at  $p$  0.05 for interpretation of the results of tests of significance.

### 5. Results

Table 1 shows the socio-demographic characteristics of the studied nurses. It illustrated that the mean age of nurses was  $33.6 \pm 9.86$ . The highest percentage of them was <5 experience (39.1%), more than fifty percent of them (55.4%) had baccalaureate degrees, and most of them did not attend any training courses regarding postpartum evidence-based nursing practice (81.8%).

Figure 1 points out the percentage distribution of studied nurses according to their sources of information. Near Two thirds (60%) of studied nurses were taken information from the internet.

Table 2 compares nurses' knowledge regarding evidence-based postpartum care pre, post, and follow-up after the intervention. It is clear from the table that there is a highly statistically significant difference between nurses' knowledge in the three study phases regarding most of the evidence-based practices about postpartum care before, immediately after post-program implementation, and follow-up ( $p < 0.000$ ), except for the definition of the postpartum term (0.081), and care (0.204).

Table 3 compares nurses' knowledge about evidence-based nursing practice (EBNP) throughout program phases. It is clear from the table that there is a highly statistically significant difference between nurses' knowledge regarding evidence-based nursing practice (EBNP) before, immediately after post-program implementation, and follow-up ( $p < 0.000$ ).

Figure 2 displays the nurses' knowledge regarding evidence-based practices about postpartum care and

knowledge regarding evidence-based nursing practice (EBNP) throughout the program phases. It is well-defined from the figure before the program's implementation that slightly more than half of nurses (52.7%) had poor knowledge. While after the implementation of the program low percentage of them (17.3%) only had poor knowledge and progressed to 17.3% in the follow-up phase.

Table 4 shows a comparison of studied nurses' practice of evidence-based nursing during the postpartum period throughout the program phases. It is clear from the table that there is a highly statistically significant difference between nurse practice regarding all practice skills before and immediately after and at follow-up program implementation ( $p < 0.000$ ).

Figure 3 displays the total nurses' practice regarding postpartum care throughout the program phases. It is well-defined from the figure that before the implementation of the program (26.4%) of the studied nurses had competent practices regarding postpartum care. While after the implementation of the program, nearly three-thirds (82.7%) of nurses had competent practices regarding postpartum care.

Table 5 reveals the frequency and percentage distribution of barriers of studied nurses in implementing EBNP. Most

(84.5%) agree that the nurses do not have time to read the research, and 80.9% believe that the administration will not allow implementation.

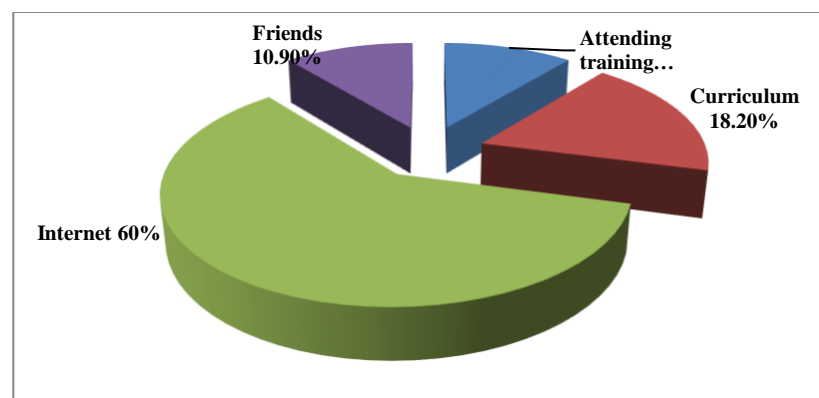
Table 6 points to the relation between the total score of knowledge and the personal characteristics of the nurse throughout the program phases. It is clear from the table that there is a highly statistically significant difference between the total level of nurses' knowledge and their characteristics before and immediately post-program implementation ( $p < 0.000$ ).

Table 7 points to the relation between the total level of practice and the personal characteristics of the nurse throughout the program phases. It is clear from the table that there is a highly statistically significant difference between the total level of nurses' practice and their characteristics before and immediately post-program implementation and follow-up ( $p < 0.000$ ).

Table 8 indicates a correlation between the total score of knowledge and nurses' practice throughout the program phases. It is clear from the table that there is a positive correlation between the knowledge and practices score of nurses before, after, and after the follow-up implementation of the program ( $p = 0.000$ ).

**Table (1): Frequency and percentage distribution of studied nurses' socio-demographic characteristics (n=110).**

Variables	Frequency	%
<b>Age</b>		
<20 years	9	8.2
20-30	34	30.9
>30	67	60.9
Mean±SD	33.6 ±9.867	
<b>Years of experience</b>		
<5	43	39.1
5-<10	38	34.5
≥10	29	26.4
<b>Educational level</b>		
Nursing diploma	9	8.2
Technical institute of nursing	20	18.2
Baccalaureate degree	61	55.4
Postgraduate	20	18.2
<b>Attending training courses regarding postpartum evidence-based nursing practice</b>		
Yes	20	18.2
No	90	81.8



**Figure (1): Percentage distribution of studied nurses' sources of information (n=110).**

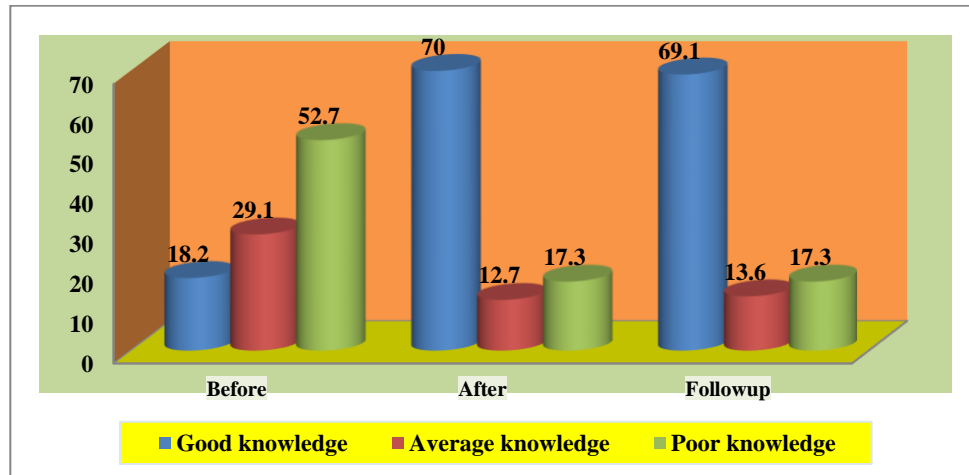


**Table (2): Comparison of studied nurses' knowledge about evidence-based postpartum care (n=110).**

Knowledge elements of postpartum care	Pre-intervention n=110				Post-intervention n=110				Follow up n=110				X <sup>2</sup>	P value
	Correct answer		Incorrect answer		Correct answer		Incorrect answer		Correct answer		Incorrect answer			
	No	%	No	%	No	%	No	%	No	%	No	%		
Definition of postpartum term	90	81.8	20	18.2	99	90	11	10	97	88.2	13	11.8	2.40	0.081
Definition of postpartum care	80	72.7	30	27.3	88	80	22	20	87	79.1	23	20.9	1.23	0.204
Phases of the postpartum period	82	74.5	28	25.5	97	88.2	13	11.8	96	87.3	14	12.7	5.87	0.009
Physiological changes in the mother	51	46.4	59	53.6	95	86.4	15	13.6	93	84.5	17	15.5	37.65	0.000
Definition of episiotomy and REEDA scale assessment	76	69.1	34	30.9	97	88.2	13	11.8	96	87.3	14	12.7	10.82	0.001
Nursing care of episiotomy based on EBNP	80	72.7	30	27.3	99	90	11	10	97	88.2	13	11.8	9.71	0.001
Common complications during the postpartum period	52	47.3	58	52.7	95	86.4	15	13.6	94	85.5	16	14.5	36.16	0.000
Definition of postpartum hemorrhage	80	72.7	30	27.3	99	90	11	10	98	89.1	12	10.9	9.71	0.001
Types of postpartum hemorrhage	64	58.2	46	41.8	94	85.5	16	14.5	92	83.6	18	16.4	18.88	0.000
Causes of each type of PPHge	51	46.4	59	53.6	91	82.7	19	17.3	89	80.9	21	19.1	30.21	0.000
The clinical picture of each type of PPHge	52	47.3	58	52.7	96	87.3	14	12.7	94	85.5	16	14.5	38.17	0.000
Nursing management of PPHge based on EBNP	52	47.3	58	52.7	97	88.2	13	11.8	96	87.3	14	12.7	40.26	0.000

**Table (3): Comparison of studied nurses' knowledge about evidence-based nursing practice (EBNP).**

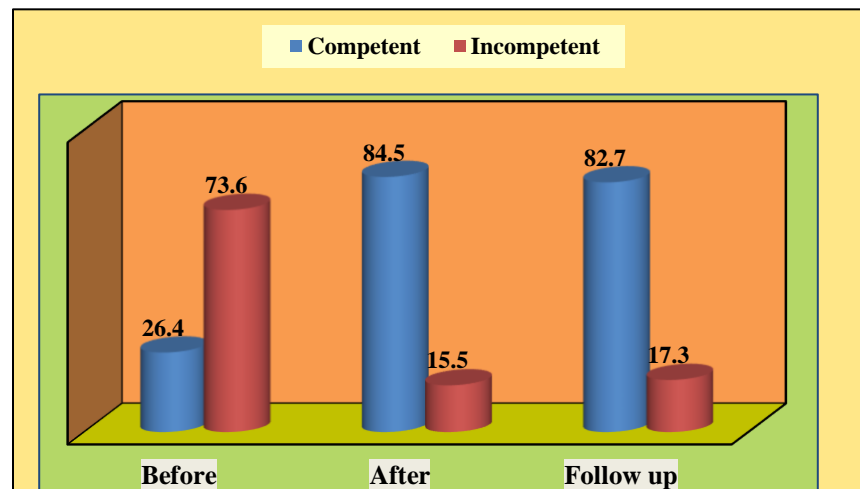
Knowledge elements of EBNP	Pre-intervention n=110				Post-intervention n=110				Follow up n=110				X <sup>2</sup>	P value
	Correct answer		Incorrect answer		Correct answer		Incorrect answer		Correct answer		Incorrect answer			
	No	%	No	%	No	%	No	%	No	%	No	%		
Definition of evidence-based nursing practice concept	21	19.1	89	80.9	95	86.4	15	13.6	93	84.5	17	15.5	97.18	0.00
Benefits of EBNP	52	47.3	58	52.7	83	75.5	27	24.5	81	73.6	29	26.4	17.25	0.00
Needs of EBNP	52	47.3	58	52.7	88	80	22	20	87	79.1	23	20.9	24.06	0.00
Sources of EBNP	38	34.5	72	65.5	80	72.7	30	27.3	77	70	33	30	30.72	0.00
Advantages and disadvantages of EBNP	27	24.5	83	75.5	90	81.8	20	18.2	88	80	22	20	70.17	0.00
Barriers and facilitators to implementing EBNP	31	28.2	79	71.8	80	72.7	30	27.3	77	70	33	30	41.89	0.00
process of evidence-based practice according to the PICOT model	33	30	77	70	81	73.6	29	26.4	79	71.8	31	28.2	40.21	0.00
Components of the PICOT model	29	26.4	81	73.6	78	70.9	32	29.1	76	69.1	34	30.9	41.92	0.00
Strategies to promote evidence-based nursing practice during postpartum care.	30	27.3	80	72.7	79	71.8	31	28.2	78	70.9	32	29.1	41.89	0.00
Competent nursing care in postpartum unit based upon EBNP	25	22.7	85	77.3	78	70.9	32	29.1	77	70	33	30	49.36	0.00



**Figure (2):** Percentage distribution of total knowledge level of studied nurses regarding postpartum evidence-based care at pre, and post-intervention phases and follow-up (n=110).

**Table (4):** Comparison of studied nurses' practice of evidence-based nursing during the postpartum period.

EBN practice	Pre-intervention n=110				Post-intervention n=110				Follow up n=110				X <sup>2</sup>	P value
	Correct done		Incorrect done		Correct done		Incorrect done		Correct done		Incorrect done			
	No	%	No	%	No	%	No	%	No	%	No	%		
Abdominal examination for fundus involution	29	26.4	81	73.6	96	87.3	14	12.7	95	86.4	15	13.6	83.16	0.000
Perineal care	44	40	66	60	94	85.5	16	14.5	93	84.5	17	15.5	48.60	0.000
Immediate care of newborn	47	42.7	63	57.3	94	85.5	16	14.5	93	84.5	17	15.5	43.62	0.000
Fundus and lochia assessment	36	32.7	74	67.3	94	85.5	16	14.5	92	83.6	18	16.4	63.25	0.000
Fundus massage	39	35.5	71	64.5	94	85.5	16	14.5	91	82.7	19	17.3	57.51	0.000
Breast care	74	67.3	36	32.7	93	84.5	17	15.5	92	83.6	18	16.4	8.97	0.000
Pitting edema assessment	42	38.2	68	61.8	94	85.5	16	14.5	92	83.6	18	16.4	52.07	0.000
Caring for the eclamptic patient	38	34.5	72	65.5	94	85.5	16	14.5	93	84.5	17	15.5	59.39	0.000
Assessment of bladder and bowel	35	31.8	75	68.2	94	85.5	16	14.5	91	82.7	19	17.3	65.23	0.000
Assessment Episiotomy (REEDA)	36	32.7	74	67.3	93	84.5	17	15.5	92	83.6	18	16.4	60.88	0.000
Homan's Sign-for DVT	34	30.9	76	69.1	94	85.5	16	14.5	93	84.5	17	15.5	67.25	0.000
Assessment Emotional Status	30	27.3	80	72.7	93	84.5	17	15.5	92	83.6	18	16.4	73.18	0.000



**Figure (3):** Percentage distribution of total practice of studied nurses regarding postpartum evidence-based practice at pre, and post-intervention phases and follow-up (n=110).

**Table (5): Frequency and percentage distribution of barriers facing the nurses to implement evidence-based nursing practice (n=110).**

Barriers	Nurses rating (n=110)					
	Disagree		Neutral		Agree	
	No	%	No	%	No	%
The nurse does not feel she or he has enough authority to change patient care procedures	20	18.2	50	45.4	40	36.4
There is insufficient time on the job to implement new ideas	19	17.3	24	21.8	67	60.9
The facilities in the postpartum unit are inadequate for the implementation of EBNP	20	18.2	15	13.6	75	68.2
Implications for practice are not made clear	18	16.4	15	13.6	77	70
The nurses feel the results are not generalizable to their setting	15	13.6	6	5.5	89	80.9
The nurse does not have time to read the research	9	8.2	8	7.3	93	84.5
The administration will not allow the implementation	13	11.8	8	7.3	89	80.9
The nurse is isolated from knowledgeable colleagues with whom to discuss the research	13	11.8	7	6.4	90	81.8
The nurse sees little benefits to self	11	10	10	9.1	89	80.9
The research is not reported clearly and in readable	13	11.8	10	9.1	87	79.1
The nurse feels the benefits of changing practice will be minimal	13	11.8	7	6.4	90	81.8
Research reports/articles are not readily available	13	11.8	11	10	86	78.2
Physicians will not cooperate with the implementation	31	38.2	58	52.7	21	19.1
There is no documented need to change the practice	28	25.4	40	36.4	42	38.2
The nurse is unwilling to change/ try new ideas	63	57.3	20	18.2	27	24.5
The nurse is unaware of the research	20	18.2	19	17.3	71	64.5
The nurse does not feel capable of evaluating the quality of the research	19	17.3	9	8.2	82	74.5
Other staff are not supportive of the implementation	19	17.3	9	8.2	82	74.5
The research is not relevant to nurses' practice	17	15.4	13	11.8	80	72.7

**Table (6): Relation between total score of knowledge and personal characteristics of the nurse throughout program phases (n=110).**

Personal Characteristics	Pre-intervention group n=110				Post-intervention group n=110				Follow up n=110			
	Competent		Incompetent		Competent		Incompetent		Competent		Incompetent	
	No	%	No	%	No	%	No	%	No	%	No	%
<b>Age</b>												
<20 years	0	0	9	100	0	0	9	100	0	0	9	100
20-30	0	0	34	100	26	76.5	8	23.5	24	70.6	10	29.4
>30	29	43.3	38	56.7	67	100	0	0	67	100	0	0
	X <sup>2</sup> =21.121, p-value =0.000				X <sup>2</sup> =53.88, p-value =0.000				X <sup>2</sup> =55.225 p-value =0.000			
<b>Experience</b>												
<5	0	0	43	100	26	60.5	17	39.5	24	55.8	19	44.2
5-<10	0	0	38	100	38	100	0	0	38	100	0	0
≥10	29	100	0	0	29	100	0	0	29	100	0	0
	X <sup>2</sup> =77.686, p-value =0.000				X <sup>2</sup> =23.773, p-value=0.000				X <sup>2</sup> =27.154 p-value =0.000			
<b>Educational level</b>												
Nursing diploma	0	0	9	100	0	0	9	100	0	0	9	100
Technical institute of nursing	0	0	20	100	12	60	8	40	10	50	10	50
Baccalaureate degree	9	14.7	52	85.3	61	100	0	0	61	100	0	0
Postgraduate	20	100	0	0	20	100	0	0	20	100	0	0
	X <sup>2</sup> =42.784, p-value =0.000				X <sup>2</sup> =55.962, p-value =0.000				X <sup>2</sup> =58.811, p-value =0.000			
<b>Attending training courses regarding post- Partum evidence-based nursing practice</b>												
Yes	20	100	0	0	20	100	0	0	20	100	0	0
No	9	10	81	90	73	81.1	17	18.9	71	78.9	19	21.1
	X <sup>2</sup> =67.655, p-value=0.000				X <sup>2</sup> =4.428, p-value =0.024				X <sup>2</sup> =5.057, p-value =0.015			



**Table (7): Relation between total level of practice and personal characteristics of the nurse throughout program phases (n=110).**

Personal Characteristics	Pre-intervention N=110				Post-intervention N=110				Follow up N=110			
	Competent		Incompetent		Competent		Incompetent		Competent		Incompetent	
	No	%	No	%	No	%	No	%	No	%	No	%
<b>Age</b>												
<20 years	0	0	9	100	0	0	9	100	0	0	9	100
20-30	0	0	34	100	26	76.5	8	23.5	24	70.6	10	29.4
>30	29	43.3	38	56.7	67	100	0	0	67	100	0	0
	X <sup>2</sup> =21.121, p-value=0.000				X <sup>2</sup> =53.882, p-value=0.000				X <sup>2</sup> =55.225, p-value =0.000			
<b>Experience</b>												
<5	0	0	43	100	26	60.5	17	39.5	24	55.8	19	44.2
5- <10	0	0	38	100	38	100	0	0	38	100	0	0
≥10	29	100	0	0	29	100	0	0	29	100	0	0
	X <sup>2</sup> =77.686, p-value=0.000				X <sup>2</sup> =23.773, p-value=0.000				X <sup>2</sup> =27.154, p-value=0.000			
<b>Educational level</b>												
Nursing diploma	0	0	9	100	0	0	9	100	0	0	9	100
Technical institute of nursing	0	0	20	100	12	60	8	40	10	50	10	50
Baccalaureate degree	9	14.7	52	85.3	61	100	0	0	61	100	0	0
Postgraduate	20	100	0	0	20	100	0	0	20	100	0	0
	X <sup>2</sup> =42.784, p-value=0.000				X <sup>2</sup> =55.962, p-value=0.000				X <sup>2</sup> =58.811, p-value=0.000			
<b>Attending training courses regarding post- Partum evidence-based nursing practice</b>												
Yes	20	100	0	0	20	100	0	0	20	100	0	0
No	9	10	81	90	73	81.1	17	18.9	71	78.9	19	21.1
	X <sup>2</sup> =67.655, p-value =0.000				X <sup>2</sup> =4.428, p-value =0.024				X <sup>2</sup> =5.057, p-value =0.015			

**Table (8): Correlation between the total score of knowledge and practice of studied nurses throughout the program phases (N=110)**

Program phases	Total Knowledge					
	Pre-program		Post-program		Follow Up	
	r	p-value	r	p-value	r	p-value
Practices pre	0.767	0.000				
Practices post			0.760	0.000		
Practices follow up					0.804	0.000

## 6. Discussion

Evidence-based practice (EBP) increases the quality of patient care and reduces healthcare costs. Evidence-Based Practice uses the best scientific evidence and integrates it with clinical experience, incorporating patient values and preferences in professional nursing care to give the best clinical decisions (Melnyk, & Fineout-Overholt, 2019). Guidelines are important tools in EBP that can reduce healthcare variation and improve patient outcomes, so This study aimed to evaluate the effect of implementing evidence-based nursing practice guidelines related to postpartum care on maternity nurses' performance

Concerning the personal characteristics of the maternity nurses, the current study's findings reveal mean age of the nurse was 33.6±9.86 years. The highest percentages were <5 experience. More than half had Baccalaureate degrees, and most did not attend training courses regarding postpartum evidence-based nursing practice.

This finding agreed with a study by Wallen (2019), who studied "Nursing competence and confidence during obstetric emergencies through simulation: A quality improvement project" the study found that the most common

age category observed was 32-37. All participants in the study were females. The category of years worked in OB that was most frequently observed was 2-5. 92% of participants had never taken part in OB simulations, and none had RNC-OB certifications. Moreover, the study agreed with El-Khawaga et al. (2019) regarding nurses' knowledge and practice; they assessed the impact of implementing a teaching program about immediate postpartum care. They discovered that nurses' ages ranged from 20 to 55, with a mean age of 33.72±9.894, and that 75% of nurses had not attended any training sessions. Furthermore, a study by Abu Hadaf et al. (2019) assessed the perception of the graduates of the professional diploma in midwifery educational program about the effect of the educational program on graduates' knowledge, attitudes, and practices in the Gaza Strip. They discovered that only 20% of the studied nurses had attended training sessions in the past five years or less.

Regarding the percentage distribution of source of information, the current study finds that two-thirds of the study sample were taken information from the internet; this may be due to advanced technology and the internet giving information in a little or fast time.

Regarding the knowledge score level among nurses, the present study's findings indicated that more than half of nurses had a poor level of knowledge before implementing the guidelines because the studied nurses did not receive the needed refreshment course regarding postpartum care. Meanwhile, after implementing the guidelines, more than two-thirds of the nurses had a good level of knowledge with highly statistically significant differences between pre and post-intervention in most of the studied domains. This finding may be because the guidelines were simple, interesting, and explained by PowerPoint, videos, and maternal and fetal models. Also, because of the use of various teaching strategies.

Also, in our opinion, such enhancement might be accounted for by nurses' concern to learn and acquire knowledge about the study subject as well as the written guidelines that were distributed to nurses and used as a current reference, which was supportive of nurses' attainment of knowledge.

This result is congruent with *Said et al. (2022)*, entitled "Effect of the educational guideline on nurses' performance regarding postnatal care of mothers and neonates," and found that nurses' knowledge shows a significant improvement post-implementation of health educational guidelines regarding the care of postnatal mothers and neonates compared to pre-implementation.

This result is consistent with *Mohamed et al. (2022)*, who studied the evidence-based practices guideline on nurses' performance regarding the care of aborted women and discovered a statistically significant difference between their knowledge before and after implementing the evidence-based guidelines.

Regarding the practice score level among nurses throughout the implementation of the guidelines, the findings of the present research reveal that the near three-quarters of nurses had an incompetent level of practice regarding evidence-based nursing practice related to postpartum procedures, e.g., abdominal examination, fundus massage, lochia assessment, bladder assessment, and REEDA scale before implementation of the guidelines. This finding might be due to the lack of workshops to teach them evidence-based obstetric techniques that would have positively affected their practice. The training program also uses various instructional techniques and media, including videos, demonstrations, and re-demonstrations, to teach nurses how to carry out the procedures according to the latest evidence. After the guidelines were implemented, most were practiced at a competent level, with a statistically significant difference regarding all procedures taught.

This result is congruent with *Mohamed et al. (2022)*, who revealed that adopting such guidelines significantly positively impacted nurses' performance in caring for aborted women.

The present study's findings also agree with those of *Jasper et al. (2017)*, which reported that adopting the training program improved the nurse's practice score. While the results of the study conducted by *Parra Cotanda et al. (2016)* revealed that the deployment of the training program did not improve nurses' practices, disagree with the current

study finding. The discrepancy between the two studies may be due to inadequate practical training or the time of training unsuitable, or sample characteristic as nurses not being interested in the training program.

There are many barriers to implementing EBP, and the process of implementing EBP could be faster. Common barriers include lack of time to search for evidence, lack of understanding and interpreting skills for research findings, inadequate access to information technology, limited information technology (IT) skills, lack of autonomy to change practice, and lack of information searching skills (*Ellboudy et al., 2018*).

Regarding barriers of nurses that hinder the implementation of EBNP in this study, the findings reveal that most of the studied nurses agree that the nurse needs more time to read the research, inadequate knowledge, and resources. The administrators will not allow for implementation. These results align with the study by *Alatawi et al. (2020)*, who investigated "Barriers to implementing evidence-based practice in the nursing profession: A literature review." The study concluded that nursing administrators and educators must facilitate the adoption of evidence-based practice. In line with the study by *Mathieson et al. (2019)* indicated that lack of time to investigate, evaluate, analyze, communicate, and implement research evidence was among several obstacles to implementing EBP. The Nurses often note inadequate resources and a lack of organizational support for research use. From the researchers' point of view, it is important to assess barriers to overcome the identified ones, using various strategies such as adopting the evidence-based practice. It can be facilitated through training and education to raise nursing knowledge and skills, scheduling nursing time, supporting nurses with the necessary resources, and providing adequate supervision, which positively impacts the quality of care.

The relation between the nurses' characteristics and the total level of knowledge and practice of the nurses concluded as there is a statistically significant relationship between the total score of nurses' knowledge and practice and their characteristics before and immediately post guidelines implementation and at follow-up. This finding may be due to many constituents that influence the knowledge and the practice of nurses, such as workshops, self-learning, and conferences, and their linkage with the personal characteristics of the nurse. Furthermore, in a study conducted at Orotta National Referral Maternity Hospital, *Kavitha et al. (2014)* evaluated the knowledge level of nurse interns on emergency obstetric treatment. According to the study, there was no correlation between nurses' age and their knowledge of and practice of emergency obstetric management.

Concerning the correlation between knowledge and practice scores, the current study's findings reveal a statistically significant positive correlation between nurses' knowledge and practice scores pre and after implementing the guidelines and at follow-up. These relations may be due to improvements in the knowledge that may result from nurses learning new skills that improve their practice. Also,

the training programs aid nurses in learning the necessary skills and practicing them until they become competent.

These findings agreed with the study of *Nassar (2015)*, who said that the training program's applications had been more successful in raising nurses' knowledge, which led to improved practice.

Additionally, *Mohamed (2018)*'s study found a correlation between participants' knowledge and practice following the program's implementation. These improvements in practice may result from nurses learning new skills that improve their practice. Also, the training programs aid nurses in learning the necessary skills and practicing them until they are competent.

Finally, professional skills are the most important aspect of practical training in nursing education. They concentrate on developing competent nurses in all areas of knowledge, skills, and professional attitude. Clinical training nurses have many opportunities to build professional identities and develop their psychomotor abilities (*Abdelrahman & Omar, 2018*). The findings of this research study supported the research hypothesis, which is that maternity nurses' performance regarding evidence-based nursing practices related to postpartum care showed significant improvement after the implementation of evidence-based nursing practices guidelines compared to pre-intervention

## 7. Conclusion

Based on the current study findings, the study concluded that the maternity nurses' performance regarding postpartum evidence-based nursing practices showed significant improvement after implementing evidence-based practice guidelines that supported the study hypothesis and achieved the aim of the study.

The barriers for nurses that hindered the implementation of EBNP in this study were that the nurse did not have time to read the research, inadequate knowledge and resources, and their belief that the administration would not allow them to implement the EBNP. Moreover, there was a highly statistically significant positive relationship between the studied nurses' knowledge and practice pre- and post-guideline implementation and at follow-up.

## 8. Recommendations

The study suggests the following recommendations:

- Encourage continuous educational training programs and workshops for nurses regarding evidence-based nursing in obstetrics and gynecological units.
- Mind maps or pictures about nursing management of postpartum hemorrhage should be present at the workplace.
- Development of periodic workshops for nurses regarding time management to attain time for research and updating performance.
- Further research is needed to apply and test the evidence-based guidelines for nurses working in normal labor.

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