

## Effectiveness of Placental Stage of Labor Care Protocol on Performance of Maternity Nurses

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### Abstract

**Background:** The placental stage of labor occurs between the completion of the newborn's delivery and the completion of the placenta's delivery. **Aim:** To evaluate the effectiveness of placental stage of labor care protocol on performance of maternity nurses in Port Said city. **Design:** A quasi-experimental design was used. **Setting:** The current study was performed in the labor and delivery departments of two hospitals in Port Said: Obstetrics and Gynecological Specialized Hospital and Alhayaa Hospital. **Subjects:** A total of 48 nurses were selected convenience for the intervention part of this study. **Tools:** Structured Self-administered questionnaire and an observational checklist were used to collect data. **Results:** In the pre-test, more than two thirds of the studied nurses had an unsatisfactory level of knowledge and practices regarding caring of women during the placental stage of labor, but in the post-test and follow-up tests, the highest percentage of the nurses had a satisfactory level of knowledge and practices. Also, there was a highly statistically significant positive correlation between nurses' knowledge and practice about caring of women during placental stage of labor at pre-post and follow-up of developed nursing protocol implementation. **Conclusion:** The placental stage of labor care protocol had a highly statistically significant positive impact on the studied maternity nurses' performance regarding caring of women during the placental stage of labor. **Recommendations:** Availability of the developed care protocol and creating a standardized guideline for different services to follow in order to sustain and provide high-quality health care for women during the third stage of labor.

**Keywords:** Placental stage of labor, Care protocol, Maternity nurses, Performance.

### Introduction

Labor is described as a series of actions that occur in the genital organs in order to expel the uterus's products of conception through the vaginal canal into the outside world (Gabbe et al., 2017). The third stage of labor, also known as the placental stage of labor, begins shortly after the baby is born and includes the separation and detachment of the placenta from the uterine wall, as well as full

evacuation of the placenta and membrane (Begley et al., 2019).

In 3% of women, the placental stage of labor lasts longer than 30 minutes, with an increased frequency of problems (Bhutia et al., 2018). The difficulties surrounding the third stage of labor should be explained to the patient. The patient and her partner should be asked about their choices for the delivery procedure, as well as any risk factors that may be present and their consequences. If

management options are restricted, the patient should be told about deviations from standard practice and must understand the implications and potential hazards. There should be no misconceptions between the patient and the healthcare staff. Patients who are at high risk for difficulties during the placental stage of labor should be made aware of special treatment issues (Walsh, 2014).

The nurse, who is in a key position by disseminating knowledge about the placental stage of labor, ensuring and providing proper service to enhance women's role in the implementation of efficient self-care practices and becoming more independent, is the main measure to reduce maternal mortality and morbidity (Lorraine, 2012). Nurses play an important role in labor; women who got nursing care had higher self-esteem, self-efficacy, and empowerment, as well as a sense of mastery during labor and the childbearing period, all of which are important aspects of a woman's birth experience (Farahat et al., 2015).

In addition, the major purpose of nursing care is to ensure that the mother and the newborn have the best possible outcome. As a result, nursing care focuses on developing a meaningful, open relationship, identifying fetal condition, fostering the woman's self-direction, as well as supporting the woman and her family throughout the labor and delivery process. Furthermore, caring for a woman during the placental stage of labor entails supporting normal physiologic changes as well as anticipating and responding quickly to probable difficulties such as postpartum hemorrhage (PPH), which is the most common complication at this period (Schorn et al., 2015).

Midwifery care during the placental stage of labor is focused on ensuring complete separation and ejection of the placenta, as well as avoiding dangerous and excessive blood loss, which can result in maternal morbidity and mortality. Nurses are essential to the healthcare system. Midwives are crucial in placental stage

labor management since they are in charge of disseminating information about the third stage of labor, as well as ensuring and delivering excellent service to increase the woman's involvement in implementing effective self-care practices (Smith & Brennan, 2020).

### **Significance of the study:**

Because of the potential of PPH, the placental stage of labor has been labelled as "hazardous". Globally PPH is the largest cause of maternal death, accounting for over 25% of all pregnancy-related deaths. To avoid immediate and long-term unfavorable effects, the third stage of labor must be managed and monitored. This is traditionally the shortest period of childbirth, but it is also the most dangerous for maternal morbidity and mortality (Gowan, 2015). The obstetric nurse wields a great deal of influence over the outcome of the labor. She must also be adept at managing the placental stage of labor. Therefore, this study was fulfilling to evaluate the effectiveness of placental stage of labor care protocol on performance of maternity nurses in Port Said city.

### **Aim of the Study**

This study aimed to evaluate the effectiveness of placental stage of labour care protocol on performance of maternity nurses.

#### **Research objectives: -**

- a) Assess the maternity nurses' knowledge related to caring of women during placental stage of labor.
- b) Assess the maternity nurses' practice related to caring of women during placental stage of labor.
- c) Develop nursing protocol for maternity nurses for caring of women during placental stage of labor.
- d) Implement developed nursing protocol.

e) Evaluate the maternity nurses' knowledge and practice regarding caring of women during placental stage of labor after implementation of the developed nursing protocol.

#### **Research hypothesis: -**

The developed care protocol would have positive effect on performance of maternity nurses regarding caring of women during placental stage of labor.

**Operational definition of maternity nurse's performance: It means knowledge and practice of the maternity nurse's.**

#### **Subjects and method**

##### **Research Design:**

Quasi-experimental study design was utilized in this study.

##### **Study subjects:**

The current study was carried out in delivery room of obstetrics and gynecology department at two hospitals in Port Said city namely Obstetrics and Gynecological Specialized and Alhayaa hospital that follow the comprehensive health insurance.

##### **Study sample:**

Convenience sample of all nurses worked in obstetrics and gynecology department (48 nurse) at the previous mentioned setting were enrolled in this study during the period of data collection (eight months).

##### **Tools for data collection:**

To collect data for this study two tools were used: -

**Tool I: Structured self-administered questionnaire which consisted of two parts:**

**Part one:** designed by the researcher to collect data such as name, age, qualification, experience and previous in labor training ....ect.

**Part two:** included information about nurses' knowledge that was adopted from David et al. (2020), modified and translated to Arabic by the researcher to evaluate the nurses' knowledge of the third stage of labor, such as the definition, signs of placental separation, effective treatment for the third stage of labor, and the function of the nurse during the placental stage of labor, etc.

The questionnaire had 69 questions, and the total score was 18 out of a possible 100. The correct answer was scored as (1), while the incorrect response was scored as (zero). Following the summarization and conversion to a percentage score. It was as follows: satisfactory knowledge if the score was greater than 75 percent, and unsatisfactory knowledge if the score was less than 75 percent.

##### **Tool II: Nurses Practice Observational Checklist:**

This tool was adopted from Prevention of Postpartum Hemorrhage Initiative (POPHI) (2016) and modified by researcher to evaluate nurses' practice for caring of women during the placental stage of labor. It evaluated the practical nursing procedures that must be performed at the placental stage.

The checklist had 69 steps, with a total score of 138 points. Each step was graded as "done correctly" received two points, "done wrongly" received one point, and "not done" received zero. If the total score is more than 80 percent, the practice is considered satisfactory; if the total score is lower than 80 percent, the practice is considered unsatisfactory.

##### **Content validity:**

A panel of seven nursing professors from different faculties of nursing, all of whom

are professionals and experts in nursing management, evaluated the two tools for clarity, relevance, applicability, comprehensiveness, understanding, and simplicity of implementation. Minor changes were made to the tools, according to their evaluation.

#### **Content reliability:**

The structured self-administered questionnaire had a Cronbach's alpha of 0.87, whereas the observational checklist had a Cronbach's alpha of 0.92. Cronbach's alpha test was used to verify the tools' reliability.

#### **Ethical considerations:**

The study protocol was submitted to the Scientific Research Ethics Committee at Port Said University's Faculty of Nursing for approval. An official agreement was obtained by sending an official letter from the college of nursing to the study setting's authorities, requesting their permission to collect data. The purpose of the study was told to the studied nurse in order to acquire their trust and confidence. When explaining the study tools to them, it was explained that the instruments would not disgrace them or hurt them in any way. Each nurse gave oral consent to participate in the study, and was promised that the data collected would be kept private. The researcher stressed that participation was entirely voluntary.

#### **Administrative design:**

Before beginning any step of the study, the Dean of the college of nursing sent an official letter to the director of each of the previously specified study settings.

#### **Pilot study:**

A pilot study was conducted on five nurses, with ten percent of the total sample

working on the birth department. The purpose of the pilot study was to sure if the data collection tool was relevant and applicable, to find out how long they would take to be completed, and to see if there were any issues that would obstruct the data collection process. Following the pilot study, it was discovered that the tool's words were clear, relevant, and appropriate. Only a few words in the wards have been changed.

#### **Fieldwork:**

##### **Procedures**

##### **1.Preparation phase:**

Based on a systematic review, this phase intended to prepare the tools utilized in data collecting. The researcher then developed an evidence-based guideline and protocol for nurses' performance throughout the placental stage of labor based on previous and current related literature by consulting national and international journals, conferences, and publications.

##### **2. Assessment phase:**

A Structured self-administrated questionnaire was used to assess personal data, nurse's knowledge and an observation checklist was used to assess nurse's practice to collect baseline data and identify their needs.

##### **Nursing care protocol:**

The following data was included in the developed protocol which covered the following theoretical and practical aspects of nursing care of women during the placental stage of labor: definition of the third stage of labor, physiology of the third stage of labor, methods for placenta detachment, nursing care in the third stage of labor, warning signs and complications during the third stage of labor, practical steps for nursing care in the third stage of labor, uterine massage, definition of Placenta examination, function of the placenta, describe the placenta, how to do a placental examination, and follow a nursing care guide during the third stage of labor.

### 3. Implementation phase:

From the beginning of February 2021 to the end of September 2021, all nurses at the previous specified setting participated in the study. The researcher began by presenting a protocol to a group of nurses.

The study of nurses group was divided into eight subgroups, each with four to six nurses. As a pre-test, the researcher gave the tool to nurses. Each questionnaire took between 10 and 20 minutes to complete on average. Also, the researchers assess the nurse's practice during the placental stage of labor.

The researcher had two sessions every week for each group. In the first session, the researcher gave the nurses an educational program based on their needs and baseline data from the pre-test about the placental stage of labor, its physiology, methods for placenta separation, nursing care for the third stage of labor, dangerous signs and complications for the third stage of labor. The researcher discussed the definition of the placenta, its function, descriptions of normal placental characteristics, and clinical steps of placenta evaluation in the second session.

### 4. Evaluation phase:

The posttest was conducted after the final session, using the same tool as the pre-test. The researcher used the follow-up immediately, one month later, and three months later after the post-test was completed.

**Statistical design:** The SPSS 20.00 statistical software package was used for data entry and statistical analysis. For qualitative variables, descriptive statistics in the form of frequencies and percentages were used, as well as means and standard deviations for quantitative variables. The chi-square test was used to compare qualitative variables. Statistical significance was defined as a p-value of less than 0.05, while highly statistical significance was defined as a p-value of less than 0.01.

### Results

**Table 1** indicates that the mean age of the nurses analyzed was  $30.10 \pm 5.01$ , that nearly half of the nurses in the study (48%) were between the ages of 25 and 30, and that 72.9 percent of them were married. More over a fifth of the nurses surveyed (41.6 percent) had a bachelor's degree, while 35.5 percent attended a nursing technical institute. In terms of nursing experience, 39.8% of the nurses analyzed had more than ten years of experience, with a mean of  $9.28 \pm 6.08$ , and 56.2 percent of them had 1-5 years of nursing experience in the labor and delivery unit. In addition, this table shows that 70.3 percent of the nurses in the study did not attend training courses on the placental stage of labor, while 29.7% attended training courses on the placental stage of labor.

**Table 2** shows statistically significant improvement in nurses' total knowledge level regarding caring of women during the placental stage of labor at three phases after developed nursing protocols implementation ( $p < 0.001$ ).

**Figure 1** describes a statistically significant increase in nurses' overall knowledge level about caring of women during the placental stage of labor following the implementation of the nursing protocol reported at the three post phases. It's revealed that, 33.3 percent of nurses had only enough knowledge prior to the intervention, but this raised to 89.6% at the posttest immediately, 81.2 percent after one month, and 70.3 percent after three months ( $p < 0.001$ ).

In all evaluated variables, **Table 3** shows statistically significant improvement in nurses' total practice level regarding caring of women during the placental stage of labor at three phases after developed nursing protocols implementation ( $p < 0.001$ ).

**Figure 2** shows a statistically significant improvement in the overall practice of nurses regarding caring of women during the placental stage of labor at the three post phases. In all, 31.2 percent of nurses achieved

satisfactory performance only in the pre-intervention period, rising to 85.4 percent at the posttest immediately, 77.1 percent after one month, and 70.3 percent after three months ( $p < 0.001$ ).

**Table 4** presents that there is a highly statistically significant positive correlation between nurses' knowledge and practice about caring of women during placental stage of labor at pre-post and follow-up of developed nursing protocol implementation ( $r = -.718$ ).

**Table 1: Frequency and percentage distribution of the studied nurses regarding to their personal characteristics (n=48).**

Personal characteristics	No	%
<b>Age (year)</b>		
20-<25	5	10.4
25-30	23	48
>30	20	41.6
<b>Mean ± SD</b>	<b>30.10 ± 5.01</b>	
<b>Marital status</b>		
Single	9	18.8
Married	35	72.9
Widow	4	8.3
<b>Educational level</b>		
Diploma	11	22.9
Nursing Technical Institute	17	35.5
Bachelor	20	41.6
<b>Years of nursing experience</b>		
1-5	19	39.8
6-10	10	20.4
>10	19	39.8
<b>Mean ± SD</b>	<b>9.28 ± 6.08</b>	
<b>Years of experience labor and delivery unit</b>		
1-5	27	56.2
6-10	13	27.1
>10	8	16.7
<b>Mean ± SD</b>	<b>6.40 ± 4.81</b>	
<b>Attendee of courses on the third stage of labor.</b>		
Yes	14	29.7
No	34	70.3

**Table 2: Comparison of the studied nurses' overall knowledge about caring of women during placental stage of labor in the pre-post and follow-up nursing protocols implementation (n=48).**

Knowledge	Pre		Immediately		1 month		3 Months		Test of Sig. (p <sub>1</sub> )	Test of Sig. (p <sub>2</sub> )	Test of Sig. (p <sub>3</sub> )	Test of Sig. (p <sub>4</sub> )	of Fr=32.07 P=0.000**
	N	%	N	%	N	%	N	%					
Satisfactory	16	33.3	43	89.6	39	81.2	34	70.3	$\chi^2=15.30$ P=0.000**	$\chi^2=14.87$ P=0.000**	$\chi^2=14.10$ P=0.001**		
Unsatisfactory	32	66.7	5	11.4	9	18.8	14	29.7					
<b>Total score</b>	<b>8.52 ± 3.88</b>		<b>14.11 ± 4.27</b>		<b>13.05 ± 3.42</b>		<b>12.01 ± 3.08</b>		<b>t= 12.34</b> P= 0.000*	<b>t= 11.03</b> P= 0.001*	<b>t= 10.93</b> P=0.001*		<b>F=32.07</b> P=0.000**

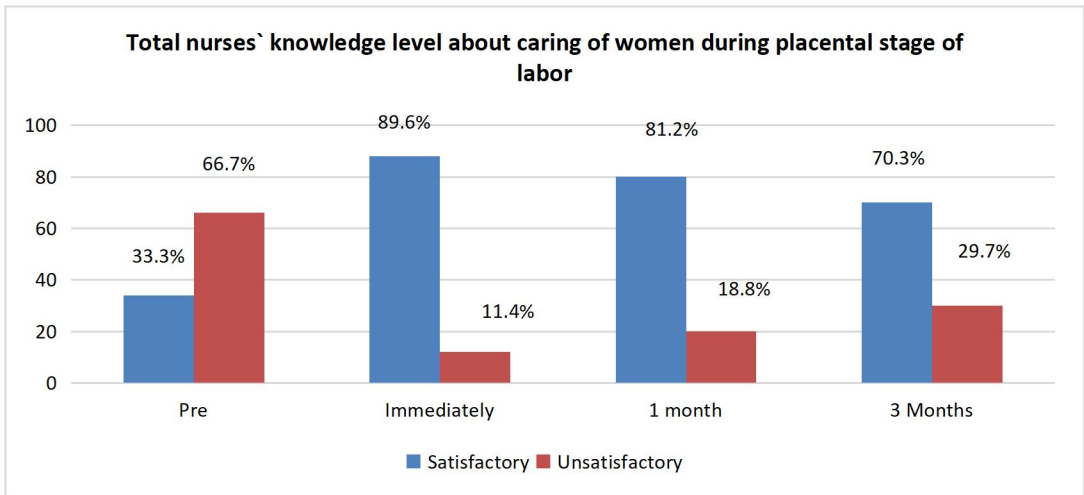


Figure 1: Percentage distribution of the studied nurses total knowledge level about caring of women during placental stage of labor at pre-post and follow up nursing protocol implementation (n=48).

Table 3: Comparison of the studied nurses' overall practice in the pre-post and follow-up nursing protocols implementation regarding caring of women during placental stage of labor (n=48).

Levels of total performance	Pre		Immediately		1 month		3 Months		Test of Sig. (p <sub>1</sub> )	Test of Sig. (p <sub>2</sub> )	Test of Sig. (p <sub>3</sub> )	Test of Sig. (p <sub>4</sub> )
	N	%	N	%	N	%	N	%				
Satisfactory	15	31.2	41	85.4	37	77.1	34	70.3	$\chi^2=9.721$ P=0.000**	$\chi^2=9.805$ P=0.000**	$\chi^2=9.770$ P=0.001**	F=24.32 P=0.000**
Unsatisfactory	33	68.8	7	14.6	11	22.9	14	29.7				
Total score	44.25 ± 17.31		115.24 ± 19.57		104.53 ± 11.93		97.82 ± 19.25		t= 14.54 P= 0.000*	t= 14.03 P= 0.001*	t= 13.27 P= 0.001*	F=38.47 P=0.000**

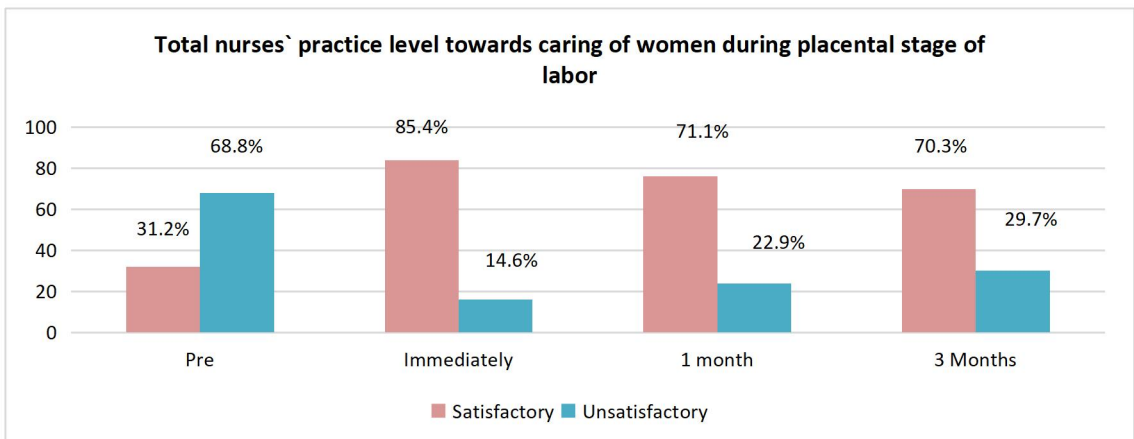


Figure 2: Percentage distribution of the studied nurses total practice level towards caring of women during placental stage of labor at pre-post and follow up nursing protocol implementation (n=48).

**Table 4: Correlation between nurses' knowledge and their practice towards caring of women during placental stage of labor at pre-post and follow up nursing protocol implementation.**

Variables	Total knowledge				
		Pre	Immediately	1 month	3 Months
Total practice	R	.397	.412	.399	.498
	p	.000**	.000**	.000**	.000**

### Discussion

The time between the birth of the baby and the delivery of the placenta and membranes is traditionally referred to as the placental stage of labor. It usually lasts between 10 and 30 minutes; the placental stage is termed extended if the placenta does not detach within 30 minutes of delivering. When the placental stage of labor lasts longer than 30 minutes, there is a six-fold increase in the risk of PPH (Ahmed, 2018). As a result, this study was carried out to evaluate the effectiveness of placental stage of labor care protocol on performance of maternity nurses in Port Said city.

The current study found a statistically significant improvement in total knowledge of nurses about caring of women during the placental stage of labor after following a nursing protocol, with the more than two thirds of them reporting unsatisfactory knowledge prior to the intervention compared to highest percentage had satisfactory level after the intervention. This could be explained by offering intervention to nurses, which leads to an improvement in their expertise and information. This finding is in line with Daef et al. (2017), who found that nurses' knowledge levels were unsatisfactory pre-test compared to a high degree of satisfaction post-test. Similarly, In a study titled "Nursing Care of the Third and Fourth Stages of Labor: Protocol of Care" conducted in Egypt, by Wasef et al. (2018) who found that more than two-thirds of the nurses studied had poor knowledge of the third and fourth stages of labor in the pre-intervention test, but improved

to more than three-quarters in the post-intervention test, with a P value<0.001.

In contrast, Bhutia et al. (2018), who conducted his research in Gangtok, Sikki and titled "Knowledge and Practice of Active Management of Third Stage of Labor (AMTSL) among Nursing Students in Selected Hospitals," and found that the majority of nursing students had a good level of knowledge about AMTSL. Differences in attending nurses renewed courses on the third stage of labor could explain the disparity between the previous studies and the current one.

The findings of the current study demonstrated that there was a highly statistically significant difference in practice among the studied nurses regarding caring of women during the third stage of labor after intervention compared to pre intervention. Nurses' overall practice was unsatisfactory prior to intervention among more than two thirds of them, but the highest percentage of them had satisfactory level at post three phases. This could be due to the fact that nurses' lack of experience in third-stage labor management, which can make implementing the necessary protocol of care for the third stage of labor difficult, and nurses may fail to follow the standardized guideline's for doing protocol of care. In addition, training sessions were successful in improving the practice of maternity nurses.

In the same line Bhutia et al. (2018) reported that an observational checklist was used to assess the level of practice of active management of the third stage of labor among forty nurses, and that over half of the sample



had poor practice. Furthermore, in a study named "A Systemic Approach to Evaluate Nursing Practice of Active Management Third Stage of Labor Protocol" conducted in India, by **Saha (2019)** who found that nursing personnel's ongoing practice of managing the third stage of labor protocol was low. There is a significant gap in the implementation of WHO-recommended Steps. Thus, to increase nurse performance, various nursing intervention approaches, in-service trainings, and refresher courses were required.

On the other hand, study named "Care during the third stage of labor: nurses opinions and practise in an Albanian maternity hospital," that performed by **Bimbashi et al. (2010)** who discovered that the majority of the study sample reported always or usually adopting active management for the third stage of labor. In both reported and actual practise, the timing and selection of the uterotonic medication was similar. Although some of them claimed to wait longer than a minute before clamping the umbilical cord, this was not confirmed in fact. In half of the births, controlled cord traction was used. The disparity between the previous research and this one could be related to variances in the number of years that nurses had worked in a labor and delivery ward.

Furthermore, these findings are consistent with those of **Hassan et al. (2017)**, who found a significant improvement in nurses' knowledge and practice in the labor unit after implementing a systematic placental assessment programme in both Ain Shames and Beni-Suef hospitals. Also, **Waghmare et al. (2019)** reported that the majority of the nurses in the trial performed poorly when it came to the placenta and placental examination prior to participating in the protocol. However, after applying the programme, nurses' performance in terms of placental assessment improved significantly.

In contrast, **Yaekob et al., (2015)** conducted a study in Ethiopia titled "Assessment of knowledge, attitude, and practise of midwives on active management of

third stage of labor at selected health centres," who found that most midwives achieve satisfactory scores of practises regarding active management and all basic components about placenta and its examination. The disparity between the two studies could be related to differences in nursing experience in the labor and delivery ward, attendance at training courses, and hospital performance evaluations.

In terms of correlation between nurses' knowledge and their practice about caring of women during the placental stage of labor at pre-post and follow-up nursing protocol implementation, the current research found that there was a highly statistically significant positive correlation. That can be explained by the fact that nurses' educational level, job training, and level of knowledge had a major impact on their level of practice when it came to managing the placental stage of labor.

This finding is consistent with that of **Bhutia et al. (2018)**, who found a positive association between knowledge and practise of active management of the placental stage of labor among the nurse's students studied ( $p < 0.05$ ). It means that active management of third stage of labor practice improved as a result of improved knowledge.

## Conclusion

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The findings of this study confirmed the research hypotheses that there was highly statistically significant improvement in nurses' knowledge and practices after implementation of the developed protocol regarding caring of women during the placental stage of labor in comparison to pre-intervention. Also, there was highly statistically significant correlation between of the studied nurse's knowledge and practice as a result; the developed care protocol implementation had a positive impact on the nurse's performance.

## Recommendations

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**The following suggestions were made based on the findings of the current study:**

- Developing in-service educational programs for nurses in obstetrics departments around the country to improve their knowledge and practice regarding caring of women during the placental stage of labor.

- In the placental stage of labor, all nurses in the obstetric department should be trained to offer adequate and effective nursing care based on the developed care protocol.

- Availability of the developed care protocol and establishing standardized guidelines for various services in order to sustain and provide high-quality health care during the placental stage of labor.

**Future research:**

A repetition of the study with a larger sample size and a broader geographic area to allow for more generality of the findings.

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