

## Effect of Educational Sessions about Prevention of Postpartum Hemorrhage on Maternity Nurses' Skills

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### 1.ABSTRACT

**Background:** Postpartum hemorrhage considers one of the most urgent obstetrical complications related to the vaginal and cesarean section delivery as a result of the third stage of labor. Bleeding is the main cause of maternal death in Africa and Asia. **Aim:** The current study aimed evaluate the effect of educational sessions about prevention of postpartum hemorrhage on maternity nurses' skills. **Design:** A quasi experimental (pre- & post test) research design was utilized. **Subjects:** A convenient sample of 71 maternity nurse's. **Setting:** the study was conducted at labor departments and postpartum wards of obstetrics and gynecology departments at Mansoura University Hospitals in Dakahlia Governorate. **Tools:** A structured interview questionnaire and observational checklist. **Results:** the study showed that there was highly statistically significant improvement post implementation of the educational sessions compared to pre implementation regarding total practical skills to prevent postpartum hemorrhage. This study **concluded** that maternity nurses' of Mansoura University Hospitals had unsatisfactory level of clinical practices about prevention of postpartum hemorrhage. **Recommendation:** develop planned in-service training programs to improve maternity nurses' skills related to prevention of postpartum hemorrhage.

**Keyword:** Postpartum Hemorrhage, Educational Sessions, Skills.

### 2.Introduction

Post-Partum Hemorrhage (PPH) stills the primary leading factor for maternal deaths worldwide. PPH is a silent killer could be fatal if undetected early within two hours of its occurrence because it has no warning signs. Around 80% of women's deaths occur due to primary hemorrhage which is concerned with excessive bleeding in the early 24 hours after birth. (Morris, et al.,2019)

There are many risk factors leading to PPH such as anemia with pregnancy, multiple pregnancies, polyhydramnios, increase parity, previous history for PPH, over distention of the uterus, infection, placental abnormalities, prolonged labor, obstructed labor and high doses of oxytocin after labor, However, the primary causes for PPH is uterine atony, retained placental parts, genital trauma or tears, rupture of uterus, hypofibrinogenaemia and disseminated intravascular coagulation due to failed clotting at the placental bed (Sebghati & Chandharan, 2017; WHO, 2018).

The PPH is preventable in more than half of the cases. Active management of the third stage of labor (AMTSL) as one of the most effective interventions to prevent PPH should be used routinely. AMTSL includes oxytocin after delivery

of the fetal anterior shoulder and controlled cord traction with the Brandt maneuver. Uterine massage after delivery of the placenta is a reasonable approach and is included in some AMTSL protocols. Delayed cord clamping one to three minutes after delivery may be considered to decrease risk of infant anemia without increasing maternal hemorrhage risk. Moreover, PPH could be prevented or managed if the women had access to a skilled health care practitioner with the necessary back-up and support (Bazirete et al., 2020).

Most of patients with PPH are quickly identified and successfully treated before the development of major complications as hypovolemic shock(that include early shock and late shock), intra vascular coagulopathy, severe anemia, clotting disorders, acute renal failure, sepsis, hepatic dysfunctions wound infection, pneumonia, venous thrombosis or embolism and acute lung injury, damage to anterior pituitary gland may result in delay or failure of lactation as well as secondary infertility and less commonly myocardial ischemia, pulmonary edema. (Butwick, Lyell & Lawrence, 2020)

Nurses are central to the effective prevention, early recognition and treatment of PPH. They need to be aware of the risk factors for this condition and take appropriate action when they are identified. Nurses play an important role in monitoring the woman's status, assisting with measures to control bleeding, educating the woman about her condition and providing support to the woman and her family. There is a clear need to enhance nurses' competencies related to emergency obstetric care, particularly PPH and pregnancy induced hypertension, as well as nursing care measures for the woman experiencing PPH focuses on stopping the bleeding, restoring fluid balance, preventing injury and promoting adequate tissue perfusion. As with any postpartum complication, be sure to provide emotional support for the woman and family, explaining all events and procedures to minimize anxiety and fear, keep the family informed of the situation, in addition explaining laboratory tests, procedures and signs of improvement (Ali & Ghafel,2022).

### 2.1 Significance of the study

Globally, 35% of maternal deaths are concerned with PPH. In Egypt, the maternal mortality ratio associated with PPH accounts 45 deaths per 100,000 live births in 2014. Ministry of Health and Population in Egypt reported that PPH is responsible for 19.7% of all maternal deaths (Mahmoud & Omar, 2018).

Around the world, one to five percent of births are suffered from postpartum hemorrhage. In 2015, there were 23 episodes of maternal mortality following postpartum hemorrhage per 100,000 births. Around 99% of the maternal deaths happened in middle-income countries and low-income (Demis, et al., 2020).

Sivaram elaborated that, the most important reasons for maternal deaths is the deficiency and lack in the frontline maternity nurse's knowledge and skills which interfere with the prevention and management of postpartum hemorrhage as well as decreasing maternal deaths. (Sivaram, et al, 2018). Hence, the nurses' play significant roles in the prevention & management of PPH as a primary care givers to reduce maternal morbidity and mortality rate.

### 2.2 Aim of the study

The aim of this study is to evaluate the effect of educational sessions about prevention of postpartum hemorrhage on maternity nurses' skills.

### 2.3. Research hypotheses:

Educational sessions about postpartum hemorrhage were improved the level of maternity nurses' skills regarding prevention of postpartum hemorrhage.

### 3. Subjects and method

#### 3.1 Research design:

Aquasi experimental (pre- posttest) research design was utilized to achieve the aim of current study ; where the effect of the independent variable (ie., educational sessions about prevention of postpartum hemorrhage) on the dependent variable (ie., nurse's skills ) was assessed in this study.

#### 2.2. Setting study:

This study was conducted at labor departments and postpartum wards of obstetrics and gynecology departments at Mansoura University Hospitals in Dakahlia Governorate, Egypt .

#### 2.3. Sample Size:

Sample size was based on data from literature (Elkholy, Ramadan, Ouda & Ahmed, 2017), to calculate the sample size with precision/absolute error of 5% and type 1 error of 5%: Sample size =  $[(Z_{1-\alpha/2})^2 \cdot P(1-P)]/d^2$  Where ,  $Z_{1-\alpha/2}$  = is the standard normal variate, at 5% type 1 error ( $p < 0.05$ ) it is 1.96 , P = the expected proportion in population based on previous studies, d = absolute error or precision. So, Sample size =  $[(1.96)^2 \cdot (0.10)(1-0.10)] / (0.07)^2 = 70.56$  , Based on the above formula, the sample size required for the study was 71.

#### 3.4 Subjects of the study:

The study utilized a convenient sample of 71 maternity nurse's who work at labor departments and postpartum wards of obstetrics and gynecology Hospitals, at the work force with clinical experience not less than 6 months of work and were no administrative work.

#### 3.5 Tools of Data Collection:

Two tools were utilized to collect data as follow;

##### Tool I: A structured interview questionnaire:

assessed nurse's general characteristics (age, level of education, job position, years of experience and attendance of training programs) involved seven questions.

##### Tool II: Observational checklist:

It was adopted from Elkholy, Ramadan, Ouda & Ahmed, (2017). It was assess maternity nurses' clinical practices concerned with the prevention of PPH during & after labor which including inserting intravenous

lines, blood sampling, measuring vital signs, .....et.

**Scoring system:** each statement was given score (3) for correctly done or given score (2) for incorrectly done and given score (1) for not done. It consists of 19 items. The total score was categorized as the follow:

- Not done: if the score was < 50% from the maximum score.
- Incorrectly done: if the score was 50 % to 75 % from the maximum score
- Correctly done: if the score was >75% from the maximum score.

### 3.6 Validity of tools:

Before conducting the current study, content validity of the study tools was reviewed by a panel of three specialists (Prof. Dr Hanan El sayed, Assist. Prof Ahlam Goda & Dr.Om hashem), in the field of Woman's Health and Midwifery Nursing researchers specialty to test for its content. According to expertise's suggestions, modification of some questions was done to be easy & clear for maternity nurses'.

### 3.7 Reliability of tools:

The tool of data collection was tested for its reliability using Cronbach's alpha value of the nurse's general knowledge regarding PPH was 0.903, and of the post-partum hemorrhage observational checklist was 0.897.

### 3.8 Field work:

Three phases were followed to implement the study including : preparatory, implementation and evaluation.

#### Preparatory Phase:

First developing tools of data collection by the researcher after reviewing national, international literature, & books about preventable practices of PPH. Before data collection the researcher introduced an official letters from Faculty of Nursing- Mansoura University to the head of Obstetrics and Gynecology Departments of Mansoura University Hospital for taking official permission to carry out the study after explaining the purpose. The researcher attends to the study setting three days per week (Saturday - Monday - Thursday), each interview took about half an hour to one hour.

**Pilot study:** Pilot study was carried out on 10% of maternity nurses' (7) of the total sample size to measure the feasibility of content validity and time needed for completion of each tool as well as to be sure that the questions were understood,

easily, covered the aim of the study and carried the same meaning that designed for it. Results helped in making the needed modification e.g paraphrasing of some statements and words to be clear for maternity nurses, the participants of the pilot study were excluded from the actual study.

#### Implementation phase:

The researcher introduced herself to each nurse, explanation the aim of the study to gain trust & cooperation, took informed consent from maternity nurse's. After that, the study tool was completed by the researcher through face-to-face interview, during the interview, for 1<sup>st</sup> tool the researcher assess the maternity nurse's general characteristics after that give educational sessions, 1<sup>st</sup> session was about mutual understanding and basic rapprochement .

2nd session was about education about knowledge of PPH.

3rd session was about types of PPH & active management of third stage of labor

4th session was about clinical practice for dealing with PPH & assessment of lochia.

5th session was about assessment for preniem & the terminating session.

#### Evaluation phase:

After giving all educational sessions evaluate maternity nurses nursing care that given to women during labor & postpartum period to assess the performance of maternity nurses

### 3.9 Ethical consideration:

Ethical approval was obtained from the Research Ethics Committee of the Faculty of Nursing at the Mansoura University, then a letter from Faculty of Nursing Mansoura University to head of labor departments and postpartum wards of obstetrics and gynecology departments at Mansoura University Hospitals. Written agreement was obtained from each participant involved in the study after clarifying its goal and approach. The participants were reassured about the anonymity, privacy, safety and confidentiality of the collected information throughout the whole study. The participants were informed about their rights to refuse participation or withdraw from the study at any time. The results were be used as a component of the research for master study as well as for education and publication.

### 3.10 Statistical analysis

Statistical analyses were performed using SPSS for windows version 20.0 (SPSS, Chicago, IL). Continuous data were normally distributed and were expressed in mean  $\pm$ standard deviation (SD).

Categorical data were expressed in number and percentage. Chi-square test (or Fisher's exact test when applicable) was used for comparison of variables with categorical data. The reliability (internal consistency) test for the questionnaires used in the study was calculate. Statistical significance was set at  $p < 0.05$ .

**4.Results**

Table1. shows the general characteristics of maternity nurses' ; revealed that mean age of maternity nurse's was  $31.2 \pm 8.7$  years, 42.3% of them had secondary level of nursing education, more than half 54.9% of them were married, 91.5% of them were staff nurse & the majority (94.4%) didn't had workshop on PPH.

Table2. shows maternity nurse' clinical practice related to prevention of PPH; that revealed there were highly statistically significant differences after PPH educational sessions in relation to nurse's clinical practices about PPH including follow medication rights, giving Oxytocin as prescribed & statistically significant differences including avoidance of excesses fundal pressure and examination of placental lobes.

Table3. shows that there were a highly

Table 1. Number and Percent Distribution of the General Characteristics of Maternity Nurse's

Variables	No =71n	%
<b>Age (Years)</b>		
21 – 30	31	43.7
31 – 40	20	28.2
41 – 50	20	28.2
<b>Mean <math>\pm</math>SD=</b>	<b>31.2 <math>\pm</math>8.7</b>	
<b>Education level</b>		
Secondary nursing education	30	42.3
Technical institute	35	49.3
Bachelor of Nursing	4	5.6
Postgraduate studies	2	2.8
<b>Marital condition</b>		
Married	39	54.9
Not married	32	45.1
<b>Job</b>		
Staff nurse	65	91.5
Supervisor nurse	6	8.5
<b>Experience (Years)</b>		
Less than 5	22	31.0
5 – 10	19	26.8
More than 10	30	42.3
<b>Mean <math>\pm</math>SD=</b>	<b>8.4 <math>\pm</math>4.0</b>	
<b>Having workshop on PPH *</b>		
Yes	4	5.6
No	67	94.4
<b>The time elapsed since last workshop? (n=4)</b>		
Less than a year	3	75.0
More than a year	1	25.0

statistically significant differences ( $P < 0.001$ ) after PPH educational sessions in which nurse's practices relate to PPH prevention had significantly improved including lochia assessment and initiation of breast feeding, And significant differences including fundal assessment, uterine massage, and evacuation of urinary bladder and insignificant as putting the postpartum woman in comfortable position.

Figure 1. Shows that 74.6% of maternity nurse's had incorrect performance before educational sessions, in which after educational sessions more than half of them 70.4% had correct performance.

Figure 2. Shows that 31% of maternity nurse's had incorrect performance before educational sessions, in which more than three quarters 74.6% of them had correct performance after educational sessions.

Figure 3. Shows that there were highly statistically significant differences 31% had correct performance before educational sessions & 74.6% had correct performanc after educationa sessions.

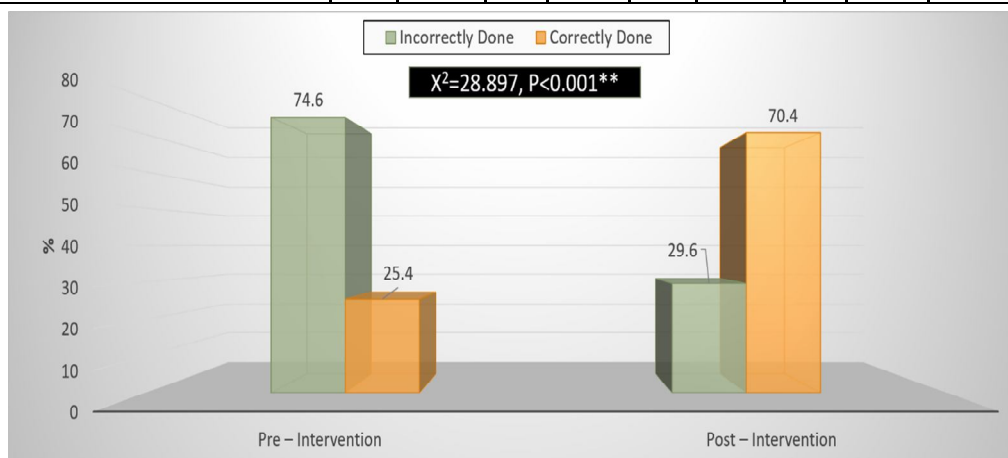
## Effect of Educational Sessions about . . .

**Table 2. Maternity Nurse's Clinical Practice regarding Prevention of Post Partum Hemorrhage during Third Stage of Labor**

Variables	Pre – Intervention						Post – Intervention						Chi – Square	
	Not Done		Incorrectly Done		Correctly Done		Not Done		Incorrectly Done		Correctly Done			
	n	%	n	%	n	%	n	%	n	%	n	%	X <sup>2</sup>	P
Follow medication rights	0	0.0	52	73.2	19	26.8	0	0.0	8	11.3	63	88.7	55.876	<0.001**
Giving Oxytocin as prescribed	0	0.0	57	80.3	14	19.7	0	0.0	6	8.5	65	91.5	74.210	<0.001**
Controlled cord traction	69	97.2	2	2.8	0	0.0	69	97.2	0	0.0	2	2.8	4.000	0.135
Avoidance excesses fundal pressure	0	0.0	41	57.7	30	42.3	0	0.0	24	33.8	47	66.2	8.199	0.004*
Examination of placental lobes	0	0.0	44	62.0	27	38.0	0	0.0	28	39.4	34	60.6	7.213	0.007*
Examination of genital tract	65	91.5	4	5.6	2	2.8	65	91.5	1	1.4	5	7.0	3.086	0.213

**Table3. Maternity Nurse's Clinical Practice regarding Prevention of Post Partum Hemorrhage during Early Post Partum Period**

Variables	Pre – Intervention				Post – Intervention				Chi – Square	
	Incorrectly Done		Correctly Done		Incorrectly Done		Correctly Done			
	n	%	n	%	n	%	n	%	X <sup>2</sup>	P
Vital signs measurement	14	19.7	57	80.3	7	9.9	64	90.1	2.738	0.097
Putting the postpartum woman in comfortable position	7	9.9	64	90.1	4	5.6	67	94.4	0.887	0.346
Insertion two large bore cannula	19	26.8	52	73.2	12	16.9	59	83.1	2.022	0.155
Fundal assessment after delivery	12	16.9	59	83.1	2	2.8	69	97.2	7.924	0.004*
Uterine massage as needed	16	22.5	55	77.5	7	9.9	64	90.1	4.202	0.040*
Lochia assessment	53	74.6	18	25.4	10	14.1	61	85.9	52.754	<0.001**
Nurse should check urinary output per shift after C – Section	49	69.0	22	31.0	31	43.7	40	56.3	9.276	0.002*
Nurse should check urinary output every 2 hours after vaginal labor	50	70.4	21	29.6	32	45.1	39	54.9	9.351	0.002*
Initiation of breast feeding	36	50.7	35	49.3	10	14.1	61	85.9	21.737	<0.001**
Administration uterotonics drugs, & fluids	17	23.9	54	76.1	9	12.7	62	87.3	3.013	0.083
Intake and output chart	16	22.5	55	77.5	7	9.9	64	90.1	4.202	0.040*
Blood transfusion if needed	12	16.9	59	83.1	11	15.5	60	84.5	0.052	0.819



**Figure 1. Maternity Nurse's Clinical Practice regarding Prevention of Post Partum Hemorrhage during Third Stage of labour**

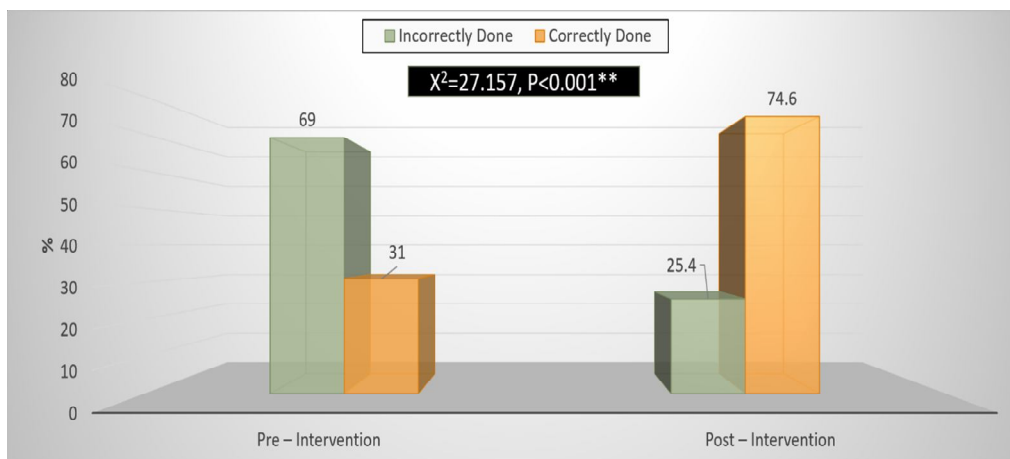


Figure2. Maternity Nurse's Clinical Practice regarding Prevention of PPH during Early Post Partum Period

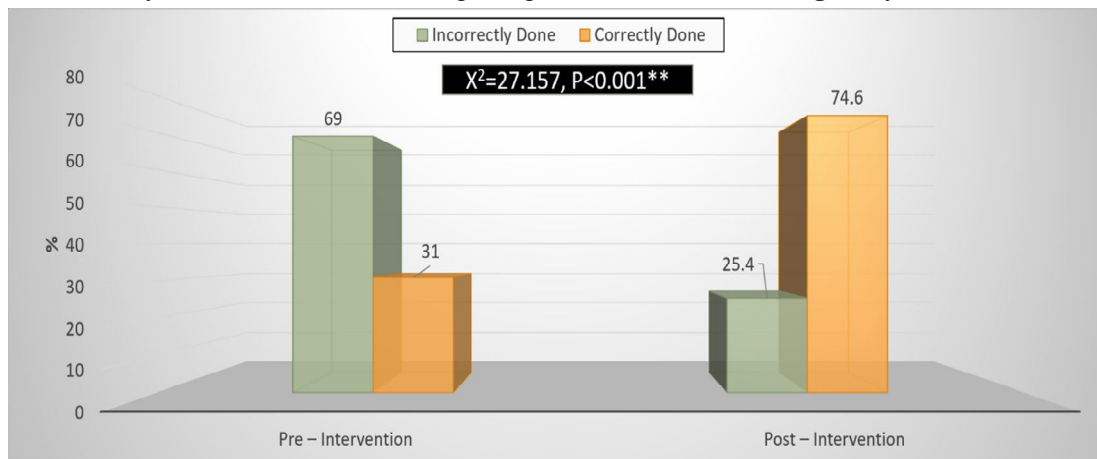


Figure 3. Number and Distribution of the Post Partum Hemorrhage Practice Total Score

**5. Discussion**

The study aimed to evaluate the effect of educational sessions about prevention of postpartum hemorrhage on maternity nurses' skills. This aim was achieved through study finding as well as there was highly statistically significant improvement post implementation of the educational sessions compared to pre implementation regarding total practical skills to prevent postpartum hemorrhage. the study hypothesis was supported by the study finding.

Concerning to maternity nurses' clinical practice regarding prevention of PPH during third stage of labor the current study showed that there were highly statistically significant differences after PPH educational sessions in relation to maternity nurse's clinical practices about prevention PPH including follow medication rights, giving Oxytocin as prescribed & statistically significant differences including avoidance of excesses fundal pressure and examination of placental lobes. About three quarters of maternity

nurse's had incorrect performance before educational sessions, compared to around one third had incorrect performance after educational sessions. Regarding to maternity nurses' clinical practice regarding prevention of PPH during early postpartum there were a highly statistically significant differences after PPH educational sessions in which maternity nurse's practices relate to prevention of PPH had significantly improved including lochia assessment and initiation of breast feeding, also, significant differences including fundal assessment, uterine massage, and check urinary output and insignificant as putting the postpartum woman in comfortable position, vital signs measurement, insertion two large bore cannula & administration uterotonic drugs & fluids.

The current study finding was in the same line with **Abd Elhakem, 2018** found that more than three quarters of maternity nurses' had unsatisfactory practice regarding postpartum hemorrhage at pre program phase, which has changed to be more satisfactory post intervention.

And, also, the total practice score of studied nurses' regarding PPH was un satisfactory at pre intervention and become more satisfactory at post intervention. From the investigator point of view; the low level Maternity Nurse's Clinical Practices related to Prevention of PPH may be due to the fact that the majority of them were technical institute of nursing and the majority didn't had workshop on PPH.

Regarding to insert two bore cannula related to maternity nurses' practice, the present study showed that three quarters of maternity nurses' had satisfactory practice regarding postpartum hemorrhage at pre and post program phase , this result was not in the same line with **Abdelgadir ,2020** who study about " The effect of Training Program on Midwives Practice Concerning Timely Management of Postpartum Hemorrhage at Aljenena town Dafur" and revealed that there were unsatisfactory in pre test less than ne tenth related to midwives' performance while in post become more than three quarters.

Furthermore the current results were supported by study of **El-Khawaga et al., 2019**, as they revealed the correlation between the total performance scores and socio demographic data among the studied nurses regarding immediate postpartum care in the present study revealed that, there was a positive statistically significant correlation between between their age and educational level pre and post program implementation.

The present study results were in the same line with study of **Abd Elhakm & Elbana, 2019**, who study about " Effect of Simulation Based Training on Maternity Nurses' Performance and Self-confidence Regarding Primary Postpartum hemorrhage management " reported that there was a highly statistically significant difference between studied nurses' practice related to active management for postpartum hemorrhage between the pre and post intervention phases. There was a highly statistically significant difference between studied nurses' practice related to general & specific management of postpartum hemorrhage between the pre and post intervention phases .

Similarly, **Ahmed Shahin et al., 2021**, revealed that there were highly statistically significant changes in the nurses' performance before and after the intervention regarding preparation tasks, uterine massage, placental examination, and immediate-postpartum care. Near to half of them had competent practice during labor and immediate postpartum period to prevent primary postpartum hemorrhage compared to pre

intervention.

Also, in agreement with **Dawood et al., 2021**, demonstrated that the result of the present study findings was highly significant improvement in total practical skills among the studied sample pre intervention compared to post intervention. Furthermore, **Soliman et al., 2020**, stated that there is a marked improvement in practical skills among the studied sample about general and local examination post-implementation of on-job training sessions compared to pre-intervention, there is a highly statistical significant difference between pre and post-implementation of on-job training sessions. Also, there is a marked improvement in practical skills among the studied sample about health education post-implementation of on-job training sessions compared to pre-intervention.

The present study finding in contrast with **El-hamid et al., 2021**, reported that there was no significant difference between the study and control groups before implementation of the training program in their mean scores of performance of all studied items regarding prevention and management of atonic PPH (3rd stage of labor and immediate postnatal prevention of PPH, as well as management of PPH).

The present study revealed that there was statistically significant relation between nurse's practices related to prevention of PPH & educational level & occupation post intervention. Also, There was highly statistically significant association between nurse's age and practice after educational intervention. This finding were supported by study of **El-Khawaga et al., 2019**, stated that the correlation between, total performance scores and socio demographic data among the studied nurses regarding immediate postpartum care.

In addition, **Soliman et al., 2020**, showed that that there is a highly statistically significant difference at between pre and post the implementation of on-job training sessions. Additionally, there is a marked improvement in information among the studied sample about early postpartum hemorrhage post-implementation of on-job training sessions compared to pre-intervention. From the investigator point of view; This agreement between the current study findings & the other different studies results may be concerning with the positive effective educational sessions in empowering & enhancing maternity nurse's knowledge as a base of upgrading their knowledge which can be reflected later on their performance, as well as, help in reducing maternal morbidity & mortality that go with Egypt vision 2030.

## 6. Conclusion

Based on the results of the present study, it can be concluded that, there was a statistically significant improvement in nurses' practice mean scores after the educational intervention. The implementation of an educational intervention significantly improved nurses' practices towards prevention and control of PPH. Moreover, the above mentioned results proved and reinforced the study hypothesis.

## 7. Recommendations

**In the light of current study findings, the following recommendations were suggested:**

- Adequately planned in-service training programs regarding PPH must be conducted in order to improve nurses' practices which will be reflected on improving the quality of health care.
- Providing maternity nurses in obstetrics and gynecology departments with an instructional booklet regarding PPH to enhance their practices.
- The nursing curriculum should be revised and updated according to recent researches regarding PPH prevention and control.
- Replication of the study on a larger sample and in different geographical areas in Egypt is recommended for generalization of findings.

## Further researches studies to

- Assess the barriers that hinder maternity nurses' to be aware about early detection & prevention of postpartum hemorrhage.
- This study should be replicated in other sitting to generalize its results.

## 8. Acknowledgment

We extend our thanks and appreciation to the maternity nurses' who participated in the research, the directors of labor departments and postpartum wards of obstetrics and gynecology departments at Mansoura University Hospital for helping me to conduct my study and without whom the study couldn't have been achieved. We do not forget to mention all the thanks and appreciation to the supervisors participating in the research for their guidance and support.

## 9. Conflict of interest

The authors observe that there is no dispute with respect to this research.

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