Effect of Educational Program on Nurses' Performance Regarding Bleeding in Late Pregnancy

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Abstract:

Background: Bleeding in late pregnancy is the most common obstetric emergency. It is serious complication of pregnancy occurring within the third trimester and also a major cause of perinatal maternal morbidity and mortality which needs for a highly skilled health care provider to save the life of the pregnant woman and her unborn fetus. **The aim of this study:** was to evaluate the effect of educational program on nurses' performance regarding bleeding in late pregnancy. **Subjects and method: Setting:** The study was carried out at antenatal wards in obstetric and gynecological departments at Main Tanta University Hospital, El-Menshawy Hospital affiliated to the Ministry of Health and population and El-Mabara Hospital affiliated to the Health Insurance. **Subjects**: All available nurses (48 nurses) who were working in the previously mentioned study settings and were provided care for 144 pregnant women with bleeding in late pregnancy. **Tools:** Two tools were used for data collection; **Tool (I):** Structured Interview Schedule. It comprised the following parts: **Part 1:** Socio-demographic characteristics of nurses and **Part 2:** Assessment of nurses' Knowledge regarding bleeding in late pregnancy. **Tool (II):** Nurses' practice regarding bleeding in late pregnancy by using an observation checklist. **Results:** The total knowledge level of the studied nurses regarding bleeding in late pregnancy was increased immediately and four months after implementation of the program with a significant statistical difference P value=0.0001 compared to pre-program. The total practice level of the studied nurses regarding bleeding in late pregnancy was higher immediately and four months after implementation of the program with a significant statistical difference P value=0.0001 compared to pre-program. **Conclusion:** The findings of present study revealed that there was a significant improvement of knowledge as well as practice among studied nurses regarding bleeding in late pregnancy immediately after the implementation and four months later post program compared to preprogram. **Recommendation:** Frequent and schedule in-services training program should be applied for nurses at the hospital regarding management of bleeding in late pregnancy in order to improve nurses' knowledge and practices which will be reflected on improving the quality of health care.

Keywords: Educational Program, Nurses 'Performance and bleeding in late pregnancy

Introduction

Bleeding in late pregnancy is a life-threatening event, which can lead to maternal and perinatal morbidity and mortality in developing countries and worldwide. **Worldwide**, approximately 2% to 5% of pregnancies are complicated by vaginal bleeding in the third trimester [1,2]. **In Egypt**, bleeding in late pregnancy accounts one third of maternal deaths [3]. Bleeding from the genital tract after the 28th week of pregnancy and before the end of the second stage of labor is considered to be bleeding in late pregnancy; it is also referred to **Late Antepartum hemorrhage (LAPH)**. It needs a highly skilled health care provider

to save the life of the pregnant woman and her unborn fetus [4,3].

Bleeding in late pregnancy could be due to placental or extra-placental causes. Placental causes of bleeding are the most common cause of LAPH, accounting for nearly 70-75% cases; whereas the extra-placental causes account for 5% cases and unexplained causes for the remaining 20-25%. Extra-placental causes: anal causes as (hemorrhoids, trauma, tears or lacerations), vulvar causes include (varicose veins, or lacerations) vaginal causes as (trauma, tears or lacerations), cervical causes include (severe cervicitis, polyps, lacerations or carcinoma) and uterine causes such as (uterine rupture, placenta previa or abruption or vasa previa) [5].

The most significant placental causes of bleeding in late pregnancy are due to bleeding from the placenta site which includes placenta previa and placental abruption. Placenta previa is a condition of pregnancy in which the placenta is implanted abnormally in the lower uterine segment. Placental abruption refers to an abnormal premature separation of normally implanted placenta. Women who bleed in late pregnancy may be at greater risk of complications [6,7].

High risk factors for placenta previa are older age, multiparity, multiple gestation, previous cesarean delivery, myomectomy, hysterectomy and previous uterine curettage [8]. The most common signs and symptoms of placenta previa; is vaginal bleeding. The cases can be classified into symptomatic and asymptomatic cases. The classical features of symptomatic cases are bleeding that are sudden onset, painless, causeless, recurrent and bright red [9]. Placenta previa is one of the obstetric hazards and in majority the cause is unknown. Thus, the following guidelines are useful to minimize the risks.

Adequate antenatal care, correction of anemia and accurate diagnosis of placental degrees with routine ultrasound [10].

The second common cause is placental abruption (PA); high risk factors of PA are high birth order pregnancies with gravida 5, poor socio-economic condition, malnutrition and smoking (vasospasm). Hypertension in pregnancy, traumatic separation of the placenta usually leads to its marginal separation with escape of blood outside, sudden uterine decompression and short cord can bring placental separation during labor by mechanical pull, folic acid deficiency, cocaine abuse and Thrombophilias [11].

The clinical features of placental abruption depend on degree of placental separation, speed at which separation occurs and amount of blood concealed inside the uterine cavity [12]. The prevention aims at elimination of the risk factors of placental separation such as correction of anemia, early detection and effective treatment of preeclampsia and other hypertensive disorders of pregnancy. Avoidance of trauma, cocaine abuse, cessation of smoking and routine administration of folic acid from the early pregnancy [13].

Bleeding in late pregnancy may be a sign of maternal and fetal complications. Maternal complications such as premature labor, postpartum hemorrhage, shock, retained placenta, higher rates of caesarean section, puerperal infections and even death caused by acute hemorrhage. Fetal complications such as mal-presentation, intrauterine growth retardation, low birth weight, low Apgar score, intrauterine death and birth asphyxia [14-16]. Bleeding in late pregnancy as placenta previa and placental abruption are not a preventable condition, client education is important to help and reduce the risk for a recurrence of this condition.

Encourage the woman to maintain a healthy lifestyle. Urge her to seek early and continuous prenatal care and to receive proper health care if any signs and symptoms occur during pregnancy.

Nurses play a key role in the prevention and control of late antepartum hemorrhage, they may be the first and only professional persons present when bleeding occurs, competent action will be crucial in controlling blood loss and reducing the risk of maternal and neonatal morbidity or even death. Moreover, providing a quality of nursing care to pregnant women by highly qualified nurses in their health care facility should be achieved through providing nurses with effective educational program regarding bleeding in late pregnancy.

Significance of the study:
Bleeding in late pregnancy is an obstetric emergency that contributing to perinatal, maternal and fetal morbidity and mortality that lead to various complications for both pregnant woman and her fetus. There was lack of nurses' knowledge as well as unsatisfactory practice regarding bleeding in late pregnancy. Thus, nurses need to update their knowledge and practice through continuous educational program. So, this study was conducted to evaluate the effect of educational program on nurses' performance regarding bleeding in late pregnancy.

Aim of the study
The aim of this study was to evaluate the effect of educational program on nurses' performance regarding bleeding in late pregnancy.

Research Hypothesis:
Nurses' performance is expected to be improved after implementation of educational program regarding bleeding in late pregnancy.

Subjects and Method:

Study design:
A quasi-experimental research design was used to conduct this study.

Setting:
This study was carried out at antenatal wards in obstetric and gynecological departments at Tanta University Hospital, El-Menshawy Hospital affiliated to the Ministry of Health and population and El-Mabara Hospital affiliated to the Health Insurance.

Subjects:
All available nurses (48 nurses) who were working in the previously mentioned study settings at the time of data collection ,they included nurses who were working at Tanta University Hospital (24 nurses), nurses who were working at EL-Menshawy Hospital (11 nurses) and nurses who were working at El-Mabara Hospital (13 nurses) and were provided care for 144 pregnant women with bleeding in late pregnancy.

Tools of data collection:
Two tools were developed and used by the researcher to achieve the aim of the study.

Tool I: Structured Interview Schedule: This tool was developed by the researchers [17] after reviewing recent related literature to assess the nurses' socio-demographic characteristics and knowledge. It consisted of two parts: **Part (1): Socio-demographic characteristics of nurses:** This part was used to collect data about (name, age, marital status, workplace, level of education, years of experience, previous training regarding bleeding in late pregnancy (numbers of attendance courses, the reason for attending the previous training courses, the date of the last training course, the organization that organized this training and its benefits). **Part (2): Assessment of nurses' Knowledge regarding bleeding in late pregnancy:** It was used to collect

nurses' knowledge before, immediately and four months after implementation of the educational program regarding bleeding in late pregnancy such as: Definition, causes, types of bleeding in late pregnancy and definition, incidence, risk factors, classification, clinical features, diagnosis, complications and nursing management of placenta previa and placental abruption.

Scoring system for nurses' knowledge:

- Correct and complete answers will be scored as (2).
- Correct and incomplete answers will be scored as (1).
- Incorrect and didn't know will be scored as (0).

Total score level of knowledge will be as follows:

- High level of knowledge ≥ 80%.
- Moderate level of knowledge 60 % - < 80%.
- Low level of knowledge < 60%.

Tool II: Nurses' practice regarding bleeding in late pregnancy by using an observation checklist: This tool was developed by the researchers [17,18] after reviewing recent related literature to assess nurses' practice before, immediately and four months after implementation of the educational program regarding bleeding in late pregnancy.

Scoring system of nurses' practice will be used as the following:
- Done correctly and completely will be scored as (2).
- Done correctly and incompletely will be scored as (1).
- Done incorrect or not done at all will be scored as (0).

The total score of nurses' practice will be as follow:
- Satisfactory performance ≥ 80 %.

- Unsatisfactory performance < 80%.

Method

The study was conducted according to the following steps:

1) An official letter clarifying the purpose of the study was obtained from the Faculty of Nursing and was submitted to the responsible authorities of the selected setting for permission to carry out the study.

2) Ethical and legal consideration:
   a) Approval of the ethical commitment was obtained.
   b) All participants were informed about the purpose of the study.
   c) An informed consent was taken from every participant in the study including the right to withdraw at any time.
   d) The researchers were ensured that the nature of the study do not cause any harm or pain for the entire sample.
   e) Confidentiality and privacy were taken into consideration regarding data collection.

3) **Tools I, II** for data collection was developed by the researchers after reviewing recent related literature; it was tested for content and construct validity by 5 experts in the obstetric and gynecological nursing field.

4) The suitable statistical test analysis was used for testing the validity and reliability of the developed tool.

5) A pilot study was carried out on 10% of nurses (5) nurses from the previously mentioned setting. After implementation of pilot study, it was applicable and there was no change. Cronbach's Alpha of reliability was knowledge tool= 0.767 and practice tool=0.941. The data

obtained from the pilot study was included in the study sample.

6) Data was collected within one year from December 2020 to December 2021.

7) The educational program was conducted through four phases (**Assessment, planning, implementation and evaluation**) as followed:

-Assessment phase:

- The nurse was assessed using **Tool I part (1)** to collect socio-demographic data and **Tool I part (2)** to assess nurses' knowledge regarding bleeding in late pregnancy.

- **Tool II** was used to assess nurses' practice regarding bleeding in late pregnancy before implementation of the educational program.

-Planning phase:

a- Preparation of the educational program sessions:

- The teaching program was included (5 sessions for each hospital) and was carried out in the previously mentioned settings. The total numbers of nurses were (48 nurses); they were divided into 11 groups. Each group was consisted of (3-5) nurses; five groups at Tanta University Hospital, four groups of them were consisted of 5 nurses and one group was consisted of 4 nurses. Three groups at El-Menshawy Hospital, two groups of them were consisted of 4 nurses and one group was consisted of 3 nurses. Three groups at El-Mabara Hospital, two groups of them were consisted of 4 nurses and one group was consisted of 5 nurses. The content was presented at 2 days per week for each group. The duration of each session was ranged from 30 to 45 minutes including the periods of discussion. The researchers started the data collection from Tanta University Hospital followed by EL-Menshawy

Hospital and finally ended with El-Mabara Hospital. The researchers provided the theoretical content for two days in the first week then followed by clinical content given also for three days in the second and third week.

- The program was conducted on morning and afternoon shifts.

b- Setting the goals and objectives of the program:

c- Prepare the content of the program:

- An educational booklet was developed by the researchers based on nurses' knowledge, practice, needs and data from the assessment phase, using recent relevant literature available locally and internationally (books and magazines). The booklet was distributed to all nurses after the first post-test to increase their awareness about bleeding in late pregnancy. The program was included different methods of teaching as lecture, group discussion, posters, power point, demonstration and re-demonstration by nurses.

- Implementation phase:

- The researchers were explained the purpose of the educational program individually for nurses and was obtained their consent to participate in the study.

- Nurses' performance was assessed (three times); the first pre-test was conducted pre-program then the second post-test was conducted immediately after implementation of the educational program and the third post-test 4 months after the second post-test for each group by using **Tool I part (2)** and **Tool II**.

- The educational program was divided into five sessions for each group.

The sessions were as follow:
a) **The first session (First day of the program):**
   - The aim of this session was to explain the goal and objectives of the program then provide the nurses with knowledge about definition, causes and types of bleeding in late pregnancy followed by break time for 15 minutes, then the researcher explained placenta previa; definition, incidence, risk factors, classification, clinical features, diagnosis, complications and nursing management.

b) **The second session (Second day of the program):**
   ▪ The aim of this session was to provide the nurses with knowledge about placental abruption; definition, incidence, risk factors, classification, clinical features, followed by break time for 15 minutes, then the researchers explained diagnosis, complications, nursing management and difference between placenta previa and placenta abruption.

c) **The third session (Third day of the program):**
   - The aim of this session was to provide the nurses with the proper and needed nursing practice regarding bleeding in late pregnancy. The researchers demonstrated all nursing practices regarding bleeding in late pregnancy and then the nurses were observed by the researcher during re-demonstration of nursing practices on doll to observe and evaluate their performance. They included **initial assessment at the time of women admission to the hospital** and **assessment the**

characteristics of the blood loss: (amount, color, and consistency) which included:
-**Assessment the color of blood loss**: usually dark and non-clotting vaginal bleeding with abdominal pain, uterine contractions, tenderness in case of the placental abruption. It was usually bright red painless vaginal bleeding in case of placenta previa followed by break time for 30 minutes, then the researchers explained the **different methods used to estimate the amount of blood loss through:**
   - By using blood drape, weigh all blood-soaked materials by using weighing scale and by the extent of perineal pad saturation by visual estimation on the basis of the National Guideline provided by the Maternal Health Office.
   - **Assessment of abdominal pain if present (type, onset, location and severity):** Absence of abdominal pain **in placenta previa** unless in labor and presence of abdominal pain **in placental abruption.**

d) **The fourth session (Fourth day of the program):**
The aim of this session was to perform nursing practice needed regarding the following items:
   - **Monitoring** and recording the maternal vital signs (pulse, blood pressure, respiration, and temperature), **recording** intake and output chart, **preparing** the woman for ultrasound, **checking** the result of abdominal or vaginal ultrasound followed by break time for 15 minutes, then the researcher explained the **preparation** for the laboratory tests according to obstetrician prescription which

included explain the type and the purpose of investigation to woman, withdraw the required laboratory tests and inform the woman about the result of the laboratory tests.

e) The fifth session (Fifth day of the program):

The aim of this session was to perform nursing practice needed regarding the following items:

- **Assessment the signs and symptoms of hypovolemic shock.**
- **Management of hypovolemic shock and maintain fluid replacement according to doctor prescription** followed by break time for 15 minutes, then the researcher's explained **assessment of fetal wellbeing.**
- **Promotion of maternal tissue oxygenation.**
- **Psychological support and keeping privacy.**

- **Evaluation phase:**

- Nurses' performance was assessed (two times); the first post-test was conducted immediately after implementation of the educational program for each group. The second post-test was conducted 4 months after the first post-test for each group by using **Tool I part (2)** and **Tool II**.
- Each nurse was observed three times to assess their performance during providing nursing care before, during and after implementation of the educational program for women suffering from bleeding in late pregnancy.
- Comparison was done in relation to nurses' performance before, and after implementation of the educational program.

Results

Table (1): Shows that nurses' age ranged from 19-59 years, with a mean age of 46.87 years±9.65. More than three quarters (77.1%) of the studied nurses were married while 20.8% of the studied nurses were widow and 2.1% were single. Regarding nurses' workplace, 50% were working at Tanta University Hospital, 27.1% at El-Mabara Hospital compared to 22.9% at El-Menshawy Hospital. Concerning their educational level, 85.4% of nurses had completed secondary nursing while those who had completed technical nursing institute and Bachelor of nursing were 12.5 % and 2.1% respectively. As regard years of experience, this table also observed that the majority of nurses (91.7%) had more than 10 years of experience, 6.3% had between 5-10 years of experience and 2.1% had less than 5 years of experience.

Table (2): Reveals studied nurses' knowledge regarding bleeding in late pregnancy, placenta previa and placental abruption pre, immediately and four months post implementation of educational program. As regards knowledge about bleeding in late pregnancy, only 6.3% of nurses had correct and complete answers before implementation of the educational program then increased to 87.5% immediately after the program compared to 75% four months after implementation of the educational program. The difference was statistically significant ($\chi 2$=25.540, P= 0.0001*). Concerning knowledge about placenta previa, only 18.7% of nurses answered correctly and completely preprogram, while most of them (93.7%) answered correctly and completely immediately

after the program while more than three quarter (83.3%) four months post program. The difference was statistically significant (χ2=71.042, P= 0.0001*). **Figure (1):** Shows that all nurses (100%) had low level of knowledge pre program, 93.7% immediately after the program implementation had high level of knowledge, while the percentage decreased to 81.3% four months post program implementation with statistically significant difference (χ^2 test=117.000 and P value= 0.0001*). **Table (3):** Shows practices of the studied nurses regarding bleeding in late pregnancy pre, immediately and four months post program. As regards initial assessment for pregnant women at the time of hospital admission, 27.1% of nurses carried out the steps correctly and completely preprogram compared to 93.8% of them immediately after program, while decreased to 83.3% four months post program with statistical significant difference P=0.0001*. Moreover, 68.8% of nurses carried out the steps of estimating the amount of blood loss by using different methods correctly and incompletely preprogram compared to the majority (95.8%) of them immediately after program, decreased to 93.7% four months post program with statistical difference P=0.0001*. The table also reveals that, 31.3% of nurses have done the steps of monitoring the maternal vital signs correctly and completely preprogram compared to 100% of them immediately after program, decreased to 75% four months post program with statistically significant difference P=0.0001*. About 77.1% of nurses also carried out the steps of recording intake and output

chart correctly and completely preprogram compared to 100% of them immediately after program, decreased to 89.6% four months post program with statistically significant difference P=0.0001*.

Figure (2): Represents that all nurses (100%) had unsatisfactory practice regarding bleeding in late pregnancy preprogram implementation.While immediately after program implementation, the percentage of satisfactory practice became 100% and decreased to 68.8% four months post program implementation with statistically significant difference (χ2 test=102.095 and P value= 0.0001*). **Figure (3):** Demonstrates that 87.5% of nurses had low level of knowledge and unsatisfactory practice preprogram, compared to all nurses had moderate level of knowledge and unsatisfactory practice immediately after program implementation and 82.1% of them had high level of knowledge and satisfactory practice four months post program implementation.

Table (4): Shows a significant relationship was found between total knowledge scores of the studied nurses and their age four months after the program implementation (F value=3.484, P value=0.039*). Furthermore, a significant relationship was found between total knowledge scores of the studied nurses and their workplace immediately and four months after program implementation (F value=8.281 and P value=0.0001* and F value=100.844 and P value=0.0001*) respectively.

Table (5): A significant relationship was also observed between total practice scores and the educational level preprogram (F value=8.021 and P value=0.001*). A significant relationship was also observed between total practice scores and years of experience four months after program implementation (F value=4.689 and P value=0.014*).

Table (1): Distribution of the studied nurses according to their socio-demographic characteristics (n=48)

Socio-demographic Characteristics		The studied nurses (n=48)	
		No	%
•Age years	19-35	8	16.7
	>35-45	13	27.1
	>45-59	27	56.3
	Range	19-59	
	Mean±SD	46.87±9.65	
•Marital status	Single	1	2.1
	Married	37	77.1
	Widow	10	20.8
•Workplace	Tanta University Hospital	24	50.0
	EL-Menshawy Hospital	11	22.9
	El-Mabara Hospital	13	27.1
•Educational level	Secondary nursing	41	85.4
	Technical nursing institute	6	12.5
	Bachelor of nursing	1	2.1
•Years of experience (years)	<5	1	2.1
	5-10	3	6.3
	>10	44	91.7

Table (2): Studied nurses' knowledge regarding bleeding in late pregnancy, placenta previa and placental abruption pre, immediately and four months post implementation of educational program (n=48)

Knowledge sub-items	Response of the studied nurses about knowledge questions before and after program implementation (n=48)						χ^2 test	P value
	Pretest		Immediately after implementation		4 months after implementation			
	No	%	No	%	No	%		
A-Knowledge about bleeding in late pregnancy								
Incorrect or Don't know	30	62.5	5	10.4	9	18.7	25.540	0.0001*
Correct and incomplete	15	31.3	1	2.1	3	6.3		
Correct and complete	3	6.3	42	87.5	36	75.0		
B-Knowledge about placenta previa								
Incorrect or Don't know	27	56.3	1	2.1	3	6.3	71.042	0.0001*
Correct and incomplete	12	25.0	2	4.2	5	10.4		
Correct and complete	9	18.7	45	93.7	40	83.3		
C-Knowledge about placental abruption								
Incorrect or Don't know	23	47.9	2	4.2	3	6.3	68.655	0.0001*
Correct and incomplete	18	37.5	2	4.2	7	14.6		
Correct and complete	7	14.6	44	91.7	38	79.2		

*Significant (P<0.05)

Fig (1): Total knowledge level of the studied nurses regarding different types of bleeding in late pregnancy before, immediately and four months after implementation of the program (n=48)

Table (3): Practices of the studied nurses regarding bleeding in late pregnancy pre, immediately and four months post implementation of educational program (n=48)

Practice sub-items	Practices of the studied nurses before, immediately and four months after program implementation (n=48)						χ^2 test	P value
	Pretest		Immediately after implementation		4 months after implementation			
	No	%	No	%	No	%		
A-Initial assessment for pregnant women at the time of hospital admission:							81.101	0.0001*
Done incorrect or not done	29	60.4	0	0	3	6.3		
Done correctly and incompletely	6	12.5	3	6.3	5	10.4		
Done correctly and completely	13	27.1	45	93.8	40	83.3		
B- Characteristics of blood loss:							10.580	0.0001*
Done incorrect or not done	43	89.6	1	2.1	3	6.3		
Done correctly and incompletely	3	6.3	7	14.6	10	20.8		
Done correctly and completely	2	4.2	40	83.3	35	72.9		
C-Estimate the amount of blood loss by using different methods:							18.232	0.0001*
Done incorrect or not done	15	31.3	2	4.2	3	6.3		
Done correctly and incompletely	33	68.8	46	95.8	45	93.7		
D-Assessment of presence or absence of abdominal pain (type, time of onset and its severity):							106.340	0.0001*
Done incorrect or not done	42	87.5	1	2.1	4	8.3		
Done correctly and incompletely	1	2.1	1	2.1	7	14.6		
Done correctly and completely	5	10.4	46	95.8	37	77.1		

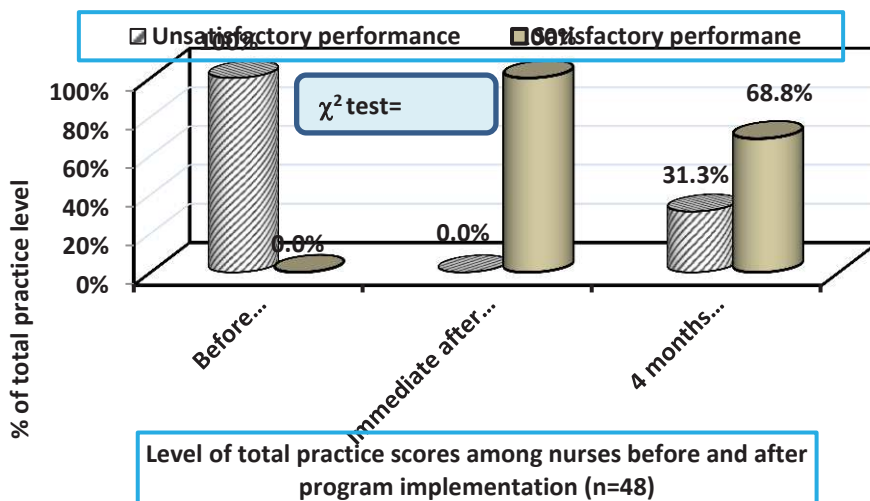|							
E-Monitoring the maternal vital signs:							
Done incorrect or not done	**8**	**16.7**	**0**	**0**	**2**	**4.2**	**54.452**	**0.0001***
Done correctly and incompletely	**25**	**52.1**	**0**	**0**	**10**	**20.8**		
Done correctly and completely	**15**	**31.3**	**48**	**100**	**36**	**75.0**		
F-Recording intake and output chart:							
Done incorrect or not done	**5**	**10.4**	**0**	**0**	**4**	**8.3**	**14.946**	**0.0001***
Done correctly and incompletely	**6**	**12.5**	**0**	**0**	**1**	**2.1**		
Done correctly and completely	**37**	**77.1**	**48**	**100**	**43**	**89.6**		
G-Preparing the woman for ultrasound:							
Done incorrect or not done	**12**	**25.0**	**0**	**0**	**8**	**16.7**	**44.903**	**0.0001***
Done correctly and incompletely	**12**	**25.0**	**0**	**0**	**1**	**2.1**		
Done correctly and completely	**24**	**50.0**	**48**	**100**	**39**	**81.2**		
H- Checking and recording the result of abdominal or vaginal ultrasound to ensure women diagnosis.							
Done incorrect or not done	**42**	**87.5**	**9**	**18.8**	**4**	**8.3**	**81.305**	**0.0001***
Done correctly and incompletely	**2**	**4.2**	**3**	**6.3**	**11**	**22.9**		
Done correctly and completely	**4**	**8.3**	**36**	**75.0**	**33**	**68.8**		
I- Preparation for laboratory tests according to the obstetrician prescription:							
Done incorrect or not done	**34**	**70.8**	**1**	**2.1**	**8**	**16.7**	**93.280**	**0.0001***
Done correctly and incompletely	**7**	**14.6**	**3**	**6.2**	**4**	**8.3**		
Done correctly and completely	**7**	**14.6**	**44**	**85.4**	**36**	**75.0**		
J-Assessment , management of hypovolemic shock and maintain fluid replacement according doctor prescription:							
Done incorrect or not done	**26**	**54.2**	**0**	**0**	**3**	**6.3**	**74.573**	**0.0001***
Done correctly and incompletely	**7**	**14.6**	**1**	**2.1**	**7**	**14.6**		
Done correctly and completely	**15**	**31.3**	**47**	**97.9**	**38**	**79.2**		
K-Assessment of fetal well-being:							
Done incorrect or not done	**27**	**56.2**	**1**	**2.1**	**2**	**4.2**	**64.064**	**0.0001***
Done correctly and incompletely	**8**	**27.1**	**6**	**12.5**	**8**	**16.7**		
Done correctly and completely	**13**	**16.7**	**41**	**85.4**	**38**	**79.2**		
L-Promotion of maternal tissue oxygenation:							
Done incorrect or not done	**28**	**58.3**	**1**	**2.1**	**4**	**8.3**	**78.000**	**0.0001***
Done correctly and incompletely	**9**	**18.8**	**0**	**0**	**3**	**6.3**		
Done correctly and completely	**11**	**22.9**	**47**	**97.9**	**41**	**85.4**		
M-Psychological support and keeping privacy:							
Done incorrect or not done	**31**	**64.6**	**6**	**12.5**	**3**	**6.3**	**75.914**	**0.0001***
Done correctly and incompletely	**7**	**14.6**	**1**	**2.1**	**7**	**14.6**		
Done correctly and completely	**10**	**20.8**	**41**	**85.4**	**38**	**79.2**		

Fig (2): Total practice level of the studied nurses regarding bleeding in late pregnancy before, immediately and four months after implementation of the program (n=48)
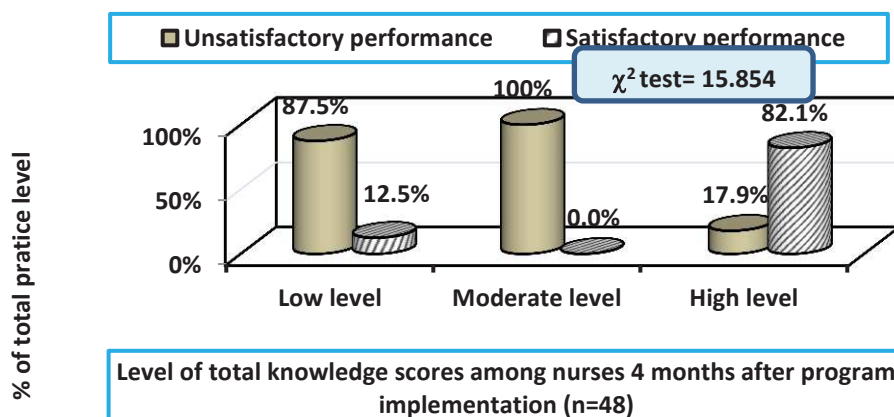

Fig (3): Relationship between level of total knowledge and total practice level of the studied nurses four months after implementation of the program (n=48)

Table (4): Total knowledge scores of the studied nurses before, immediately and four months after implementation of the program in relation to their socio-demographic data (n=48)

Socio-demographic data	No.	Total knowledge scores of the studied nurses before and after implementation of the program (n=48)		
		Before	**Immediately after**	**4 months after**
		Mean±SD	**Mean±SD**	**Mean±SD**
•**Age years**				
19-35	8	13.00±9.30	37.50±2.27	28.50±12.13
>35-45	13	14.23±6.92	39.00±0.91	37.61±2.63
>45-59	27	10.04±6.87	37.74±3.30	32.44±8.24
F value		1.621	1.144	**3.484**
P value		0.209	0.328	**0.039***
•**Marital status**				
Single	1	0.00	35.00±0.00	26.00±0.00
Married	37	14.13±5.82	38.38±2.28	34.11±8.38
Widow	10	3.60±6.40	37.10±3.90	30.50±1.38
t-test or F value		**14.354**	1.551	1.103
P value		**0.0001***	0.223	0.341
•**Work place**				
Tanta University Hospital	24	13.37±4.25	39.00±1.47	37.62±2.04
EL-Menshawy Hospital	11	11.91±10.75	38.64±1.57	38.09±2.02
El-Mabara Hospital	13	8.23±8.18	35.77±3.85	20.85±6.26
F value		2.124	**8.281**	**100.844**
P value		0.131	**0.0001***	**0.0001***

*Significant (P<0.05)

Table (5): Total practice scores of the studied nurses before, immediately and four months after implementation of the program in relation to their socio-demographic data (n=48)

Socio-demographic data	No.	Total practice scores of the studied nurses before and after implementation of the program (n=48)		
		Before	**Immediately after**	**4 months after**
		Mean±SD	**Mean±SD**	**Mean±SD**
•**Age years**				
19-35	8	28.12±4.67	64.75±3.77	52.37±16.24
>35-45	13	26.12±4.67	65.31±3.04	65.30±3.64

>45-59	27	10.00±6.91	66.81±2.57	59.11±7.81
F value		1.246	2.146	**5.309**
P value		0.297	0.128	**0.009***
•Marital status				
Single	1	25.00±0.00	60.00±0.00	40.00±0.00
Married	37	26.62±6.11	66.22±2.92	61.22±9.52
Widow	10	21.50±7.23	66.10±2.88	55.90±7.85
F value		2.563	2.222	**3.636**
P value		0.088	0.120	**0.034***
•Workplace				
Tanta University Hospital	24	26.79±6.56	67.04±2.14	65.04±4.17
EL-Menshawy Hospital	11	24.45±5.78	65.82±3.19	62.64±6.59
El-Mabara Hospital	13	24.08±7.18	64.46±3.60	47.23±8.18
F value		0.907	**3.544**	**38.478**
P value		0.411	**0.037***	**0.0001***
•Educational level				
Secondary nursing	41	24.15±5.84	61.00±2.78	53.50±17.12
Technical nursing institute	6	33.50±5.01	65.00±3.35	53.58±8.23
Bachelor of nursing	1	35.00±0.00	66.34±0.00	59.00±0.00
F value		**8.021**	2.090	1.418
P value		**0.001***	0.136	0.253
•Years of experience (years)				
<5	1	25.00±0.00	60.00±0.00	40.00±0.00
5-10	3	31.00±6.00	64.67±3.21	49.33±16.04
>10	44	25.16±6.57	66.29±2.86	60.82±8.57
F value		1.123	2.708	**4.689**

P value		0.334	0.078	**0.014***
•Attending workshops				
No	38	21.80±4.64	65.74±3.17	58.76±10.32
Yes	10	26.50±6.68	67.30±1.77	63.10±6.23
t-test		**2.087**	1.492	1.264
P value		**0.042***	0.142	0.213

*Significant (P<0.05).

Discussion

Bleeding in late pregnancy is an obstetric emergency that contributing to perinatal, maternal and fetal morbidity and mortality that lead to many complications for both pregnant woman and her fetus. Maternity nurses play a major role in early detection, care of women with LAPH and also ensure the safety of the mother and her fetus during all phases of pregnancy and delivery. Nurses must be aware about complications that can occur during pregnancy and how to deal with it [19-21]. Thus, this study has shed lights on the effect of educational program on nurses' performance regarding bleeding in late pregnancy.

As regards the socio-demographic characteristics of the studied nurses, the findings of the present study revealed that nearly two third of the studied nurses age ranged from 46 to 59 years, most of nurses had completed secondary nursing, the vast majority of nurses had more than 10 years of experience and about one fifth of the studied nurses attended workshops regarding bleeding in late pregnancy. This finding is dissimilar to **Gad-Elrab et al. (2020)** [22] who studied the effect of educational program on maternity nurses' knowledge about antepartum hemorrhage at women's health hospital. They found that more than

two third of the subjects were less than 30 years, less than half of nurses had technical institute of nursing, nearly one third had more than 10 years of experience and more than one third attended workshops regarding bleeding in late pregnancy. This may be explained from the researcher points of view due to difference in socio-demographic characteristics among the studied groups.

On contrast with **Emam (2018)** [23] who achieved study in Egypt to evaluate the effect of an educational intervention on maternity nurses' performance regarding management of LAPH. He found that more than one third of the subjects were aged between 30-39 years, three quarter of them had secondary nursing education and also more than 10 years of experience and nearly one fifth attended training program about late antepartum hemorrhage. From the researcher points of view, this discrepancy may be related to change of socioeconomic circumstance among the studied groups. Furthermore total knowledge level of the studied nurses' regarding the different types of bleeding in late pregnancy, all nurses had low level of knowledge pre program, compared to the vast of them had high level of knowledge immediately after program implementation, while the percentage decreased to more than four fifth four months post program implementation with

statistically significant difference P value= 0.0001*.

The present study findings showed highly significant improvement on the nurses' knowledge regarding all items related to LAPH after the educational program compared to pre program. The findings of the present study agree with least three other researches. **First, Ranjana (2016)** [17] who had studied "the effectiveness of structure teaching program on knowledge regarding causes and intervention of APH among staff nurses". He pointed out that there were positive significant difference between pre-test and post-test level of knowledge of staff nurses regarding the causes and intervention of APH. **Second, Kavitha et al. (2019)** [24] they had assessed level of knowledge of staff nurses on emergency obstetric management at orotta national referral maternity hospital and showed the knowledge score regarding ante partum hemorrhage management among staff nurses, majority of the staff had moderately adequate knowledge and nearly one fifth of the staff had inadequate knowledge and very small porportion of them had adequate knowledge regarding hemorrhage management pre intervention. **Third, Gad-Elrab et al. (2020)** [22] who stated that more than four fifth of studied maternity nurses had inadequate level of knowledge pre-test compared to more than three quarter had adequate level of knowledge post-test with statistically significant difference P value= 0.001**. From the researcher point of view, this result may be probably due to the immediate effect of the educational program sessions supported by the provided colored booklet and using different audiovisual material and power point presentation which enhance the retention of the information and has positive impact on their nurses' knowledge about

bleeding in late pregnancy which was helpful as ongoing reference. However, four months later, the nurses' scores were somewhat reduced but still significant which may be probably due to the absence of the continuing training and education and work overload. All nurses had unsatisfactory practice regarding bleeding in late pregnancy pre program implementation. While immediately after program implementation, the percentage of satisfactory practice increased to all of them and became more than two third four months post program implementation with statistically significant difference P value= 0.0001*.

Additionally, the present study similar to previous result **Emam (2018)** [23] clarifies that the majority of nurses had competent practice regarding late antepartum hemorrhage post intervention than pre intervention. This result was in agreement to **Abd Elmordy et al. (2018)** [25] who mentioned that more than one tenth of the studied nurses had competent practice regarding obstetrical emergencies before implementation of the instructional package. While, more than three quarters of them had competent practice immediately after implementation of the instructional package that decline to less than two third of nurses' level of practice at follow up phase of instructional package implementation P=0.000.

Furthermore, the present study in agreement with previous result **Harshash (2017)** [26] who had studied "the effect of maternity nurses' practices of women with late antepartum hemorrhage" she recommended that maintaining good performance of maternity nurses regarding ante partum hemorrhage through: develop a clear protocol for the management of massive hemorrhage, which should be regularly

updated and rehearsed. Educational program, regular seminars and workshop should be presented monthly to maternity nurses by head nurses and doctors.

Finally, regarding correlation between socio-demographic data and total knowledge, a significant relationship was found between the total knowledge scores of the studied nurses and age P value=0.039*. This result is compatible with **Ranjana (2016)** [17] who studied "the effectiveness of structure teaching program on knowledge regarding causes and intervention of APH among staff nurses. He found statistically significant association between the total knowledge scores of the staff nurses and demographic variable such as age in maternity ward at the probability level of P<0.05. Furthermore, in the current study, a significant relationship was also observed between total practice score and the educational level P value=0.001*. In the same line, **Ramadan et al. (2018)** [27] who found a highly statistically significant correlation between the studied participants total practice score and their educational qualification P<0.001.

Conclusion

Based on the findings of the present study, it can be concluded that there was a significant improvement of studied nurses' performance after conducting the educational program compared to pre-program.

Recommendations

This study recommended Frequent and schedule in-services training program should be applied for nurses at the hospital regarding management of bleeding in late pregnancy in order to improve nurses' knowledge and practices which will be reflected on improving the quality of health care. In addition, further research studies are needed regarding bleeding in late pregnancy

to identify the gaps in the knowledge and practice among different health care providers.

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