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Effect of Training Program on Nurses' Competencies in Preventing and Controlling Intrapartum Hemorrhage

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Abstract

Background: Intrapartum hemorrhage is a primary contributor to maternal morbidity worldwide. Nurses have a vital role in preventing intrapartum hemorrhage through their competences which directly impacts the standard of care and health results. **Aim:** Assess the effect of training program on nurses' competencies in preventing and controlling intrapartum hemorrhage. **Design:** Quasi-experimental research design was utilized. **Setting:** At Dar Sahet Elmar`Aa hospital and El-Hayah Port Fouad hospital in the city of Port Said. **Subjects:** Convenience sampling of all 57 staff nurses. **Tools:** A structured interview, a nurse's competency observational checklist, and an attitude likert scale were utilized to gather data. **Results:** About 48.2% of the nurses had satisfactory knowledge levels before receiving a training program, compared to 88.4% & 79% after and at one month follow up. Only 39.1% of the nurses had competent practice levels preprogram, compared to 81.8% & 75.4% after and at one month follow up. Additionally, 57.9% of the nurses prior a training program had positive attitude, compared to 94.2% and 90% after and at one month follow up. Moreover, overall practices scores of the studied sample had a positive statistical correlation with their total attitude scores. **Conclusion:** Following a competency training program, nurses' overall knowledge, practice, and attitude scores enhanced at post and at one month follow up compared to before. Additionally, overall practices scores of the studied sample had a positive statistical correlation with their total attitude scores. **Recommendations:** Continuous educational and training programs aimed at avoidance of intra-partum hemorrhage are ought to be applied for nurses in both governmental and nongovernmental sectors.

Keywords: Intra-partum hemorrhage, Nurses Competencies & Training program.

Introduction

Intra-partum hemorrhage (IPH) is a primary contributor to maternal mortality worldwide; there are 70,000 maternal deaths worldwide each year as a result of the approximately 14 million women who have IPH each year **(Jejaw & Melak, 2023).** Maternal deaths (MDs) from hemorrhagic syndromes have significantly decreased due to advances in obstetrics. However, haemorrhage continues to be the major cause of maternal demise (MDs) globally, causing over 50% of fatalities in several countries with low and moderate incomes **(WHO, 2021).**

Excessive bleeding associated with labor and delivery after 20 weeks' gestation constitutes intra-partum hemorrhage (IPH), which occurs in 4% to 7% of all pregnancies. From a clinical standpoint, IPH is best classified according to when it occurs, either before delivery of the infant (about one-third of cases) or after delivery of the infant (about two-thirds of cases) **(Wormer, et al., 2021)**. It still continues to be a significant factor in maternal and neonatal morbidity and mortality across the globe. Rupture of the womb, placental abnormalities, and conditions of the regional genital tract like cervicitis and neoplasm are additional bleeding factors, accounting for around half of cases **(Liu, et al., 2021).**

Despite a decrease in maternal dying rates worldwide, IPH continues to be a significant contributor to MDs. For each and every woman passes away, more will survive but experience various types of disability. Some of these disorders are less serious and even have the potential to be life-threatening (PLTC). However, there are also serious, life-threatening illnesses that share many traits with MD patients **(Howell, 2018).**

Like any diseases, IPH includes a number of risk factors, including unusually invasive placenta, uterine laceration after cesarean section, and vaginal laceration. With a higher maternal mortality rate, transfusion treatment is necessary for up to 90% of patients with placenta accreta variants. Even in high-income nations, there is a higher chance of bleeding during birth as a result of placenta accreta, which is

linked to the rise in cesarean deliveries **(Carrillo & Chandraharan, 2019).**

Research on intra-partum treatments in traditional maternity care has paid less attention to the measurement of characteristics that lead to welfare and excellent health outcomes by a certified healthcare professional with the required backup and help **(Koyuncu, et al., 2023).** According to the 2007 National Institute of Clinical Excellence, an intervention during labor is any procedure that takes place between the latent phase of labour (i.e., when there are uncomfortable uterine contractions and a small amount of cervical change, such as dilatation and effacement up to 4 cm) and the time the placenta and membranes are delivered **(Sargunam et al, 2019).** The management of bleeding in labor depends on the amount and cause of bleeding and condition of the mother and fetus. Hemoglobin estimates, history, and physical examination could all be used to determine the amount of blood lose. The cardiovascular system and the fetus's status are examined in detail to determine the mother state acutely **(Tekela et al, 2019).**

It's critical to adhere to maternity competency standards in order to ensure safe maternity care and enhance quality of treatment. The World Health Organization (WHO) most current statistics included in its annual report show that maternal mortality has fallen internationally by 56% since 2010. For safety's sake and respond skillfully alterations in the healthcare setting, a registered nurse must apply a wide range of information, abilities, and judgment. The information, skills, and decision necessary for ethical and safe nursing practice are referred to as competencies. Competencies are behavioral activities rather than tasks. If a nurse is proficient in all areas that concern her, then she is said to be competent, according to a criterion that has been decided to be suitable for the purpose of evaluating the nursing level **(Jejaw & Melak, 2023).**

In order to support efforts to increase institutional delivery coverage, the performance of nurses in emergency obstetric care, notably for IPH and pregnancy induced hypertension (PIH), and additionally for critical facilities and resources, clearly needs to be improved. Nurses are crucial in nursing intervention for women with intra partum hemorrhage is an essential element that prevent complication to mother and fetus during labor, including mentoring maternal, fetal condition and progress of labor, place a big bore I.V, assess the vital indicators of the woman, administer oxygen with a non-recreate face mask, draw blood for laboratory measurement of hematocrit, hemoglobin, and platelet levels as well as blood typing, a coagulation profile, and cross-matching in order to get ready for a blood transfusion **(Boelig et al., 2020).**

Significance of the study

With early detection and better and more appropriate therapy, the IPH, the most typical reason for maternal mortality globally that may be avoided. In Egypt maternal mortality rate due to intra partum bleeding was 174 lady per 100,000 births in 1992 , and 84 lady in 2000 , and continued to 50 women in 2012, up to 44 lady only in 2014, and 33 lady per 100,000 births in 2018 which still requires a serious handle **(Genina et al., 2023).**

In order to control blood loss and lower the danger of maternal complications or even death, a nurse's quick thinking and skillful action will be essential. Nurses are essential in preventing, controlling of IPH and enhance quality of treatment. When bleeding occurs, they might be the first and the only qualified person on the area **(Koyuncu, et al., 2023).** However, no previous studies were conducted at the setting of the current study to assess nurses' competencies in preventing and controlling intrapartum hemorrhage of mothers. So, the aim of this study was to assess the effect of training program on nurses' competencies in preventing and controlling intrapartum hemorrhage.

Operational Definition

Nurses' Competencies are the combination of knowledge, skill, and attitude that maternity nurses must possess in order to provide timely nursing care during labor with the goal of preventing intrapartum hemorrhage.

Intrapartum hemorrhage (IPH) is a dangerous, occasionally fatal, occurrence. Vaginal tract lacerations, uterus atony, accreta of the placenta, and abruption of placenta are a few of the recognized etiologies. Maternal outcomes will be great with prompt discovery what caused the hemorrhage, the amount of blood lost, and resuscitation of volume, which includes red blood cells and other blood contents as necessary.

Aim of the Study

The study aimed to assess the effect of training program on nurses' competencies in preventing and controlling intrapartum hemorrhage.

Research Objectives:

- Assessing the nurses' knowledge, practice and attitude in preventing and controlling intra partum hemorrhage.
- Developing and implementing of training program on upgrading nurses' competencies for preventing and controlling intrapartum hemorrhage.
- Evaluating the effectiveness of training program on upgrading nurses' knowledge, practice and attitude in preventing and controlling intrapartum hemorrhage.

- Determine the correlation between knowledge and attitude of nurses in regard with their practices in preventing and controlling intra partum hemorrhage.

Hypothesis:

H1: Nurses who received training program would have improved knowledge, practice and attitude toward preventing and controlling intra partum hemorrhage than before training program.

H2: There was a significant correlation between knowledge and attitude of nurses in regard with their practices in preventing and controlling intra partum hemorrhage.

Subjects and Method

Study Design:

A quasi-experimental research design was adopted in this study

Study Settings:

This Study was conducted at the delivery room of Dar Sahet Elmar`Aa hospital and El-Hayah port Fouad hospital which affiliated to Comprehensive Health Insurance in Port Said City. Obstetrics and Gynecology department at two hospitals in Port Said city as gynecological specialty hospital with hospital recorded intrapartum hemorrhage cases (20).

Study Subjects:

Convenience sampling of total 57 nurses carrying out in previous mentioned settings were included in this study.

Tools for Data Collection:

The data was collected through the three tools, those are as follows:

Tool I: A structured interview: It was adapted from **Emam (2018)** to assess nurses' knowledge regarding IPH and modified by researcher in English language. It was includes two main parts:

First part: It includes information on the sociodemographic characteristics of the nurses, such as their ages, levels of education, duration of time working in the maternity ward, and participation in education programs on intrapartum hemorrhage prevention.

Second part: Nurses Knowledge Assessment Questionnaire

It had 15 questions in total and included 7 head line, knowledge regarding IPH definition, types, causes, risk factors, singes and symptoms, nursing role for enhancing maternal, fetal, labor progress and outcome, nursing prevention and immediately interventions in controlling IPH, strategic plan. ..etc.

Scoring system:

A correct answer received a score of 1, and an incorrect one received a score of 0. For every knowledge item. The overall score for the part was calculated by adding the individual item scores for each knowledge area, dividing the result by the number of items, and adding the result. In addition to computing the mean and standard deviation, these scores were translated into a percentage score. If the percentage of the score was 60% or higher was deemed satisfactory and less than 60%, knowledge was deemed unsatisfactory.

Tool II: Observational checklist to Nurses' competency performance: it was adapted from **Abu Shabana et al. (2022)** in English format and the researcher modified it to assess nurses competency performance in prevention and controlling IPH as preparation tasks (insert cannula, obtained blood sample for RH factor for blood grouping, assess vital signs every 15 minutes, check level of consciousness every 15 minutes, check amount, color, odor of blood of vaginal bleeding every 50 minutes, avoid PV examination, check fetal heart rate every 50 minutes), and birth care, administration of uterotonic drugs, evaluation of the placenta, uterine massage, as well as uterine compression if needed ……etc.

Scoring system

The overall score is 73 points, with single point awarded for every answer that is correct and zero for every erroneous response. Higher scores indicated more advanced skills. If the total practice score was less than 60%, it was regarded incompetent, and if it was more than 60%, it was judged competent practice.

Tool (III): Attitude Likert scale checklist for Nurses' attitude: It was adopted from **Abu Shabana et al. (2022)** English-language study to assess a nurse's attitude toward controlling and preventing of intrapartum hemorrhage. IPH is a potentially fatal condition, thus it's crucial to follow the protocol to save the lives of the mothers involved. IPH is an extremely dangerous condition, etc.

Scoring system

The total score is 16 points, with two points awarded for agreeing, one point for unsure, and zero points awarded for disagreeing. The standard deviations and mean were calculated. If the total attitude score was ≥ 60, it was considered positive; otherwise, it was judged negative.

Content & Face validity: was used for the modified tools to assess whether the instruments are adequate for the aim. Face and validity of content were assessed by an expert jury of seven professors the discipline of obstetrics and gynecology from medical and nursing faculty staff.

Test reliability: On the study instrument, an Alpha Cronbach reliability analysis was completed. Test of Cronbach's Alpha showed the instruments' internal consistency was adequate. Knowledge reliability was

0.917, attitude reliability was 0.859, and performance reliability was 0.64.

Administrative Design:

The Dean of the Nursing Faculty granted official approval and the directorate of health to directors of the selected hospitals in Port Said governorate to obtain permission before conducting the study. They were given the option to decline taking part, and it was promised that the information they provided would only be used for study.

Ethical Considerations:

Nursing faculty approval of the Ethics Committee under code NUR 6/8/2023 (28); Port Said University, was obtained to take the permission to do the research, explained the study's objective for every nurse which comprised take participants' consent, educate them on the value of participation, and make it clear that the data collected will be kept private and utilized solely for the purposes of the study. Every nurse who took part in the trial provided additional verbal consent after being informed of its goal.

Pilot study:

10% of the entire study population took part in the pilot trial, which consisted of (6) nurses chosen at random from aforementioned settings. It was done to determine the tool's application, clarity, and relevance as well as to determine how long it will take to complete the questions. Because of modifications to the questionnaire sheet, some items were added, others were removed, and some were reworded, nurses who the primary study population was not included because they took part in the pilot trial. The tool's final design was created, and the time needed to finish it was determined.

Field Work:

After this pilot study, the data collection method consumed eight month from beginning January to the end of August 2023. Training program technique: Preparation, assessment, implementation, and evaluation were the four main phases of the current study's execution.

Preparatory Phase:

- After reviewing pertinent literature and data collection techniques related to the study topic, the researchers conducted pilot study to evaluate the viability of the tools to determine the duration allotted regarding data collection. They also obtained official written approval from the nursing faculty at Port Said University and the director of the hospitals. After filling out the questionnaire during interviews with nurses, the researcher made corrections based on the objectives of the educational intervention.
- The information from the educational sessions was gathered and translated into Arabic. The topic was developed using both PowerPoint presentations and a guidance manual. A panel of specialists was then given the booklet and the data collection instruments to review.

Assessment phase:

- Every studied nurses enrolled their verbal consent to participate. A clear explanation was given to the nurses about the nature and the expected outcomes of the study. The researcher started to collect data and explain the objectives of the study during the interview.
- The researcher interviewed every nurse alone; the tool took 20 minutes to assess knowledge and tack the time to observe the nurse when manage patient to assess competent practice and attitude using the aforementioned tools as a pre-test. Each hospital was visited two to three days according availability of nurses between 8 a.m. to 2 p.m.

Implementation Phase:

A training program was implemented based on the pre-test evaluation's findings. According to their availability to receive the training program sessions and the instruction manual, study participants were separated into subgroups of around 5 to 6 nurses. Each participant received two sessions per day. Each session was allocated one hour. Sessions of this training program included: Session one: Described the objectives of the study, the intervention procedures, how to obtain oral informed consent, how much time is allocated for subsequent instructional sessions, and how to contact the researchers. Additionally, it discusses introduction about IPH as a significant contributor to maternal mortality, as well as its definition, risk factors, and causes. Session two: Covers different types of IPHs and how to keep a check out for PIH symptoms in women. The third session covers the impact of IPH on the mother, the fetus, the course of labor, and the results. Additionally, it covers IPH prevention as well as medical and surgical management. The fourth session covers IPH preventing procedure as insert cannula, obtained blood sample for RH factor for blood grouping, assess vital signs every 15 minutes, check level of consciousness every 15 minutes, check amount, color, odor of blood of vaginal bleeding every 50 minutes, avoid PV examination, check fetal heart rate every 50 minutes, birth care. Also controlling procedures of IPH as administration of uterotonic drugs, uterine massage, and evaluation of the placenta by utilizing a video outlining the steps of procedure, role-playing and anatomical modeling. Sessions five and six focused on competency skills, allowing nurses to practice primary PPH preventive techniques until they were competent at doing so while the researchers observed their performance and gave comments using a learning guide. Session seventh: Covered all of the material from the prior

sessions. Participants were also urged to talk about any difficulties they were having.

Evaluation Phase:

The post-test was given twice: immediately following all preceding program sessions and one month later and a follow-up evaluation to evaluate influence of training program on the nurses' knowledge, competency practice, and their attitude levels using the same three tools as those indicated above. The researchers compare the data they have collected to determine the training program's effects.

Statistical Design:

Version 20.0 of the statistical package for social science (SPSS) was used for data entry and statistical analysis. For qualitative and quantitative variables, respectively, means and standard deviations were used to present the data using descriptive statistics. A statistical method called a paired sample the t-test was employed to compare means for same set of people. Additionally, the person coefficient test was employed to evaluate the interrelationships between the variables. Statistical significance was defined as a P-value of 0.05 or lower, and high significance as a P-value ≤0.01.

Results

Table (1): Frequency and percentage distribution of the studied nurses' personal general characteristics (N=57).

Parameter	N	%
Age		
Less than 20 years	8	14.0
21 – 25 years	22	38.6
26 – 30 years	15	26.3
More than 31 years	12	21.1
Mean and SD	23.18±5.22	
Gender		
Female	57	100.0
Educational level		
Secondary nursing school	37	64.9
Technical diploma	9	15.8
Bachelor/master and above	11	19.3
Years of Experience		
Less than 1 year	3	5.3
2 – 5 years	30	52.6
More than 5 years	24	42.1
Area of residence		
Urban	55	96.5
Rural	2	3.5
Attendance at training sessions on the prevention of intrapartum hemorrhage.		
Yes	7	12.3
No	50	87.7

Table (2): Knowledge mean scores regarding background and preventive measures of intra-partum hemorrhage throughout the program phases among the studied nurses (N= 57).

Items	Pre program	Post program	Follow-up (After one months)	t test / p-value1	t test / p-value2
	Mean± SD	Mean± SD	Mean± SD		
IPH background and preventive measures:					
• Definition of IPH	1.543±.502	1.894±.309	1.859±.350	5.502/ .000*	5.084/.000*
• Causes of Intra-Partum Hemorrhage	1.315±.468	1.929±.257	1.807±.398	5.715 / .000*	4.270/ .000*
• Risk factors associated with IPH	1.263±.444	1.824±.383	1.754±.434	8.171 / .000*	7.616/ .000*
• Types of IPH	1.386±.491	1.842±.367	1.807±.398	8.775 / .000*	4.879/ .000*
• Signs and symptoms of IPH	1.526±.503	1.789±.411	1.684±.468	6.155 / .000*	5.084/ .000*
• Nursing role for enhancing maternal, fetal, labor progress	1.614±.491	1.912±.285	1.842±.367	5.933 / .000*	4.270 / .000*
• Nursing preventive interventions for IPH	1.473±.503	1.947±.225	1.859±.350	6.614 / .000*	5.292 / .000*
• Health instructions for mother with IPH	1.684±.468	1.947±.225	1.807±.398	3.864 / .000*	3.024 / .000*
• Hospital discharge information and follow up schedule	1.631±.486	1.894±.309	1.736±.444	5.715 / .000*	5.084 / .000*
Mean and SD	1.486±.500	1.885±.310	1.988±.400	6.412 / .000*	4.450 / .000*

Table (3): Knowledge mean scores regarding nursing immediate interventions for controlling of intra-partum hemorrhage throughout the program phases among the studied nurses (N= 57).

Items	Pre program	Post program	Follow-up (After one months)	t test / p-value1	t test / p-value2
	Mean ± SD	Mean ± SD	Mean± SD		
Nursing immediate interventions for controlling IPH					
• Regular monitor and calculate amount of blood loss	1.333±.475	1.964±.185	1.912±.285	7.353/.000*	1.000/ .000*
• Discontinue oxytocin drug solutions	1.736±.444	1.859±.350	1.771±.423	9.439/.000*	5.715/ .000*
• Nursing strategic plan for women with IPH	1.438±.500	1.824±.383	1.754±.434	2.320/.000*	1.764/ .000*
• Placenta examination	1.684±.468	1.947±.225	1.807±.398	3.864/ .000*	3.024/ .000*
• Uterine massage	1.631±.486	1.894 ±.309	1.736±.444	5.715/.000*	5.084/ .000*
• Uterine compression	1.561±.500	1.912±.285	1.824±.383	5.933/.000*	4.472/ .000*
• Comply with infection prevention measures	1.456±.502	1.9474±.225	1.771±.423	6.853/.000*	4.472/ .000*
• Skin disinfection solutions	1.561±.500	1.912±.285	1.824±.383	5.933/.000*	4.472/ .000*
Mean and SD	1.497±.500	1.892±.310	1.977±.400	6.310/.000*	4.430/ .000*

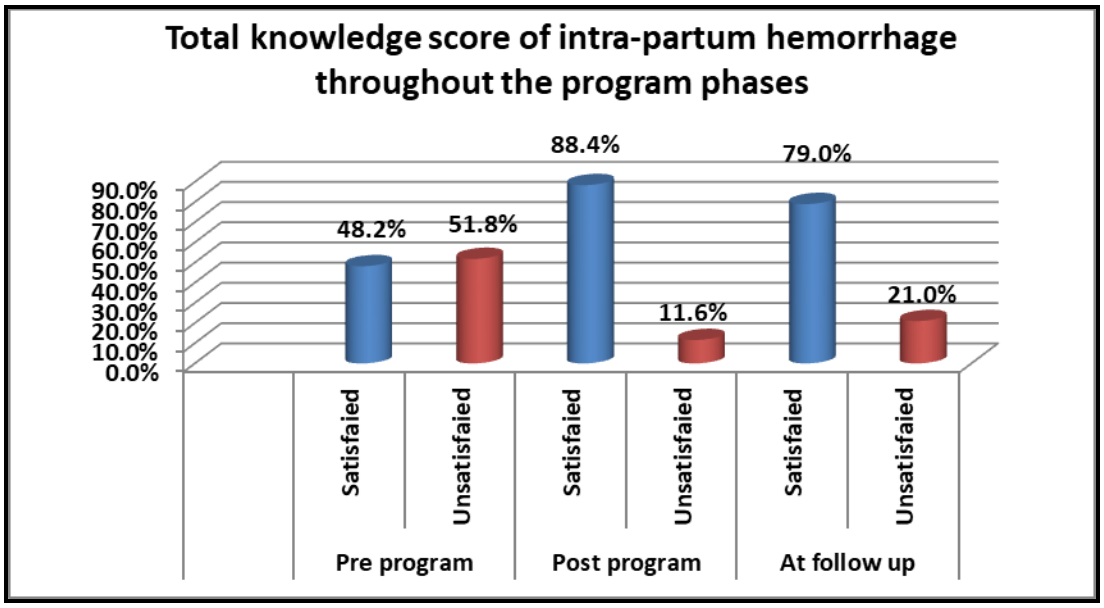

Figure (1): Percentage distribution of the studied nurses' total knowledge score of intra-partum hemorrhage throughout the program phases (N= 57).

Table (4): Practice mean scores of intra-partum hemorrhage throughout the program phases among the studied nurses (N= 57).

Items	Pre program	Post program	Follow-up (After one months)	t test / p-value1	t test / p-value2
	Mean± SD	Mean± SD	Mean± SD		
Insert cannula from 5-10 min and obtain blood sample for RH factor for blood grouping	1.245±.434	1.771±.423	1.719±.453	7.888/ .000*	7.099/.000*
Assess vital signs every 30 minutes	1.473±.503	1.807±.398	1.736±.444	5.292/ .000*	4.472/ .000*
check fetal heart rate and level of consciousness	1.473±.503	1.807±.398	1.736±.444	5.292/ .000*	4.472/ .000*
Check amount, color, consistency, odor of blood of vaginal bleeding every 50 minutes	1.438±.500	1.754±.434	1.701±.461	5.084/ .000*	4.472/ .000*
Avoid PV examination	1.070±.257	1.631±.486	1.596±.494	8.466/ .000*	7.888/ .000*
Calculate blood loss	1.596±.494	1.842±.367	1.771±.423	4.270/ .000*	3.452/ .000*
Calculate fluid intake and output	1.368±.486	1.736±.444	1.666±.475	5.715/ .000*	4.879/ .000*
Encourage fluid intake and avoid solid food by mouth	1.175±.383	1.701±.461	1.614±.491	7.888/ .000*	6.614/ .000*
Monitor administration of blood according rate per minute	1.421±.498	1.912±.285	1.842±.367	7.353/ .000*	6.382 /.000*
Record and report observations every half an hour	1.105±.309	1.807±.398	1.771±.423	11.479/.000*	10.583/ .000*
Perform perineal hygiene per hour (17)	1.543±.502	1.947±.225	1.947±.225	6.155/ .000*	6.15 / .000*
Comply with infection control measures and maintain safe and comfort environment	1.368±.486	1.736±.444	1.684±.468	5.715/.000*	5.084/ .000*
Insert urinary catheter and calculate urine every hour	1.000±.000	1.614±.491	1.561±.500	9.439/.000*	8.466/ .000*
Monitor progress of labor regarding frequency and uterine contractions	1.508±.504	1.894±.309	1.859±.350	5.933/.000*	5.502/ .000*

Items	Pre program	Post program	Follow-up (After one months)	t test / p-value1	t test / p-value2
	Mean± SD	Mean± SD	Mean± SD		
Calculate sugar and albumin every 1 hour	1.508±.5043	1.894±.309	1.859±.350	8.171/.000*	5.502/.000*
Perform birth care (14)	1.403±.494	1.947±.225	1.824±.383	5.502/.000*	6.382/.000*
Uterotonic drugs administration (4)	1.456±.502	1.807±.398	1.771±.423	3.024/.000*	5.084/.000*
Perform examination of the placenta (15)	1.824±.383	1.964±.185	1.894±.309	5.292/.000*	2.056/.000*
Perform uterine massage if needed (6)	1.508±.504	1.842±.367	1.754±.434	8.171/.000*	4.270/.000*
Perform uterine compression if needed	1.210±.411	1.754±.434	1.684±.468	9.798/.000*	7.099/.000*
After delivery of fetus encourage immediate suckling	1.368±.486	2.000±.000	1.894±.309	9.798/.000*	7.888/.000*
Instruct mother about baby care, family planning, nutrition, exercise, general hygiene and immunization during first year of life.	1.333±.475	1.947±.225	1.894±.309	10.583/.000*	8.466/.000*
Mean and SD of total practice score	1.376±.486	1.798±.403	1.740±.440	7.104/.000*	6.012/.000*

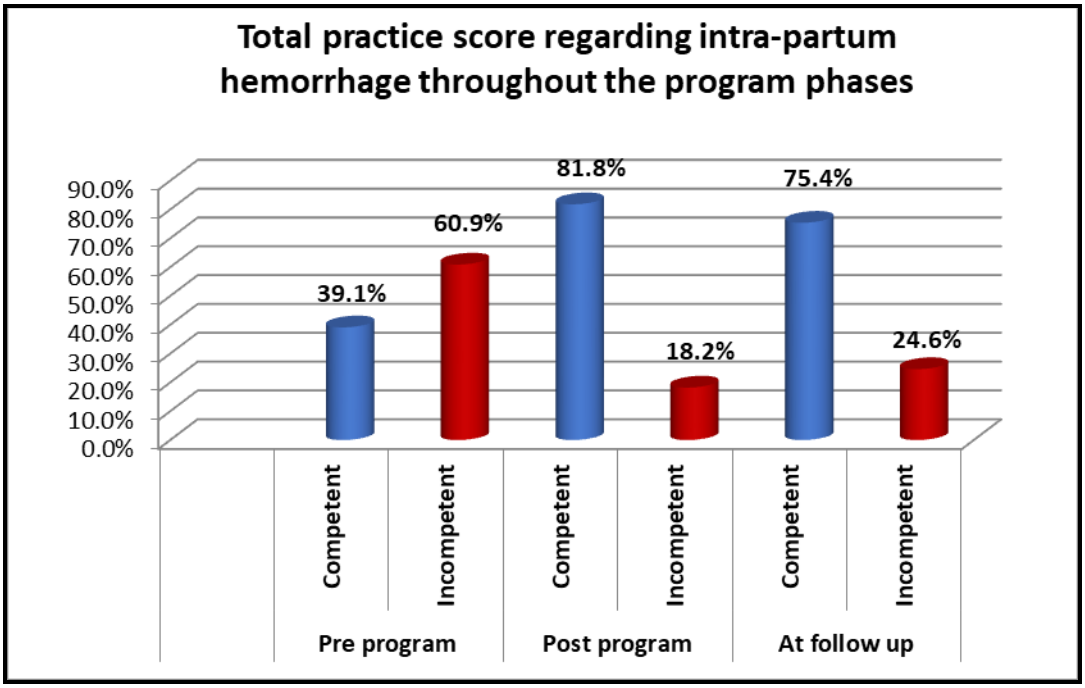

Figure (2): Percentage distribution of the studied total practice score regarding intra-partum hemorrhage throughout the program phases (N= 57).

Table (5): Attitude mean scores of intra-partum hemorrhage throughout the program phases among the studied nurses (N= 57).

Items	Pre program	Post program	Follow-up (After one months)	t test / p-value1	t test / p-value2
	Mean± SD	Mean ± SD	Mean± SD		
IPH is an emergency situation	1.912±.342	1.964±.185	1.894±.309	1.764/ .000*	.574/ .000*
Complying with IPH hospital protocol is important to save pregnant women's lives	1.736±.444	1.842±.413	1.789±.452	2.191/ .000*	1.351/ .000*
Large amount of bleeding is more dangerous than spotting	1.491±.758	1.912±.28540	1.824±.383	5.084/ .000*	5.292/ .000*
Immediate intervention for a mother is cannula insertion and obtain RH factor	.877±.780	1.754±.509	1.666±.511	10.087/ .000*	11.339/ .000*
Monitor fetal heart rate every 1 hours and labor progress	1.438±.756	1.649±.55069	1.929±.371	4.172/ .000*	1.407/ .000*
Calculate blood loss isn't important	1.666±.607	1.982±.13245	1.947±.225	4.315/ .000*	4.169/ .000*
Urinary catheter insertion is important	1.070±.798	1.947±.225	1.877±.381	8.724/ .000*	8.485/ .000*
Monitoring maternal conscious isn't important	.315±.571	1.929±.257	1.789±.452	16.245/.000*	11.523/ .000*
PV isn't contraindicated among mothers with IPH	.210±.490	1.824±.383	1.754±.434	14.154/.000*	13.437/ .000*
Encourage complete bed rest	2.000±.000	2.000±.000	2.000±.000	0.000/ .000*	0.000/ .000*
Mean and SD of total attitude score	1.271±.849	1.880±.350	1.847±.388	6.382/ .000*	6.048/ .000*

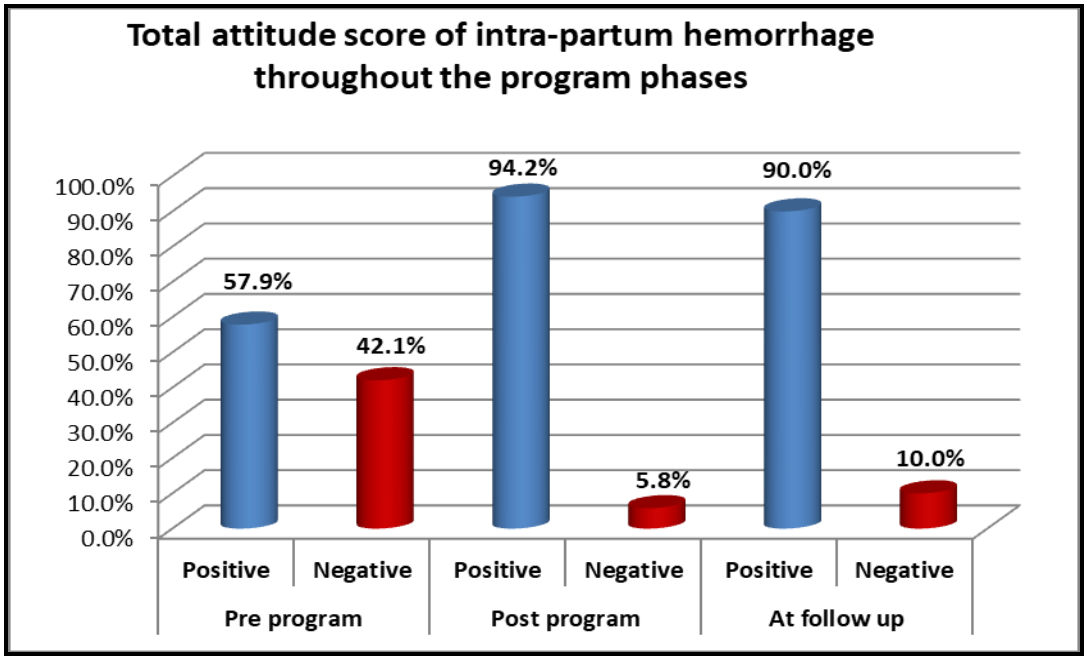

Figure (3): Frequency distribution of the studied sample regarding their total attitude score of intra-partum hemorrhage throughout the program phases (N= 57).

Table (6): Correlation between the studied sample' knowledge, practices and their attitude towards intra-partum hemorrhage (n=57).

Variables		Total knowledge	Total attitude
Total knowledge	**r**		.018
	P		.894
Total practices	**r**	.105	.295
	P	.435	.026*

** Significant at p ‹ 0.05.*

Table (1): Shows that 38.6% of the nurses aging around 21-25 years using Mean and SD of 23.18±5.22 years, 100% of the studied sample are females, and 64.9% have secondary nursing school education. Concerning, years of experience, the results indicated that, 52.6% of nurses have experiences between 2-5 years. Eventually, the table showed that 96.5% of studied sample live in urban area. Furthermore, only 12.3 of nurses attended training programs on prevention intrapartum hemorrhage.

The distribution of knowledge mean scores regarding background and preventive measures of intra-partum hemorrhage over program phases among the nurses who were the subject of the study is shown in **Table (2):** In comparison to the pre-training baseline, all knowledge-related items showed a statistically improvement after training program and also during follow-up phase (P=0.000*). Before the training program, Mean and SD deviation of total knowledge score were unsatisfactory (1.486±.500), but after the training program, they greatly improved (1.885±.310). Additionally, there was a difference between the follow-up phase's mean and standard deviation and the pre-program phase's (1.988±.400).

The distribution of knowledge mean scores regarding nursing immediate interventions for controlling of intra-partum hemorrhage over program phases among the nurses who were the subject of the study is shown in **Table (3):** In comparison to the pre-training baseline, all knowledge-related items showed a statistically improvement after training program and during follow-up phase (P=0.000*). Before the training program, Mean and SD of total knowledge score were unsatisfactory (1.497±.500), but after the training program, they greatly improved (1.892±.310). Additionally, there was a difference between the follow-up phase's mean and standard deviation and the pre-program phase's (1.977±.400).

Figure (1): Displays distribution in percentages of the study nurses' overall intra-partum hemorrhage knowledge score over the course of the program stages. It was discovered that whereas less than half of studied nurses (48.2%) had satisfied knowledge levels before training program, compared to the majority of them (88.4%) had satisfied knowledge levels following training program. About 79.0% of study's nurses have a satisfactory total knowledge level in follow-up phase.

Table (4): Displays the study nurses' practice mean scores for intra-partum bleeding during the course of the program stages. Comparing the baseline before the program to the follow-up phase, all practice-related items showed a statistically significant improvement (P=0.000*). Before the training program, Mean and SD of overall practice score were incompetent (1.376±.486) but after the training program, they greatly improved (1.798±.403). Additionally, the follow-up phase's mean and standard deviation were better than the pre-program phase's (1.740±.440).

Figure (2): Displays the percentage distribution of the total intra-partum hemorrhage practice score across all program phases for the nurses who were the subject of the study. It was shown that only around one a third of the nurses under study had competent practice before to their training program (39.1%), as opposed to the majority of them (81.8%) having competent practice following their training program. About 75.4% of nurses continued to function competently during the follow-up period.

Table (5): Shows the study nurses' attitude mean scores for intra-partum hemorrhage during the course of the program stages. In comparison to the pre-training baseline, all attitude-related items showed a statistically improvement after training program and during follow-up phase (P=0.000*). Before the training program, Mean and SD of overall attitude score were 1.271±.849, but after the training program, they were much better at 1.880±.350. Additionally, there was improvement in the mean and standard deviation at the follow-up period 1.847±.388 in contrast to the pre-program stage.

Figure (3): Illustrates percentage distribution of the study nurses' overall attitude score for intra-partum hemorrhage during the course of the program stages. It was discovered that vast majority of nurses surveyed (94.2%) have positive attitude levels after training program compared to around 57.9% before training program. Great majority (90%) of study's nurses displayed a positive attitude during the follow-up phase.

Table (6): Demonstrates positive statistical a correlations around the overall practices scores of nurses and their overall attitude scores. Although there were no a correlations around entire knowledge score of nurses and their overall attitude score at 0.05, there were no a correlations around total knowledge score of nurses and their overall attitude score.

Discussion

It is generally acknowledged that a hospital's or a nation's intrapartum stillbirth rates are an indicator of the degree of care provided during labor and the neonatal mortality rate in the first 24 hours after birth. It may be an indication of the caliber of prenatal and immediate postnatal treatment. Gaps in individual doctors' knowledge and skills, as well as systemic problems like a lack of supply and management of human resource staff and a wrong distribution of medical professionals, frequently limit the quality of maternity care **(Shahin, et al., 2021).**

A vast majority of healthcare resources in low- to moderate-income settings may not be able to provide basic or comprehensive Emergency Obstetric and Newborn Care (EmONC), according to several surveys conducted in developing nations. Structures are frequently in place, and supplies and equipment are supposedly ready, however staff claimed a lack of expertise and abilities, making them unable to offer all of Emergency Obstetric and Newborn Care signal functions and important intrapartum care, particularly when bleeding occurs. In other cases, a inadequate knowledge and abilities to deliver Emergency Obstetric and Newborn Care which exacerbated due to the failure to use simple but effective health technology **(Daniels & Abuosi, 2020).**

Numerous studies also highlight the urgent need for professional assistance in IPH prophylaxis. **Shahin, et al (2021)** observed an improvement in patient outcomes following staff nurses' inservice training on primary IPH prevention and treatment. Thus, this study was conducted to assess the effect of training program on nurses' competencies in preventing and controlling intrapartum hemorrhage.

The finding of concurrent study shows, less than half of nurses had satisfactory total knowledge score about intra-partum hemorrhage. This may be attributed to the fact that sample's average age of twenty-three years, majority of them had lacked IPH training, and the fact that most of them—more than two thirds—had finished their secondary nursing education.

In this regards, the study via **Abd-Elgany et al. (2019)**, revealed that the average age of nurses was twenty nine, which supports this. Nurses on staff made up more than two thirds of them. Seventy-five percent of them additionally had no official training in IPH prevention.

Furthermore, current result was disagreed with **Matsui et al. (2021)** who concluded that, among experienced birth attendants, delivery management knowledge was lacking. The knowledge level was unaffected by prior training experiences. It was implied that they didn't know much about anatomy and physiology. To advance knowledge and raise the standard of maternity care in Cambodia, more experimental methods should be tried. In addition, **Itote et al (2019)** mentioned, according to current globally standards, nurses' self-reported knowledge of the intrapartum period was poor.

Moreover, findings of current study reveals that about one third of nurses had competent total reported practice score toward mothers with intra-partum hemorrhage. This is may be due to the fact that, unsatisfactory knowledge about intrapartum hemorrhage, lacking training courses by majority of them which enhance their clinical skills and their reported practices, besides, lacking specialized continuous follow up and extensive supervision regarding emergency situations done by the Department of Health Affairs in Port Said Governorate under the new comprehensive insurance system.

This result was agreed via, **Housseine et al (2020)** who concluded that, nurses had incompetent practice skills to deal enough with intapartum bleeding, also, In terms of routine intrapartum care, neither worldwide nor locally tailored criteria were successfully met. This is probably caused by a gravely insufficient number of delivery attendants, without whom it is very unlikely that novel birth interventions would be successful. In order to address the core causes of poor intrafacility care in environments with limited resources, including the quantity of experienced birth attendants needed for safe and respectful births, this calls for both international and local care provider.

On the other hand, **Bohren et al., (2019)**, who mentioned that, about two thirds of the women who exposed to intraprtum hemorrhage received skillful and competent practices by the staff nurses worked in the gynecological and obstetric department.

Besides, **Taha (2015)** who stated that the practical parts of the nurse's role in the prevention of and post-partum hemorrhage were 69.6%, including the evaluation of fundal level, the significance of having an empty bladder, the evaluation of lochia and blood loss, the evaluation of vital signs, and the administration of IV fluids.

The participants' educational backgrounds and attendance at training sessions aimed at upgrading their clinical abilities and knowledge may account for the contrast between the current study and the other research.

According to the results of concurrent study, approximately half of study participants had overall IPH scores that were negative. This could be due to that nurses' demanding physical work, particularly while tending to women who are internally bleeding, may be to blame for their unfavorable attitude. Additionally, they offer all facets of treatment that patients are unable to manage themselves, which could have a detrimental impact on their attitudes.

This interpretation was supported by **Mannava et al. (2019)**, who conducted an in-depth analysis of the attitudes and behaviours of providers of maternal health care in contacts with patients. They found that the well-being of women, their level of satisfaction with care, and their desire to seek care were all impacted by a wide variety of adverse health care provider's attitudes and behaviors. Positive women encounters are greatly outnumbered by reported unfavorable ones. The makeup of the variables influencing the attitudes and actions of health workers points to the significance of developing workforce competencies in areas like counseling and communication. In attempts to promote maternal health, more consideration must be given to the attitudes and actions of National Health Care Provider Solutions (MHCPs), for the benefit of both women and medical professionals.

Additionally, **Edu et al. (2017)** came to the conclusion that the most common issues were the unfavorable attitudes of skilled nurses toward intrapartum immediate bleeding intervention and a lack of confidence in the healthcare system.

The findings of this study revealed that following the practical application of the competency nursing training program, there was a major enhancement in the nurses' knowledge, practice, and attitude levels regarding the prevention of IPH; a sizable majority of the study nurses had satisfactory knowledge, positive attitude, and a competent performance regarding primary IPH prevention. This might be because the training program was effective in raising nurses' performance and competence levels. This is consistent with findings from a research by **Shahin, et al. (2021)** on the impact of nurse intervention programs on the prevention and control of IPH.

Regarding the correlations around knowledge, attitude, and practices of the examined nurses, the current results discovered that there was a statistically positive relationship between nurse's overall practices scores and its overall attitude scores. While there was no statistically correlation around nurses knowledge and attitude or around nurses knowledge and practices.

The results of current study disagree with **Mohammed et al. (2023)**, who claimed that working on nurses' care of intrapartum hemorrhage, statistically variations were noticed in knowledge ($p<0.001$).

Moreover, study by **Getachew, et al. (2018)**, which concluded that having adequate knowledge, particularly regarding IPH immediate care intervention, is significantly associated with positive attitude, was also in contrast to this finding.

Additionally, **Idrus, et al. (2019)** found in their study "Knowledge, Attitude, and Practice on Postpartum Hemorrhage Among Women in Kuantan, Pahang, Malaysia" that there is very little correlation between this association and the low correlation coefficient, or r value (0.194). The p-value of 0.048, however, demonstrates the significance of this finding and the positive r-value's indication that the correlation is positive. The outcome showed that there is an average correlation between these associations in a similar vein. According to the p-value of 0.001 and the positive r value, the correlation and association are both sinificant.

The differences between the current study and previous mentioned studies might be due to that nurses' attitudes are mostly influenced by their practice and working with women with IPH more than knowledge. Also, most of the sample are younger age whose more actively in caring area rather than older age.

Conclusion

Based on finding of this research, it was determined that the study hypotheses were valid and thus it may be concluded that, the study nurses' overall knowledge, practice, and attitude scores all enhanced at post and at one month follow up from the competency training program as compared to the prior program. Additionally, the overall practices scores of nurses had a positive statistical correlation with their total attitude scores.

Recommendations

The following suggestions are made in light of the findings of the current study:

1- For nurses employed in the obstetrics and gynecology department, on-going education and training programs about preventing intra-partum hemorrhage should be advised.
2- It's crucial to carry out a thorough investigation on the attitudes, practices, and basic knowledge of nurses working in the obstetrics and gynecology department in regard to Intra-partum hemorrhage prevention.
3- Further studies are needed to include large sample size and different settings (Both governmental and nongovernmental sectors) to look at the obstacles that keep nurses from attending a training program.

4- It is essential to consistently record and report data that show maternal morbidities and fatalities brought on by intra-partum problems. It aids in the implementation of proper safeguards and prevention measures for intra-partum hemorrhage.

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