EFFECTIVENESS OF VIDEO SIMULATION ON INCREASING MATERNITY NURSES' KNOWLEDGE, PRACTICE, AND SELF-EFFICACY IN MANAGING PRIMARY POSTPARTUM HEMORRHAGE

Amany Ali Abd El-Salam[1], Gehan Ahmed mohmed elbahlowan[2], Eman Seif Soliman Ashour[3]

Assistant Professor of Maternal & Newborn Health Nursing, Faculty of Nursing, Menoufia University, Egypt [1&3]

Lecturer of Obstetrics & Gynecology, Faculty of Nursing Port said University, Egypt. [2]

ABSTRACT

Background: Simulation is one of the most important tools in nursing education for enhancing nurses' knowledge, performance, and self-efficacy in reducing postpartum hemorrhage morbidity and mortality **Aim:** To investigate the effectiveness of video simulation on increasing maternity nurses' knowledge, practice, and self-efficacy in managing primary postpartum hemorrhage. **Subjects and method: Design:** A quasi-experimental research design had utilized. **Settings:** This study was conducted at the postpartum unit of university hospital and Shebin El-Kom teaching hospital, Menoufia Governorate, Egypt. **Subjects:** A convenience sampling of 50 maternity nurses who worked in the previous settings and a purposive sample of 100 women with primary postpartum hemorrhage were included. **Tools**: A structured interviewing questionnaire related to the maternity nurses, a structured interviewing questionnaire related to the postpartum women, an observational checklist for maternity nurses, an observational checklist for postpartum women and self-efficacy scale. **Results:** The study revealed that there were statistically significant differences between pretest, posttest and follow up after implementation of the video simulation manifested by higher knowledge; practice and self-efficacy score for maternity nurses. **Conclusion:** Using video simulation for primary postpartum hemorrhage management increased the maternity nurses' knowledge, practice, and self-efficacy scores. **Recommendations**: Video simulation programs should be included in curriculum to help professional nurses acquire the essential knowledge, performance skills, and clinical judgment for early detection, and an effective nursing response for managing primary postpartum hemorrhage.

Keywords: Maternity nurses' knowledge, Practice, Primary postpartum hemorrhage, Self-efficacy, Video simulation

INTRODUCTION

In today's nursing world, video simulation is effective learning methods. It is a made-up version of a real training and performance-testing process. Video simulation is more than just a way to educate and practice psychomotor skills. It is an evidence-based technique for facilitating high-quality experiences that encourage critical thinking and reasoning (Cant and Cooper, 2018). Nurses can practice several clinical scenarios, including intensive care procedures, using simulation. In areas with limited resources and a probable shortage of healthcare personnel, simulation is critical. Simulation is utilized to instruct nursing staff trainees who have limited resources than their colleagues in higher-resource settings; thus, using simulation to develop basic obstetrics and gynecologic abilities would be very beneficial (Chen, et al., 2017).

Postpartum hemorrhage (PPH) is blood loss of equal to 1000 ml or more during 24 hours after birth with symptoms of hypervolemia. It accounting for roughly a quarter or more of all maternal pregnancy-related deaths worldwide, PPH classified as primary if it begins within 24 hours of delivery or secondary if it begins after that. Many deaths related to PPH can be prevented, according to various studies, if the disease diagnosed earlier and treated more effectively (Rath, 2019).

Because the maternity nurses are ready beside the bedside, they are the first responders to primary postpartum hemorrhage. Nurses must be equipped with the knowledge and procedures essential to recognize patients who have a postpartum hemorrhage to prevent maternal morbidity and death caused by postpartum hemorrhage. Maternity nurses should know how to manage a primary postpartum hemorrhage, including fundal massage method and quantifying blood loss in the case of uterine atony, which is a life-saving intervention (Gordon and Buckley, 2019).

When maternity nurses participate in a video simulation, they become more involved, learn more deeply, and have more opportunities to apply what they have learned. They also offer innovative clinical skills, a holistic behavioral approach, a better awareness of patients' needs, and the capability to advocate for their patients. Self-efficacy is a potential consequence of video simulation training courses that may influence reaching goals and performing well. Self-efficacy relates to a woman's ability to execute at a high level and select, apply, and alter the most effective teaching style. Increased understanding and experiences promote self-efficacy that enhances practice (Ayres et al., 2018).

Based on reviewing literature, there is limited studies were done about effectiveness of video simulation on increasing maternity nurses' knowledge, practice, and self-efficacy in managing primary postpartum hemorrhage in Menoufia governorate. Accordingly, by conducting this study, the researchers attempted to fill such a gap of knowledge, practice and self-efficacy of maternity nurses in managing primary postpartum hemorrhage.

Significance of Study

Maternity nurses can benefit from video simulation to increase their knowledge, practice, and self-efficacy to save the lives of women with primary postpartum hemorrhage. If prompt and sufficient treatment had not been given, a woman could die in a short period. In developing countries, primary postpartum hemorrhage continues to be a prominent cause of maternal mortality. Current studies showing that it accounts for up to 60% of maternal deaths. In Egypt, the maternal death is 45 deaths per 100,000 live births. It causes significant distress for mothers and a substantial financial load on national health systems (Berens, 2020). Based on reviewing the literature, little study has been done on this issue. In the treatment of primary postpartum hemorrhage, maternity nurses play a crucial role so, the researcher conduced this study.

AIM OF THE STUDY

To investigate the effectiveness of video simulation on increasing maternity nurses' knowledge, practice, and self-efficacy in managing primary postpartum hemorrhage.

Research hypotheses

H1- The maternity nurses will exhibit a high score of overall knowledge in managing primary postpartum hemorrhage after attending video simulation.

H2- The maternity nurses will exhibit a high score of total practice in managing primary postpartum hemorrhage after attending video simulation.

H3- The maternity nurses will exhibit a high level of self-efficacy in managing primary postpartum hemorrhage after attending video simulation. .

H4- Postpartum women with primary postpartum hemorrhage who receive care from nurses attended video simulation will have higher improvement and less complication than those who do not receive.

Theoretical and operational definitions

Video simulation: It is the act of simulating the behavior of a situation or a process with a sufficiently equivalent object (for study or personnel training) (Jeffries, 2016). It was measured using a structured interviewing questionnaire for assessment of nurses' knowledge & postpartum women's progress and an observational checklist of instructions for managing the primary postpartum hemorrhage.

Self-efficacy: It refers to a personal capacity to perform at many levels, and abilities of selecting, using, and modifying the appropriate teaching strategy. Increasing self-efficacy is achieved throughout increasing understand and experiences and later influenced on teaching and professionally behaviors (Leila et al., 2019). In this study, it refers to enhancing the practices of maternity nurses in managing postpartum hemorrhage using video simulation. It had measured pre, post, and follow-up utilizing the self-efficacy scale.

Primary postpartum hemorrhage (PPPH): Within the first 24 hours of a newborn's birth, 500 mL or more of blood is lost from the genital tract. It is moderate if of blood lost (500–1000 ml) or high (greater than 1000 ml) (Rath, 2019). This was measured by a structured interviewing questionnaire for the maternity nurses' to assess their knowledge regarding management of primary postpartum hemorrhage; an observational checklist included the instructions for managing the primary postpartum hemorrhage and an observational checklist for women with primary postpartum hemorrhage.

SUBJECTS AND METHOD

Design

A quasi-experimental research design (pre-posttest for the maternity nurses and study/control group for the postpartum women with primary postpartum hemorrhage) had utilized in this study.

Settings

The study had carried at postpartum unit of university hospital and Shebin El-Kom teaching hospital, Menoufia Governorate, Egypt. These hospitals offer services to the community, including MCH services, prenatal, natal, and postnatal services.

Subjects:

A convenience sample of 50 maternity nurses worked in the previous settings and a purposive sample of 100 postpartum women with primary postpartum hemorrhage were recruited in this study. Postpartum women with primary postpartum hemorrhage were

divided into two identical groups, one group received postpartum care from the nurses who attended video simulation (study group)and the other group exposed to routine hospital care from the same maternity nurses before receiving video simulation intervention (control group). They had given a piece of paper with a number on it; those who chose number 1 were assigned to the study group, while those who chose number 2 had allocated to the control group, which received routine hospital care. This technique had used to avoid sample contamination and bias. Under the following inclusion criteria:

- Postpartum women.

- Postpartum women with primary postpartum hemorrhage and free from any medical complications.

Sample Size:

In order to calculate the required sample size, the researchers used the Epi statistical program from the Open Source Statistics for Public Health. The assumptions were: a two-sided confidence level of 95% = 1-α; a power (1-β) or (% chance of detecting) of 80%; ratio of sample size, control / study group) = 1% of control with outcome = 5%.

Tools of data collection :

Throughout the present study, data were gathered using five instruments designed after reviewing local and international related literature:

1. A structured interviewing questionnaire for the maternity nurses:

It had divided into two parts: **1:** Socio-demographic data of the study participants like age, level of education, previous video simulation participation…….etc &**2:** Assessment of the maternity nurses' knowledge about primary postpartum hemorrhage such as definition, causes, risk factors……..etc .

 Scoring system: the correct answer took (2), the incorrect answer took (1), whereas do not know took (0). The total knowledge score had calculated by summation of the scores for the" know items". The scores had converted into percent. It categorized as Good: ≥75 %, average: 60-75% and poor if the percent score was less than 60%.

Validity:-

The validity had determined by three experts in nursing and medicine. Upon their suggestions, changes made.

Reliability:-

Internal reliability is reasonable, test-retest reliability is good, and concurrent validity is good. The instrument's dimensions were internally reliable, with Cronbach's alphas ranging from 0.70 to 0.97. To assess test-retest reliability, intra-class correlation values were high (ranging from 0.89–0.95, P 0.001). Internal consistency dependability is a measure of how well the components work together.

II. An observational checklist:

It had adopted from (Health Service Executive, 2016). An observational checklist included the instructions for managing the primary postpartum hemorrhage. It had used to measure the nurses' activities in the order required to execute all the skills getting learned systematically and included three items active management of the third stage of labor (AMTSL), general and specific management of primary postpartum hemorrhage (3, 9, and 4 items respectively).

An observational checklist scoring system

The maternity nurses' practice had scored as follows: two means that the step or task was done completed; one means that the step or task was done partially, and zero means that the step or task was not done. The overall practice score had calculated and divided into two categories: $\geq$ 90% was satisfactory, and < 90% was unsatisfactory. The validity was determined by the same way mentioned previously.

Reliability:-

Test-retest reliability had used by the researchers for testing the internal consistency of the instrument. It had done through the administration of the same instrument to the same participants under similar conditions. Scores from repeated testing had compared to test the consistency of the results over time.

III. A structured interviewing questionnaire related to postpartum women's progress: It had developed by the researchers after reviewing related literature (Emam and Saber, 2018). It had divided into two parts:

Part I: Socio-demographic data: it included data about the age, residence, education level, income, and obstetric history that included parity, gestational age, and mode of delivery, postpartum period, and cause of bleeding.

Part 2: Assessment checklist of improving postpartum women with PPPH: it was used to assess the women condition like bleeding stopped or not, the amount of blood loss, vital signs and the level of consciousness.

Scoring system:

Score	Mother's condition
1	Improved
0	Not improved

IV: An observational checklist for women with primary postpartum hemorrhage:

The researchers developed it after reviewing related literature (Bogne et al., 2019); it included data related to post intervention assessment to assess the effect of video simulation on managing PPPH and its associated complications as anemia, sepsis, shock, fluid overload and hypovolemia.

Scoring system:

Score	Mother's status
2	Without complications
1	With complications

IV: Self-efficacy scale: A valid reliable instrument had adapted from (Christian, and Krumwiede, 2018). It had translated into Arabic to assess the self-efficacy of the studied nurses attended video simulation in managing the primary postpartum hemorrhage. The scale has 16 statements with five points about issues that measure self-efficacy as:

Self-efficacy scoring: Attitude outcome of scale, every statement scored as: (5) if response was "Very confident", (4) if it had been "Confident", (3) "Uncertain", (2) if it had been "Not confident" and (1) if it was "absolutely not confident ". The overall score had used as a percentage. Self-efficacy scores were considered as follows: high self-efficacy= score ≥75 %, moderate self-efficacy= score 60 - < 75%; moreover low self-efficacy= score < 60%.

Administrative Approvals:

An official letter requesting permission to conduct the study was obtained before embarking the study from the Dean of the Faculty of Nursing, Menoufia University to the Directors of each study setting. This letter was included the aim of the study in order to get the permission and help for collection of data.

Ethical Considerations

A written permission was given from the hospitals directors. The investigators introduced themselves to the maternity nurses and the postpartum women who met the criteria for inclusion and told them about the purpose of the study to gain their acceptance to participate in this study. The researchers assured that the study did not pose any health risks or hazards, and their involvement in the study is voluntary. The researchers approached the participants who were willing to participate in the study, fulfilled the inclusion criteria, and asked for written consent to verify their acceptance, and all activities that occurred during the collection of data were regarded secret.

Pilot Study

This one was conducted to test the reliability, availability of the equipment, and intervention technique. It had been also used to determine the time required for collecting the data. It had been tested on 10% of the entire sample (5 postpartum maternity nurses and 10 postpartum women). All maternity nurses and postpartum women who had participated within the pilot trial had excluded from the whole sample. The findings of the piloting are used to calibrate the instruments and schedule the required actions. Various

modifications to the data collection method had been made supported the professors' opinions and piloting findings.

Study field work

The study had conducted through five phases:

1- The preparatory Phase: An in-depth review associated with the study had conducted including electronic dissertations, available books, and articles. A review of the literature to formulate a knowledge base relevant to the study area had also done. Written permission from the institutional authority of the two hospitals had obtained before conducting the study. Preparation and testing of all instruments regarding validity and reliability had prepared. A pilot study had done, and therefore the necessary modifications had made.

2- The interviewing phase:

- The researchers collected the data from the postpartum maternity nurses in two groups through history taking and knowledge assessment.

- the data were collected over 6 months from the start of December 2020 to the end of May 2021 within the postnatal ward from 9 AM to 2 PM, three days per week.
- The researchers introduced themselves, to the postpartum maternity nurses. The aim, significance, benefits were explained to acquire their cooperation, and informed consent was taken from them to participate within the study.

A. History taking: The nurses' socio-demographic characteristics had collected through a pre-test questionnaire depending on knowledge baseline data. This phase took nearly 15-20 minutes.

B. Knowledge assessment:
The researchers obtained the baseline assessment for each maternity nurse using a structured interviewing questionnaire part 2 to assess the nurses' knowledge in managing primary postpartum hemorrhage (pre-test). It was taken 10–15 min.

3. Planning phase
Based on pre-test results, the video simulation about the management of primary postpartum hemorrhage was developed by the researchers.

Video simulation included:

Based on the assessment phase and analysis of related research literature, video simulation was developed by the researchers. The following steps were adopted to develop the video simulation.

1. Preparation of first draft of video simulation.

2. Content validity of the video simulation.

3. Preparation of final draft of video simulation.

Preparation of the first draft of video simulation:

The first draft of the video was developed keeping in mind the purpose, criteria, literature reviewed and opinions of the experts and relevant audio-visual aids.

Content validity of video simulation:

The initial drafts of the video was given to five experts comprising of four nursing educators from the maternal and newborn health nursing department and along with criteria checklist here was 100% agreement on meeting the criteria of the content. The suggestions given by the experts was accepted and ensured the clarity and the validity of the instruments.

Preparation of the final draft of video simulation:

Suggestions from the experts taken into considerations and modifications of the instruments made. Upon integrating the recommendations of the experts, the final version of the video simulation was created.

Description of video simulation:

The video simulation was entitled "**Management of Primary Postpartum Hemorrhage**". It consists of the following contents: -

- Definition and causes.

- General measures.

- Types and management.

3- The implementing phase: The participants' maternity nurses divided randomly into ten subgroups; which included 5 nurses twice weekly from 9.00.A.M to 3.00 P.M. Video simulation include half hour theoretical with 1 hour practical. It was applied in 10 weeks, each subgroup cover one week through series of sessions;

Session 1: Discussion of theoretical information on postpartum hemorrhage management through the booklet, which lasted for half an hour.

Session 2: Watching video simulation about management of primary post-partum hemorrhage, which lasted for 10 minutes, and then the video sent to the nurses on their mobiles telephone to be available for watching again.

Session 3: Training the nurses on procedures concerned the management of primary postpartum hemorrhage as: measuring vital signs, assessment of blood loss, assessing fundal level and consistency, assessment of lochia, uterine massage. This session lasted for one hour. The researchers applied these items of training on 25 postpartum women in front of maternity nurses; two maternity nurses for each woman after taking women consent. (These women excluded from the women sample). After that, the maternity nurses applied all steps with the study group.

Session 4: It was half an hour for debriefing and feedback from nurses.

The participants' postpartum women (study group)

- The maternity nurses after receiving video simulation intervention applied postpartum management on 50 postpartum women with primary postpartum hemorrhage.

Control group

The postpartum women with primary postpartum hemorrhage in the control group assessed and managed by the same maternity nurses (before receiving video simulation intervention).

4. Evaluation phase:

The researchers evaluated the level of maternity nurses' knowledge, practice and self-efficacy post video simulation.

- The researchers evaluated the outcomes of video simulation on the study group (who received care by the maternity nurses after receiving video simulation intervention) and compared them with the control group (who received routine hospital care by the maternity nurses before receiving video simulation intervention).

5. Follow-up: After eight weeks, the researchers used the same previous assessment instrument (posttest) to follow up the effect of video simulation on nurses' knowledge, practice and self-efficacy in managing primary postpartum hemorrhage. This phase lasts for about 20-30 minutes.

Statistical Analysis: The data was tabulated and processed on an IBM compatible computer using SPSS version 22. The data for the study was analyzed using descriptive as well as nonparametric statistics. The significance level had been set at p 0.001.

RESULTS

Table (1): Reveals socio-demographic characteristics of the studied nurses. According to age, the mean age of the studied nurses was 30.5 ± 8.99 years; more than half of them (60%) were bedside nurses. In addition, half of them (52%) had lived in an urban area and (70%) were married. Half of them (50 %) had less than five years of experience. It indicates that all of them had not previous video simulation program about PPPH (100%).

Table (2): Shows level of knowledge about PPPH (Pre-simulated, Post-simulated, and Follow-up) among the studied nurses. It reveals that there would be a highly significant difference in the nurses' knowledge about PPH pre, post, and follow-up ($p<0.001$).

Figure (1): displayed an increase in the total knowledge score of the studied nurses about management of PPPH after the intervention than before the intervention as 98% of the studied nurses had good knowledge score after the intervention compared to 6% before the intervention and 96% at eight weeks after the intervention (follow-up).

Table (3): shows the general nursing practice of PPH management. It revealed a statistically significant difference among the studied nurses' practice of PPH management during the pre, post simulation and follow-up phases ($p<0.001$).

Table (4): illustrates the socio-demographic characteristics of the studied postpartum women. It shows that no statistical difference regarding the socio-demographic characteristics among the postpartum women in both groups.

Table (5): Presents the obstetrical data of the postpartum women. It shows that the most common cause of PPH was uterine a tony (52%), and (52%) of women with PPH were born by cesarean section compared to (48%) by vaginal delivery.

 Table(6): shows the obstetrical outcomes of the PP women. It shows that the obstetrical outcomes had improved in the study group compared to the control group that appeared in stopping bleeding (96% and 44% respectively) and improvement of the mother condition (98% and 46% respectively).

 Figure (2): Figure 2 illustrates the severity of postpartum complications among the postpartum women. It shows that postpartum women with complications decreased in the

study group when compared to the control group, anemia (10% and 40% respectively), sepsis (4% and 38% respectively), shock (6% and 30% respectively), fluids overload (12% and 22% respectively), and sequelae of hypovolemia (30% in the control group).

Table (7): Shows that, there was a highly statistically significant difference among the studied nurses' self-efficacy pre-simulated, post-simulated and follow-up (p<0.001).

Table (8): Shows a highly statistically significant positive correlation between practice and self-efficacy immediately and eight weeks after the intervention. Furthermore, following the intervention and eight weeks after the intervention, there seems to be a highly statistically significant positive association between overall self-efficacy and practice.

Table 1: Socio-demographic characteristics of the Studied Nurses (N=50)

Variables	The Study Nurses	
	No.	**%**
Age groups	X±SD 30.5 ± 8.99	
Educational level		
Nursing secondary school	10	20
Technical nursing education	25	50
Bachelor of nursing	15	30
Residence		
Rural	24	48
Urban	26	52
Marital status		
Unmarried	15	30
Married	35	70
Job description		
Bedside nurse	30	60
Technical nurse	10	20
Head nurse	10	20
Years of experience		
<5 years	25	50
From 5-10 years	15	30
>10 years	10	20
Source of information regarding primary postpartum hemorrhage		
Studying	25	50
Work experience	25	50
Previous video simulation participation about primary postpartum hemorrhage		
Yes	0	0
No	50	100

Table (2): Level of Knowledge about Primary Postpartum Hemorrhage (Pre-simulated, post-simulated, and Follow-up) among the Studied Nurses (N=50)

Variable	Pre		Post		Follow-up		x2	P-Value
	No	%	No	%	No	%		
Definition								
Correct	9	18	49	98	49	98	6.77	.032
Incorrect	30	60	1	2	1	2		
Don't know	11	22	0	0	0	0		
Cause								0.001*
Correct	13	26	50	100	48	96	18.12	
Incorrect	27	54	0	0	1	2		
Don't know	10	20	0	0	1	2		
Risk factors								0.001*
Correct	10	20	50	100	49	98	15.78	
Incorrect	29	58	0	0	1	2		
Don't know	11	22	0	0	0	0		
Types								0.001*
Correct	30	60	50	100	48	96	22.24	
Incorrect	20	40	0	0	2	4		
Don't know	0	0	0	0	0	0		
Signs and symptoms								0.001*
Correct	20	40	49	98	48	96	19.87	
Incorrect	30	60	1	2	2	4		
Don't know	0	0	0	0	0	0		
Complications								0.001*
Correct	30	60	50	100	49	98	21.15	
Incorrect	19	38	0	0	1	2		
Don't know	1	2	0	0	0	0		

Continued Table (2): Level of Knowledge about PPPH (Pre-simulated, post-simulated, and Follow-up) among the Studied Nurses (N=50)

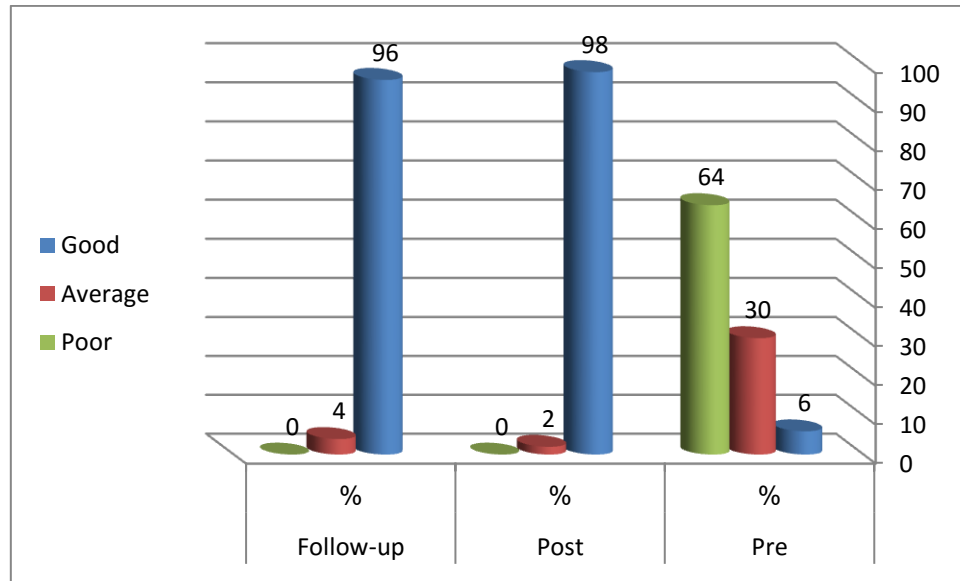| Variable	Pre		Post		Follow-up		x2	P-Value
	No	%	No	%	No	%		
Knowledge about active management of third stage of labor	19	38	49	98	49	98	29.11	0.001*
	10	20	1	2	1	2		
Correct	21	42	0	0	0	0		
Incorrect								
Don't know								
Fluids needed for hypovolemic shock	20	40	48	96	47	94	19.48	0.001*
Correct	9	18	2	4	3	6		
Incorrect	21	42	0	0	0	0		
Don't know								
Drugs used								0.001*
Correct	25	50	50	100	50	100	15.93	
Incorrect	25	50	0	0	0	0		
Don't know	0	0	0	0	0	0		
Drugs effects								0.001*
Correct	20	40	49	98	49	98	19.48	
Incorrect	20	40	1	2	1	2		
Don't know	10	20	0	0	0	0		
Complications of drugs	17	34	49	98	49	98	15.36	0.001*
Correct	23	46	1	2	1	2		
Incorrect	10	20	0	0	0	0		
Don't know								
Hysterectomy treatment for PPH	40	80	50	100	49	98		0.001*
Correct	5	10	0	0	1	2	20.92	
Incorrect	5	10	0	0	0	0		
Don't know								

*: statistically significant

Figure (1): Total Knowledge Score of the Studied Nurses about Management of PPPH

Table (3): General nursing practice of PPH management (Pre-simulated, post-simulated and Follow-up) (N=50)

Nursing Practice	Pre						Post						Follow-up						x2	P-Value
	Done		Incorrect Done		Not Done		Correct Done		Incorrect Done		Not Done		Correct Done		Incorrect Done		Not Done			
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%		
Monitoring vital signs which include Pulse BP RR Temp	10	20	40	80	0	0	50	100	0	0	0	0	50	100	0	0	0	0	88.12	0.001*
	9	18	41	82	0	0	49	98	1	2	0	0	49	98	1	2	0	0		
	11	22	39	78	0	0	50	100	0	0	0	0	50	100	0	0	0	0		
	20	40	30	60	0	0	50	100	0	0	0	0	50	100	0	0	0	0		
Assess blood loss which include Amount Cause Sources	19	38	10	20	21	42	50	100	0	0	0	0	50	100	0	0	0	0	71.4	0.001*
	15	30	18	36	17	34	50	100	0	0	0	0	50	100	0	0	0	0		
	13	26	17	34	20	40	50	100	0	0	0	0	50	100	0	0	0	0		
Fluids therapy	15	30	34	68	1	2	50	100	0	0	0	0	50	100	0	0	0	0		
Assess location and consistency of the fundus	9	18	41	82	0	0	49	98	1	2	0	0	49	98	1	2	0	0	20.41	0.001*
Assessment of lochia	4	8	25	50	21	42	48	96	2	96	0	0	48	96	2	0	0	0	12.92	0.001*
Perform uterine massage	2	4	47	94	1	2	50	100	0	0	0	0	49	98	1	2	0	0	14..54	0.001*

Continued: General nursing practice of PPH management (Pre-simulated, post-simulated and Follow-up) (N=50)

Nursing Practice	Pre-simulated						Post-simulated						Follow-up						x2	P-Value
	Done		Incorrect Done		Not Done		Correct Done		Incorrect Done		Not Done		Correct Done		Incorrect Done		Not Done			
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%		
Insert fully catheter and empty the bladder	5	10	0	0	45	90	50	100	0	0	0	0	50	100	0	0	0	0	53.7	0.001 *
Call obstetric team	50	100	0	0	0	0	50	100	0	0	0	0	50	100	0	0	0	0	12.15	--
Ensure good IV access	50	100	0	0	0	0	50	100	0	0	0	0	50	100	0	0	0	0	12.15	--
Maintain strict I&O	50	100	0	0	0	0	50	100	0	0	0	0	50	100	0	0	0	0	12.15	--
Administer utero-tonic medications as ordered	50	100	0	0	0	0	50	100	0	0	0	0	50	100	0	0	0	0	12.15	--
Send bloods for investigation	15	30	0	0	35	70	50	100	0	0	0	0	49	98	0	0	1	2	26.44	0.001 *
Review laboratory results	10	20	0	0	40	80	50	100	0	0	0	0	49	98	0	0	1	2	49.93	0.001 *
Keep the patient warm	2	4	0	0	48	96	50	100	0	0	0	0	50	100	0	0	0	0	49.3	0.001 *

*: statistically significant

Table (4): Socio-demographic Characteristics of the Studied Postpartum Women

Variables	Simulated group (N=50)		Control group (N=50)		X 2	P-Value
	No.	%	No.	%		
Age/Years						
< 25	11	22	6	12		
25-30	26	52	18	36	2.62	0.073
>30	13	26	26	52		
Mean ± SD	29.59 ± 5.32		31.06 ± 5.63			
Educational Level.						
Read and write	5	10	7	14		
Secondary	25	50	27	54	5.24	0.231
University	20	40	16	32		
Income						
Enough	26	52	25	50	1.09	0,723
Not enough	24	48	25	50		
Residence						
Rural	29	58	22	44	3.55	0.577
Urban	21	42	28	56		

Table (5): The Obstetrical Data of the Postpartum Women

Items	Simulated group (N=50)		Control group (N=50)		P-Value
	No.	%	No.	%	
Parity					
1-3	30	60	26	52	0.076
>3	20	40	24	48	
Gestational age:					
(weeks)	23	46	19	38	0.365
38-39	27	54	31	62	
40					
Mode of delivery:					
Normal vaginal	24	48	27	54	0.755
Cesarean section	26	52	23	46	
Causes of PPH:					
Atonic	26	52	28	56	0.153
Traumatic	23	46	22	44	0.106
Infection	1	2	0	0	1.000

Table (6): The obstetrical outcomes of the postpartum women

Variables	Simulated group (N=50)		Control group (N=50)		P-Value
	No.	%	No.	%	
Bleeding					
Stopped	48	96	22	44	0.001*
Not stopped	2	4	28	56	
Mother condition					
Improved	49	98	23	46	0.001*
Not improved	1	2	27	54	

*: statistically significant
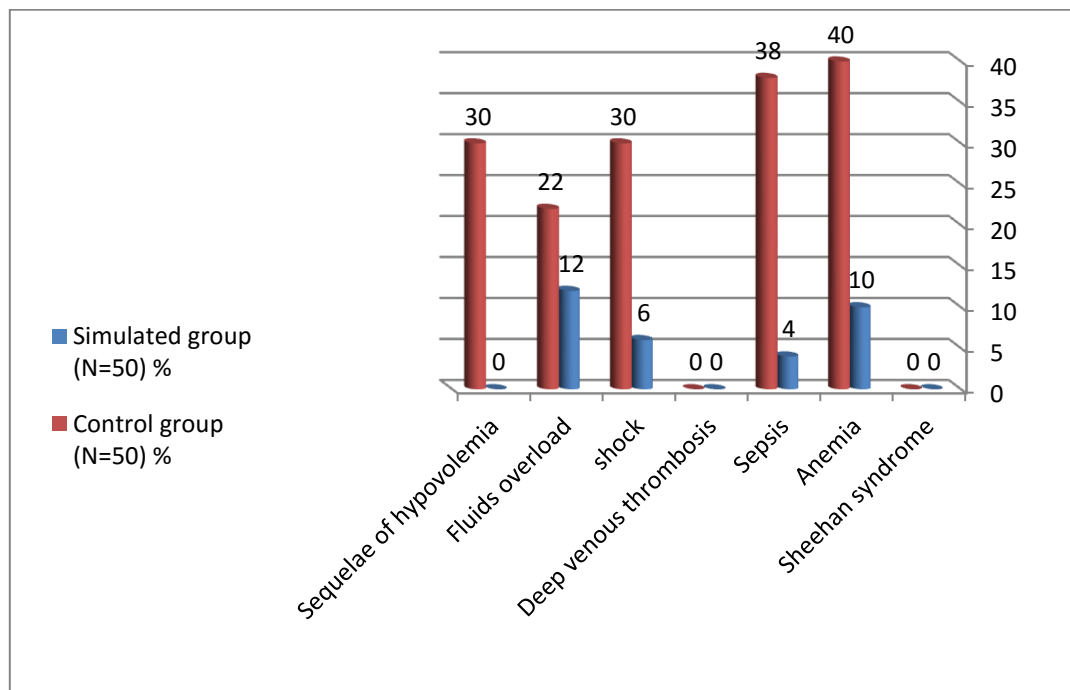
Figure (2): Postpartum Complications among the Postpartum Women

Table (7): The Studied Nurses' Self-Efficacy Regarding Postpartum Hemorrhage (Pre-simulated, post-simulated, and Follow-up) (N= 50).

Items	The study nurses (N=50)						x2	P-Value
	Pre		Post		Follow-up			
	No.	%	No.	%	No.	%		
High self-efficacy	0	0	50	100	49	98		
Moderate self-efficacy	0	0	0	0	1	2	42.36	0.001*
Low self-efficacy	50	100	0	0	0	0		

Table (8): Correlation between the Nursing Total Knowledge, Practice, and Self-Efficacy at Different Intervention Phases (Pre-simulated, post-simulated, and Follow-up) (N= 50).

Variables		Pre-simulated			Post- simulated			Follow up		
		Knowledge	Practice	Self-efficacy	Knowledge	Practice	Self-efficacy	Knowledge	Practice	Self-efficacy
Total knowledge	Pearson Correlation (r)	2	.275	.336*	2	.353*	.414**	2	.343*	.674**
	P value	--	.084	.034	--	.025	000	--	.030	.000
Total practice	Pearson Correlation (r)	2	.275	.116	.353*	2	-.010	.343*	2	.427*
	P value	.084	--	.475	.025	--	.953	.030	--	.006
Total self – efficacy	Pearson Correlation (r)	.336*	.118	2	.414**	-.010	2	.647**	.427**	2
	P value	.033	.544	--	.000	.953	--	--	.000	.006

DISCUSSION

Video simulation reduces level of anxiety and stress in emergencies among the study participants. Practical skills training, such as diagnosis and management of PPH has been demonstrated to improve the nurse's capacity to effectively utilize the acquired clinical skills. It is a valuable method for improving the performance skills and self-efficacy of maternity nurses in order to save the women's health outcomes that are deteriorating. PP video simulation allows nurses to "practice" critical thinking, clinical decision-making, and psychomotor skills in a safe, controlled environment, without putting patients at risk (Ogden et al., 2015).

The current study aimed to investigate the effectiveness of video simulation on increasing maternity nurses' knowledge, practice, and self-efficacy in managing primary postpartum hemorrhage. Regarding the socio demographic characteristics of the maternity nurses, their mean age was comparable, more than one-half of them were bedside nurses, and one-half of them live in urban area, less than five years of experience and about three-fourths were married. In addition, the results of the current study showed that no nurses had attended any previous video simulation course or program regarding PPH. This result opposite with (Elsevier et al., 2018) who reviewed that, just one third of them received in-service training about PPH (Adoyi et al., 2016); who investigated the impact of medium-fidelity simulation-based training on nurses' knowledge, performance, and clinical

judgment in PPH management at Alexandria University and stated that two-thirds of the sample attended an emergency obstetrics training regarding PPH. These findings may be due to lack of implementing educational training programs regarding PPH at these settings. Our results are in contrast with (Goulão, 2015) & (Kimhiet et al., 2016) who reported that around two-thirds of both groups had fair and good level of general knowledge before simulation training. In addition, these findings agreed with (Larsen, 2017) who discovered that teaching programs (both simulated and didactic) for the prevention and management of PPH increased the obstetric nurses' knowledge significantly. Similarly, these findings are consistent with (Centrella-Nigro, et al., 2016) & (Kordi, et al., 2017) who noticed that the study participants displayed a considerable increase in knowledge level after implementing video simulation. The researcher' opinion it provides nurses with opportunities to practice their clinical skills through various real-life situational.

The current study showed total knowledge significantly increases immediately after video simulation and after eight weeks. Before the intervention few nurses had good knowledge, and one-half of the nurses had poor knowledge while after the intervention more than three quarters of the study participants exhibited good information. In addition, about two-thirds of the nurses had good knowledge after eight weeks (follow up). (Sathiyalatha, 2015), who found an increase in level of nurses' knowledge after the intervention reported similar findings. Before the intervention, only around a third of nurses had good knowledge, but three quarters of them did after the intervention. This represents the effectiveness of the intervention, content and the importance of the topic for the maternity nurses and increased the nurse's interest to participate in the study to acquire more knowledge and practice.

These findings were consistent with (Faiza, 2015), who reported that nurses' performance in their duties in active management of the third stage of labor (AMTSL) prior to completing the simulation-training session was inadequate. While there was a significant improvement in their performance regarding (AMTSL). In relevant to these results, (Zaky, 2017) reported that the routine use of AMTSL reduced the incidence of PPH, the quantity of blood loss, the need for blood transfusions, and the need for further tectonics, and should therefore be included in any intervention program to prevent PPH fatalities. Also, in accordance with (Kumar et al., 2016) who reported that simulation-based teaching-learning method reflect significantly higher performance in simulation

group among the nurses taught about obstetrical emergencies compared to didactic teaching and those learning by means of observed practice.

In relation to, the practice of maternity nurses regarding general management of PPH. There was a highly statistically significant difference among pre, post simulation and follow-up   phases. This result is in line with (Ameh et al., 2017) who mentioned that simulation training improved participants' resuscitation technique, emergency technical abilities, knowledge, team spirit, and organized communication.

Simulation-based education with realistic clinical settings, according to the researchers, aids in the development of effective non-technical abilities, the ability to provide instant feedback, and repetitive practice teaching (Agha et al., 2018).

In relation to the maternity nurse practice of PPH management, it had been bad prior to the intervention, but it had significantly improved following the intervention. Furthermore, the current study's findings revealed that the nurses' total practice score for PPH was unsatisfactory prior to the intervention and improved afterward. This finding is consistent with the findings of Sandeep and (Sandeep and Indu, 2018) they claimed that simulation-based education is a better learning method than didactic lectures, especially for obstetric emergencies. As a result, the simulated group's overall skills have improved significantly, and their performance in an obstetric emergency is better than the didactic lecture group's on their first experience with live patients.

As regarding the maternity nurse's self- efficacy, it represented a statistically significant between nurses' self- efficacy before and after the intervention. These findings are also consistent with (Emam and Saber, 2018) who study the effect of clinical simulation on student nurse self-efficacy, and revealed that one-half of the nursing students believed that working with patient simulation increased their self-efficacy, clinical competence, and prepared them for real clinical settings. A similar study was done by (Bogne et al., 2019) who showed that nursing students expressed positive attitudes toward the simulation-based course. They agreed that the simulation was motivating and effective. The participants also expressed satisfaction toward the resources used during the simulation. They were confident in their mastery of skills, knowledge and their ability to apply this content in the clinical settings.

On an equivalent line, (Evans et al., 2016) who showed that using the simulation technique results in satisfaction and self- efficacy. Nurses' self- efficacy features a significant impact on their understanding and feeling of success in their clinical practices. Furthermore, (Nahas, et al., 2017) stated that there was a considerable rise in the level of self-efficacy among nursing students. They received simulation-based training in areas such as disease diagnosis and symptoms, patient assessment, nursing interventions, and evaluation, as opposed to the standard training group encounters with real people.

Meanwhile, the results of this study demonstrated that the nurses' total self-efficacy score for PPH was unsatisfactory prior to the intervention and improved after the intervention. These findings corroborated those of (Kumar et al., 2016), who found that the simulation group's self-efficacy score increased significantly after the intervention compared to before. Self-efficacy concepts are based on the belief that everyone must assess their ability to complete a particular task successfully, which has a significant impact on task approach and persistence in completing the work correctly. Furthermore, nurses' self-efficacy improved significantly both immediately after the intervention and eight weeks afterwards (follow up).

Our results in agreement with (Adamson, et al., 2018) who reported significant relation were observed among self-efficacy scores before training and directly after training and 8 weeks following training. Also, these findings supported by (Thomas & Mackey, 2018) who found that simulation increases self-efficacy for the nurses comparing to the traditional method. The current study showed a significant total self-efficacy improvement immediately after the intervention and after eight weeks later, where before the intervention almost all of study nurses had low and moderate self-efficacy regarding management of postpartum hemorrhage. This could be due to nurses' knowledge and experience lack.

Furthermore, our data showed that there was a highly positive association among the study nurse's total knowledge, practice and self- efficacy scores after the intervention as well as there was positive association between the study nurses' total practices and total self-efficacy. Our findings were in the same line with (Leila et al., 2017) who reported that there were positive association between knowledge and performance and self-efficacy. In addition, the nurses integrated their knowledge and experience for making accurate clinical

judgments and thus increase their self- efficacy. In addition, the simulation training permits opportunities to capture the essential knowledge and skills for developing self-efficacy.

CONCLUSION

Up on findings of the current study, there was a higher statistically significant increase in total knowledge scores of the maternity nurses about postpartum hemorrhage management after attending the video simulation. This supported the first study hypothesis.

In addition, the current study showed a higher score of total practice and a higher level of self-efficacy of the maternity nurses regarding the management of primary postpartum hemorrhage after attending the video simulation. Moreover, a positive correlation among knowledge, practice and self-efficacy was observed immediately and eight weeks after the intervention. In addition, video simulation helps in improving and relieving the women's complications of postpartum hemorrhage than those who do not receive. These supported the second, third and fourth study hypotheses. Therefore, the study hypotheses are accepted.

RECOMMENDATIONS

1- Video simulation programs should be included in curriculum to help professional nurses acquire the essential knowledge, performance skills, and clinical judgment for early detection, and an effective nursing response for managing primary PPH.

2- Conducting periodic ongoing video simulation training programs based on approved standardized guidelines is recommended for all maternity nurses in obstetrics emergencies.

3- Future researches should be conducted at different maternity settings on a large sample for generalization of results.

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تأثير تدريب ممرضات الامومة بالمحاكاة على تحسين معلوماتهن وممارساتهن وكفاءتهن الذاتية فيما يتعلق بعلاج النزيف الأولي بعد الولادة

د/ أماني على عبد السلام د/ ايمان سيف سليمان د/ جيهان احمد محمد البهلوان

أستاذ مساعد تمريض الأمومة والاطفال ـجامعة المنوفية ، أستاذ مساعد تمريض الأمومة والاطفال ـجامعة المنوفية ، مدرس أمراض النساء والتوليد بكلية التمريض جامعة بورسعيد بمصر.

الخلاصة

الخلفية: يعتبر التدريب بالمحاكاة احد أهم الوسائل في تعليم التمريض لتعزيز معلومات الممرضات وأدائهن وفاعليتهن الذاتية في الحد من الامراض والوفاة في حالات نزيف ما بعد الولادة. الهدف: هدفت الدراسة الى تقييم تأثير تعليم ممرضات الامومة بالمحاكاة على تحسين معلوماتهن وممارساتهن وكفاءتهن الذاتية فيما يتعلق بعلاج النزيف الأولي بعد الولادة تصميم البحث: استخدم تصميم شبه تجريبي لتحقيق هدف الدراسة مكان الدراسة : أجريت هذه الدراسة في وحدتي الولادة وما بعد الولادة في مستشفى شبين الكوم الجامعي ،المنوفية ، مصر. أجريت الدراسة على جميع ممرضات الأمومة اللاتي على راس العمل اثناء الدراسة وعددهم 50 ممرضة وعينة ملائمة مكونة من   100 سيدة مصابات بنزيف أولي بعد الولادة. أدوات البحث: تم استخدام استبيانات المقابلات الشخصية لكل من الأمهات والممرضات وقائمة مراجعة الملاحظة الأداء لممرضات الأمومة، ومقياس الكفاءة الذاتية. النتائج: أظهرت النتائج ان هناك فرق كبير للغاية بين معلومات وممارسات ممرضات الأمومة والكفاءة الذاتية فيما يتعلق بعلاج النزف بعد الولادة قبل تنفيذ المحاكاه مباشرة وبعده والتقييم اثناء المتابعة . الخلاصة: أدى استخدام التدريب القائم على المحاكاة لعلاج النزف الأولي بعد الولادة إلى تحسين معلومات ممرضات الأمومة وممارستهم وكفاءتهن الذاتية. التوصيات: يجب توفير التدريب عن طريق المحاكاة لجميع مقدمي الرعاية الصحية الثناء الولادة وبعدها لمساعدة الممرضات على تحسين معرفتهم وممارسة الكفاءة الذاتية ولعب دور فعال في حالات الولادة.

الكلمات المرشدة : المحاكاة، الكفاءة الذاتية. نزيف ما بعد الولادة الأولي