

EVALUATION OF NURSES/MIDWIVES KNOWLEDGE REGARDING POSTPARTUM HEMORRHAGE BEFORE AND AFTER IMPLEMENTATION OF AN EDUCATIONAL PROGRAM AT MATERNITY TEACHING HOSPITAL IN SULAIMANI CITY



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ABSTRACT

Background

The main preventable cause of maternal death and illness worldwide remains postpartum hemorrhage, an obstetric emergency related to vaginal birth and cesarean section.

Objectives

This study aimed to evaluate the knowledge of nurses and midwives on postpartum hemorrhage before and after an educational program was implemented.

Materials and Methods

Sixty nurses and midwives who worked in the delivery room and postpartum ward at a maternity teaching hospital in Sulaimani, Iraq, participated in a quasi-experimental study.

Results

The majority of the participants, 76.7% of Nurses/Midwives, had inadequate knowledge regarding PPH in the pretest, and 68.3% had good knowledge in the posttest. There are statistically significant differences between the pretest & posttest in Knowledge PPH ($\chi^2= 87.758$, p-value=0.000).

Conclusion

The majority of nurses and midwives had poor knowledge of PPH before the implementation of the educational program, but after being exposed to it, their knowledge significantly increased.

Keywords: *Postpartum hemorrhage, Nurses/Midwives knowledge related to PPH, active management of the third stage of labor. .*

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INTRODUCTION

Postpartum haemorrhage is the most common cause of maternal mortality and the most preventable. Every woman who carries a pregnancy after 20 weeks is at risk for PPH and its aftereffects. It happens in 1% to 6% of deliveries and is the leading cause of morbidity and mortality in childbirth⁽¹⁾. Globally, PPH affects over 14 million women annually, resulting in about 70,000 maternal deaths⁽²⁾. The WHO has generally described postpartum haemorrhage as “blood loss of 500 ml or more from the vaginal tract within 24 hours following childbirth.” A 1000-ml threshold is also frequently used to characterize severe bleeding after a cesarean operation^(3,4). Primary PPH is defined as “blood loss estimated to be more than 500 ml or more per vagina and 1000 ml or more after cesarean section within the first 24 hours of delivery,” and secondary PPH, which occurs between 24 hours and twelve weeks, are two categories for PPH. Minor (500–1000 mls) or major PPH might occur (more than 1000 mls). The categories of major include mild (1000–2000 mls) and severe (greater than 2000 mls)⁽⁴⁾. The four T’s (Tone, Trauma, Tissue, and Thrombin) represent the traditional categorization of PPH etiologies⁽⁵⁾.

About 80% of PPH is caused by atony, the primary cause of PPH. Uterine atony, a disease in which the uterine muscle fails to contract and occludes uterine blood arteries after delivery of the placenta, is responsible for most postpartum haemorrhage-related deaths⁽⁶⁾. A retained placenta, perineum or birth canal tears, uterine rupture, uterine inversion, and coagulation issues are other causes⁽⁷⁾. Prolonged use of uterotonic drugs (as in prolonged induction or augmentation of labour), sepsis, and abnormal placentation. However, many women present with these risk factors but do not develop PPH⁽⁸⁾. Significant blood loss and hypovolemic shock are two of the most common complications of severe PPH. It can also result in severe anaemia, shock, and death, especially in developing nations where women often lack access to affordable, high-quality healthcare⁽⁹⁾. An evidence-based strategy can prevent six out of ten PPH cases⁽¹⁰⁾. According to the WHO and organizations representing mothers, the active management of the third stage of labour should be carried out at every delivery. The recommended uterotonic varies; the most popular options are oxytocin, the first agent of choice for PPH prophylaxis, and Other uterotonic agents, including heat-stable carbetocin, misoprostol, and ergometrine⁽¹¹⁾. The AMTSL entails giving a uterotonic medication, delaying cord clamping until

one to three minutes after birth, using controlled cord traction to deliver the placenta, and massaging the uterus⁽¹²⁾. Managing the specific cause of bleeding after a woman develops PPH involves resuscitating the hemodynamic instability with medication (oxytocic drugs, misoprostol, ergometrine, tranexamic acid) or, when necessary, with surgical intervention (intrauterine balloon tamponade, laparotomy for B-lynch sutures, internal iliac artery ligation, or hysterectomy)⁽⁸⁾.

MATERIAL AND METHOD

Design of the study

A quasi-experimental design was used throughout the entire study to evaluate the nurses-midwives’ knowledge of postpartum hemorrhage before and after the educational program. The pre-posttest technique was also applied.

Study sample:

In a non-probability (convenient sample), 60 nurses and midwives working in the delivery rooms and the postpartum department of the maternity teaching hospital in Sulaimani City were selected.

Eligibility criteria:

Specific inclusion criteria were used to recruit nurses and midwives for the study, such as those responsible for providing nursing care in the labour and delivery and postpartum departments, All levels of nursing education, Nurses/midwives who had at least six months of experience, and above in the delivery room, and exclusion criteria included nurses/midwives who had an administrative role only as the head nurses, The nurses, and midwives who were not available during the period of data collection, The nurses and midwives who did not agree to participate in this study.

Data collection procedure:

Data were collected through the use of the study instrument and the application of an educational program on knowledge regarding PPH from September 2022 through April 2022. The researcher gathered the data while working morning and evening shifts. A pretest, educational program, and posttest were given to the sample. A self-report questionnaire was created for the study by reviewing the literature and previous studies. It consists of two parts: the sociodemographic information, which is organized into nine categories (age, level of education, employment, are you doing a second job in a private hospital, etc.); and the knowledge

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of PPH, subdivided into sixteen single-choice questions. Data were gathered using the study instrument and a knowledge-based educational program on PPH. The researcher first completed a pretest to determine their level of knowledge about postpartum haemorrhage. After the pretest, we started the program and gave knowledge and information about PPH and how to prevent it. After the program was finished, we took a posttest.

Statistical analysis:

Once the data were gathered, all data entered were using the computerized statistical software; statistical package for social science (SPSS) version 22 was used.

P-value: there were criteria of probability levels to determine the significance of the test:

*Highly significant ($p \leq 0.001$)

*Significant ($p \leq 0.05$)

*Nonsignificant ($p > 0.05$)

The responses of the nurses/midwives' Knowledge regarding PPH items included two answers correct answer is given a 1 score, and each wrong answer gives a 0 score. Then the total score (60). The scale of knowledge of nurses/midwives was classified as poor knowledge ($< 50\%$) with a score (of 0–29), Fair knowledge ($50\% - < 75\%$) with a score (of 30–44), and good knowledge ($\geq 75\%$) with a score (45-60).

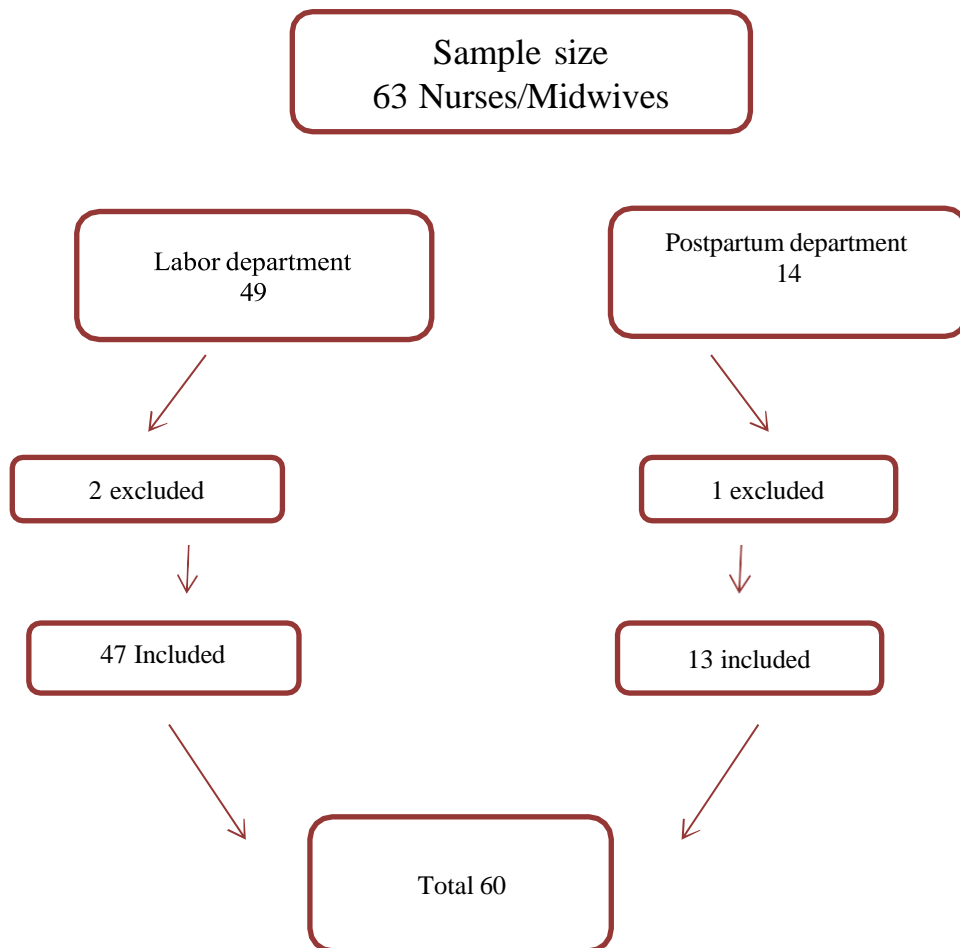


Figure 1. Flow chart shows the distribution of the study sample.

RESULTS

Table 1 displays the sociodemographic data of the study sample (nurses and midwives). Only 38.3% of the participants were over 40, while 43.3% were under 30. Just 1.7% of nurses and midwives graduated from nursing school, whereas most (56.7%) obtained their degrees from midwifery institutes. Just 38.3% of the workers were employed by the government, while 61.7% had contracted. 28.3% of survey participants had a part-time job at a private hospital.

The second table shows the distribution of nurses and midwives working shifts and the average number of deliveries for each shift. The afternoon shift was worked by 73.3 percent of nurses and midwives, and the morning shift by 26.7 percent. Yet, whereas 26.7 percent of nurses and midwives said there were between 5 and 10 births on average every shift, 61.7 percent of respondents believed there were more than 15 births per shift. The majority of the participants, 76.7, were unaware of the Royal College of Obstetricians and Gynecologists and the Kurdistan Ministry of Health offering instructions and guidelines on avoiding and treating postpartum haemorrhage.

Table 3 presented the distribution of PPH training

courses nurses and midwives took and how long they had worked in the delivery room. Compared to 55% of nurses and midwives with less than five years of experience and 26.7% of participants with more than ten years of experience, only 18.3% had between five and ten years of experience in the delivery room. In addition, only 16.7% of the nurses and midwives had completed three to four PPH preventive training courses, as opposed to 60.0 percent of participants who had completed one to two such courses and 23.3 percent of participants who had not.

The association between nurse-midwives knowledge of the questions on the PPH questionnaire related to prevention and management is shown in Table 4 among the study samples (pre- and posttest). Because the p-value was less than the standard alpha of 0.05, this indicates a statistically significant difference (or association) between the pretest and the posttest in nurse-midwives knowledge regarding the prevention and management of PPH.

According to Table 5, the majority of participants (68.3%) had good knowledge following the educational program, while only 31.7% had fair knowledge. Before the program, participants had poor knowledge in 76.7% of cases and fair practice in 23.3%.

Table 1. Distribution of Sociodemographic Characteristics for Nurses/Midwives among study sample.

Sociodemographic	Frequency	%
Age (years)		
< 30	26	43.3
31 – 40	11	18.3
> 40	23	38.3
Mean ± S.D	30.47 ± 9.46	
Level of education (graduated)		
Nursing School	1	1.7
Secondary Nursing	4	6.7
Secondary Midwifery	7	11.7
Nursing Institute	7	11.7
Midwifery Institute	34	56.7
College of Nursing	7	11.7
Master and more	0	0.0
Employment		
Government	23	38.3
Contract	37	61.7
Do you have an extra job in a Private hospital?		
No	43	71.7
Yes	17	28.3
Total	60	100

Table 2. Distribution of Nurses/Midwives working shifts regarding study participants & the number of delivery/shifts.

Working shifts & number of delivery	Frequency	%
Working Shifts		
Morning shift	16	26.7
Afternoon shift	44	73.3
Average No. of delivery/shift		
5-10	16	26.7
11 -15	7	11.7
> 15	37	61.7
Mean ± S.D	17.37 ± 7.79	
Do you know the instructions and guidelines issued by the Kurdistan Ministry of Health and in consensus with the guidelines of the Royal College of Obstetricians and Gynecologists in preventing and managing postpartum haemorrhage?		
No	46	76.7
Yes	14	23.3
Total	60	100

Table 3. Distribution of Nurses/Midwives Service years in the delivery room & Training course among study sample.

Service years & training	Frequency	%
Number of years of service (experience) in the delivery room		
< 5	33	55.0
5 – 10	11	18.3
> 10	16	26.7
Mean ± S.D	8.19 ± 8.51	
Number of training courses related to the prevention of PPH		
Not training	14	23.3
1-2	36	60.0
3-4	10	16.7
Mean ± S.D	1.32 ±1.03	

Table 4. Relationship between Knowledge of Nurse-Midwives towards prevention & management of PPH Questionnaire's items among study samples (Pre and posttest).

Knowledge of Nurses-Midwives towards prevention & management of postpartum hemorrhage		Pretest		T . S (results)	Posttest		T.S (results)	χ ² P-value
		Incorrect	Correct		Incorrect	Correct		
Postpartum haemorrhage is defined as	Fr.	36	24	24	8	52	52	28.134
	%	60.0	40.0	(poor)	13.3	86.7	(good)	P=0.000
Types of postpartum haemorrhaging are	Fr.	53	7	7	9	51	51	64.605
	%	88.3	11.7	(poor)	15.0	85.0	(good)	P=0.000
The most common cause of postpartum haemorrhage is	Fr.	48	12	12	7	53	53	56.425
	%	80.0	20.0	(poor)	11.7	88.3	(good)	P=0.000
If the bleeding continues during the third stage with a contracted uterus, the cause is most likely to be	Fr.	33	27	27	9	51	51	21.099
	%	55.0	45.0	(poor)	15.0	85.0	(good)	P=0.000
The 4 "T's" of PPH are	Fr.	35	25	25	4	56	56	36.505
	%	58.3	41.7	(poor)	6.7	93.3	(good)	P=0.000

Risk factors of PPH (occurring in pregnancy) are	Fr.	45	15	15	10	50	50	41.119
	%	75.0	25.0	(poor)	16.7	83.3	(good)	P=0.000
What signs and symptoms of PPH are?	Fr.	40	20	20	3	57	57	49.616
	%	66.7	33.3	(poor)	5.0	95.0	(good)	P=0.000
The diagnosis of PPH after giving birth depends on- 1. > 500 blood loss 2. hypotension 3. tachycardia	Fr.	40	20	20	4	56	56	46.507
	%	66.7	33.3	(poor)	6.7	93.3	(good)	P=0.000
The causes of tears that lead to primary postpartum haemorrhage include all of the following except	Fr.	35	25	25	5	55	55	33.75
	%	58.3	41.7	(poor)	8.3	91.7	(good)	P=0.000
Among the measures you take to prevent tearing during the second stage of labour are:	Fr.	37	23	23	4	56	56	40.346
	%	61.7	38.3	(poor)	6.7	93.3	(good)	P=0.000
Which of the following during labour and childbirth would result in a risk of PPH?	Fr.	33	27	27	8	52	52	23.155
	%	55.0	45.0	(poor)	13.3	86.7	(good)	P=0.000
The best time for an episiotomy to prevent tearing is	Fr.	39	21	21	7	53	53	36.099
	%	65.0	35.0	(poor)	11.7	88.3	(good)	P=0.000
Causes of bleeding associated with placenta	Fr.	33	27	27	3	57	57	35.714
	%	55.0	45.0	(poor)	5.0	95.0	(good)	P=0.000
If the placenta is not separated automatically within 30 minutes of the child being born, the midwife or nurse will proceed as follows	Fr.	48	12	12	9	51	51	50.827
	%	80.0	20.0	(poor)	15.0	85.0	(good)	P=0.000
All of the following are wrong practices practised by a Nurse / Midwife in delivery rooms, except	Fr.	44	16	16	8	52	52	43.982
	%	73.3	26.7	(poor)	13.3	86.7	(good)	P=0.000
The necessary procedures that are taken by the Nurse/ Midwife to manage postpartum haemorrhage are:	Fr.	27	33	33	6	54	54	18.433
	%	45.0	55.0	(Fair)	10.0	90.0	(good)	P=0.000

Table 5. Overall Knowledge of Nurse-Midwives towards PPH among study samples (Pre and posttest).

Levels	Items	Pretest	Posttest
Poor	Fr.	46	0
	%	76.7	0.0
Fair	Fr.	14	19
	%	23.3	31.7
Good	Fr.	0	41
	%	0.0	68.3
Total	Fr.	60	60
	%	100	100

DISCUSSION

Most PPH-related maternal deaths occur in low-income nations in settings (hospitals and communities) with no birth attendants or when those there lack the knowledge or tools to prevent and treat PPH and shock⁽¹³⁾. Atiya⁽¹⁴⁾ stated that the caregiver's attitude was the most crucial factor in maternal satisfaction with care and successful labour. According to the study's findings, the majority of participants were younger than 30. More than half of the study sample had a degree from a midwifery institute, and minorities had attended nursing school, despite the fact that the majority of participants were contracted and a minority had other work in private hospitals. In keeping with our research, 55% of individuals had labour and delivery room experience under five years old. In addition, the majority of participants received PPH training to improve their knowledge and performance in practice, with just around a quarter of participants receiving no such training. Midwives and nurses take up a significant part of the afternoon shift. The average number of deliveries per shift is 15, and 61.7% of the study group said they made more than 15 deliveries daily. The results showed that nurses' and midwives' knowledge was at a poor level in the pretest and accounted for 76.6% of all knowledge-related questions before the start of an education program but improved at an excellent level to account for 68.3% in the posttest after program implementation, except for one question about (The necessary procedures that are taken by the nurse/midwife to manage a postpartum haemorrhage) began with a fair level of knowledge in the pretest and improved to a good level in the posttest. This study's findings were in line with a study conducted by Bahaaldeen⁽¹⁵⁾ in Baghdad City to assess the impact of an educational program on nurses' and midwives' knowledge and practices regarding postpartum haemorrhage in delivery rooms of maternity hospitals in Baghdad City. The ability of nurses and midwives was found to be at a low level in the pretest and accounted for 37.4% of all knowledge-related questions. Still, it significantly increased to 90.5% in the posttest after the program's implementation.

Additionally, it was discovered by^(16,17) that the majority of nurses lacked adequate knowledge of PPH prevention and management. But⁽¹⁸⁾ disagreed with the result of our study, which showed more than half of the study nurses had good knowledge about PPH. According to the study's findings, a highly significant association existed between the pretest and the posttest. The outcome of the Rwandan study, which found a highly

significant association between PPH knowledge scores on the pretest and posttest ($p < 0.001$), was similar to the result of the present study⁽¹⁹⁾.

CONCLUSION

The results of our study show that, unfortunately, all of the nurses and midwives who took part in the current study lacked sufficient knowledge of the PPH before implementing an educational program. However, 68.3% of the participants demonstrated good knowledge of the PPH following the implementation of the educational program. The results also show a highly significant association between the nurse's or midwife's knowledge before and after the educational program implementation.

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Ethical Approval

The institutional ethics committee approved the study.

Disclosure

No financial disclosures are required in this investigation, and no conflicts of interest exist.

REFERENCES

1. Muthoni DM, Kabue PN, Ambani EK. Factors that influence management of postpartum hemorrhage among midwives in a rural setting in Kenya. *African Health Sciences*. 2021 Apr 16;21(1):304-10.
2. World Health Organization. Human Reproduction Programme (HRP) revised programme budget 2022-2023. World Health Organization; 2023 Mar 8.
3. World Health Organization. WHO recommendations for the prevention and treatment of postpartum haemorrhage. World Health Organization; 2012.
4. Royal College of Obstetricians and Gynaecologists (RCOG). Prevention and management of postpartum haemorrhage. *BJOG* 2016;124:e106-e149.
5. Edwards HM. Aetiology and treatment of severe postpartum haemorrhage 2016.
6. Wake GE, Wogie G. Assessment of midwife knowledge, practice, and associated factors towards active management of the third stage of labor at Governmental Health Institutions in Tigray Region, Northern Ethiopia, 2018. *BioMed Research International*. 2020 Nov 3;2020.

7. Abd-Elgany LK, Zahran KM, Ahmed NH, Abd-Elhafez HA. Assessment of Nurses' Knowledge About Preventive and Therapeutic Measures of Postpartum Hemorrhage. *Assiut Scientific Nursing Journal*. 2019 Sep 1;7(18):22-31.
8. Al-beity FM. Effects of Helping Mothers Survive Bleeding After Birth in-service training of maternity staff: A Cluster-Randomized trial and mixed-method evaluation (Doctoral dissertation, Karolinska Institutet (Sweden) 2020).
9. Amanuel T, Dache A, Dona A. Postpartum haemorrhage and its associated factors among women who gave birth at Yirgalem General Hospital, Sidama Regional State, Ethiopia. *Health Services Research and Managerial Epidemiology*. 2021 Nov;8:23333928211062777.
10. Salati JA, Leathersich SJ, Williams MJ, Cuthbert A, Tolosa JE. Prophylactic oxytocin for the third stage of labour to prevent postpartum haemorrhage. *Cochrane Database of Systematic Reviews*. 2019(4)..
11. World Health Organization. WHO recommendations Uterotonics for the prevention of postpartum haemorrhage: Web annex 7: Choice of uterotonic agents. World Health Organization; 2018..
12. Begley CM, Gyte GM, Devane D, McGuire W, Weeks A, Biesty LM. Active versus expectant management for women in the third stage of labour. *Cochrane database of systematic reviews*. 2019(2)..
13. Henok A, Yaekob R. Factors associated with knowledge, attitude and practice of midwives on active management of third stage of labor at selecte d health centers Addis Ababa. *J Resour Dev Manage*. 2015;10:54-61.
14. Atiya KM. Maternal satisfaction regarding quality of nursing care during labor and delivery in Sulaimani teaching hospital. *International Journal of Nursing and Midwifery*. 2016 Mar 31;8(3):18-27.
15. Bahaaldeen E. Effectiveness of an Education Program on Nurses-Midwives' knowledge toward Postpartum Hemorrhage at Delivery Room of Maternity Hospitals in Baghdad City. *Iraqi National Journal of Nursing Specialties*. 2019;32(2):87-101.
16. Niazi, S. M. Assessment of Midwives' Knowledge towards Management of Third Stage of Labour in Baghdad City (2020). Vol. 23 Issue 9. DOI:
17. Angelina JA, Kibusi SM, Mwampagatwa I. Factors influencing nurses' knowledge and skills in the prevention and management of postpartum haemorrhage. *African Journal of Midwifery and Women's Health*. 2019 Oct 2;13(4).
18. Ahmed Elkholy G, Abd Elsalsm Ramadan S, Ouda S, Abdel Fatah Ahmed AA. Assessment of Nurse's Practical Skills Regarding avoidance of Postpartum Hemorrhage. *Egyptian Journal of Health Care*. 2017 Sep 1;8(3):219-33.
19. Nishimwe A, Ibisomi L, Nyssen M, Conco DN. The effect of an mLearning application on nurses' and midwives' knowledge and skills for the management of postpartum hemorrhage and neonatal resuscitation: pre-post intervention study. *Human Resources for Health*. 2021 Dec;19(1):1-0.