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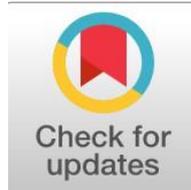
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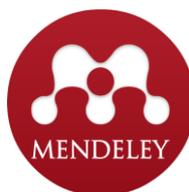
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## Nurses' and Midwives' Knowledge Toward Postpartum Hemorrhage Prevention in Kerbala City, Iraq

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### Abstract

**General Background:** Postpartum hemorrhage remains a major obstetric emergency and a leading contributor to maternal morbidity and mortality worldwide, requiring competent health professionals capable of recognizing and preventing the condition during maternity care. **Specific Background:** Nurses and midwives play a central role in maternity services, particularly in identifying risk factors, applying preventive measures, and implementing clinical protocols related to postpartum hemorrhage prevention in hospital settings. **Knowledge Gap:** Despite established clinical guidelines and international recommendations, evidence indicates that knowledge among healthcare providers may vary, and limited data exist regarding the level of understanding among nurses and midwives working in maternity facilities in Kerbala City, Iraq. **Aims:** This study aims to assess the knowledge of female nurses and midwives regarding postpartum hemorrhage prevention and to determine the association between knowledge levels and selected sociodemographic variables. **Results:** A descriptive cross-sectional study involving 60 participants revealed that 53.3% demonstrated poor knowledge scores, while 46.7% achieved good scores. Statistical analysis indicated no significant association between knowledge levels and age, educational level, years of working in the delivery room, participation in postpartum hemorrhage courses or workshops, or current workplace within the hospital. **Novelty:** The study provides recent empirical evidence describing the knowledge profile of maternity healthcare staff in a teaching hospital in Kerbala City, highlighting areas of insufficient understanding in postpartum hemorrhage prevention. **Implications:** The findings emphasize the necessity of structured training programs, continuous professional education, and regular knowledge assessment to strengthen clinical preparedness of nurses and midwives in maternity care and support safer maternal health services.

#### Highlights:

- Majority of Participants Demonstrated Insufficient Understanding of Preventive Measures Related to Obstetric Bleeding Emergencies.
- Statistical Testing Showed No Relationship Between Knowledge Scores and Demographic or Professional Characteristics.
- Findings Indicate the Need for Structured Professional Education and Continuous Assessment in Maternity Services.

**Keywords:** Postpartum Hemorrhage Prevention, Nurses And Midwives Knowledge, Maternal Health Care, Obstetric Emergency Management, Iraq

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## Introduction

Postpartum Hemorrhage (PPH) is an important emergency condition and is considered to be one of the major reasons for morbidity and mortality among women worldwide [1]. It is considered to be a loss of 500 mL or more after a vaginal delivery or 1000 mL or more during or after a cesarean delivery. PPH is divided into primary PPH, occurring within 24 hours after delivery, and secondary PPH, occurring from 24 hours to 12 weeks after delivery [2]. It is estimated that one woman dies every four minutes due to PPH. It is one of the major reasons for one-fourth of all maternal mortality worldwide and is thus an important public health problem of great significance. PPH is still one of the major reasons for mortality among pregnant women despite advancements in medical technology, and hemorrhage is still one of the leading causes of mortality among pregnant women in most countries, with a wide gap between highly developed and underdeveloped countries [3]. Therefore, efforts should be made to prevent PPH and detect it early so that management can be instituted promptly. [2]. The major causes are: "4Ts" rule (Tone, Trauma, Tissue, and Thrombin) acts as a key guideline for determining PPH and implementing appropriate intervention. Uterine atony or absence of uterine muscle tone is the major cause of PPH. Therefore, key interventions include uterine massage for inducing uterine muscle tone and administering uterotonic drugs like oxytocin for intensifying uterine muscle tone [4]. PPH prevention and management require proper implementation of evidence-based care protocols for PPH, along with education and reinforcement for healthcare providers [5]. There is need for early detection and identification of women at risk for PPH, active management of the third stage of labor for all women who are undergoing delivery, quick calculation of blood loss, monitoring of the woman for warning signs for PPH, and its management [6]. Health care personnel staff play a major role in the detection, prevention, and treatment of PPH [7]. According to the roadmap, 2023-2030 for the prevention of PPH, there also needs to be unequivocal national leadership and support to ensure that norms on PPH issues are developed in partnership with the World Health Organization (WHO) and its implementation is made country appropriate and disseminated from the national to the sub-national levels through "champions" who can generate awareness and facilitate use [8]. To reduce PPH burden and its contribution to maternal mortality: Agreement on priority PPH research gaps across three tracks: innovation, implementation, and cross-cutting, was recognized as a key step to help focus efforts to avoid research waste and to accelerate the pace at which we can respond to public health needs [9]. Despite existing guidelines, knowledge gaps among health care providers have implications for maternal health. Nurses and midwives frequently have a key role to play in the prevention of PPH potentially life-threatening situations.

## Methodology

**Study Design:** A descriptive cross-sectional approach was employed from September 10, 2025, to January 18, 2026.

**Study Sample:** In this study, the probability systematic random sampling technique was used in choosing 60 female nurses and midwives working in the Gynecology and Obstetric Teaching Hospital in Kerbala City, Iraq.

### Inclusions criteria:

- Female Nurses - Midwives Currently Working at the Gynecology and Obstetric Teaching Hospital in Kerbala City at Various Departments of the Hospital
- Who are working in different shifts: morning or evening.
- Who are agree to participate in this study voluntarily.
- Who have different qualification levels.

### Exclusions criteria:

- Male
- Female nurses-midwives are not willing to participate in the study.

**Tool:** Data collection was done using a structured tool which has been divided into two parts: I—socio-demographic data and II—assessment of knowledge regarding prevention of PPH among the target group nurses/ midwives. Tool for knowledge assessment was prepared based on studies conducted in the past and World Health Organization's clinical guidelines on the topic. It includes 14 items as multiple-choice questions.

**Validity:** The content validity of the instrument was ascertained through the panel of experts (ten).

**Pilot study:** This was a small-scale study on feasibility. Various features of the methods will be tested for investigation in a larger, more rigorous or confirmatory study. It was carried out on 10 subjects who were excluded from the actual study.

**Reliability:** The reliability of the items was based on the internal consistency. The Cronbach Alpha for the checklist was 0.92.

**Data Collection and Data Analysis:** To collect data, a structured questionnaire was designed, which was done through direct interviews. An approximate time of 20-25 minutes was given for filling out the questionnaire. Data of the current study was analyzed using SPSS, version 26.

Rating and Scoring of the Scale: The rating of the items of knowledge is as follows: (2) for "True Answer" and (1) for "False Answer". Cut off point: To find the cut-off point, it can be calculated using the following formula: Cut off point = = = 1.5

Assessment of knowledge: Good when the mean score > 1.5, Fair =1.5, Poor < 1.5 .

## Results

**Table 1 : Distribution of Sociodemographic Information :**

No	Items	F	%
<b>1.</b>	<b>Age groups</b>		
	20-24	16	26.7
	25-29	14	23.3
	30-34	9	15
	35-39	10	16.7
	40-44	6	10
	45-49	5	8.3
<b>2.</b>	<b>Educational level</b>		
	Bachelors graduating and high	8	13.3
	Midwifery diploma	8	13.3
	Nursing diploma	13	21.7
	Midwifery secondary school graduated	23	38.3
	Nursing secondary school graduated	8	13.3
<b>3.</b>	<b>Years of working (experience) in the delivery room</b>		
	Did not work in delivery room	17	28.3
	1month -1year	11	18.3
	2-6 years	19	31.7
	7-11 years	8	13.3
	12-16 years	4	6.7
	17-21years	1	1.7
<b>4.</b>	<b>Attending courses and workshops in PPH</b>		
	Yes	24	40
	No	36	60
<b>5.</b>	<b>Current workplace in the hospital</b>		
	Delivery room	25	41.7
	Postnatal room	15	25.0
	Gynecologic wards	17	28.3
	Consultation	3	5.0
<b>6.</b>	<b>Is she seeing PPH case</b>		
	Yes	46	76.7
	No	14	23.3

F=Frequency, %= P ercentage

Table 1: Indicated that the majority of participants (26.7%) belonged to (20-24) age group, (38.3%) of them were midwifery secondary school graduated, (31.7%) of them had (2-6) years cumulative experience for working in the delivery room, (60%) of them were attending courses and workshops in PPH, (41.7) of them did work in the delivery room in time of study conducting, (76.7%) of sample were seeing PPH cases.

**Table 2: Assessment of Nurse and Midwives Knowledge Toward PPH Prevention**

No	Knowledge items	Answer	F.	%	Mean score	Assessment
1.	Definition of PPH	True	6	10	1.10	Poor
		False	54	90		
2.	Classification of PPH	True	29	48.3	1.48	Poor
		False	31	51.7		
3.	Definition of primary PPH	True	46	76.7	1.77	Good
		False	14	23.3		
4.	Definition of secondary PPH	True	35	58.3	1.58	Fair
		False	25	41.7		
5.	Uterotonics Drugs for the prevention of PPH during 3 <sup>rd</sup> stage of labor	True	46	76.7	1.77	Good
		False	14	23.3		
6.	Uterine message	True	52	86.7	1.87	Good
		False	8	13.3		
7.	How do you evaluate PPH	True	30	50	1.50	Fair
		False	30	50		

8.	Signs of PPH	True	31	51.7	1.52	Fair
		False	29	48.3		
9.	Control Cord Traction for vaginal births	True	8	13.3	1.13	Poor
		False	52	86.7		
10	Assessment of Postpartum abdominal uterine tons	True	31	51.7	1.52	Fair
		False	29	48.3		
11.	Causes of PPH	True	31	51.7	1.52	Fair
		False	29	48.3		
12.	Risk factors of PPH	True	6	10	1.10	Poor
		False	54	90		
13	Using Injectable Ergometrine (methylegometrine) for appropriate client	True	27	45	1.45	Poor
		False	33	55		
14.	Misoprostol drug	True	14	23.3	1.23	Poor
		False	46	76.7		
Overall assessment		True	392	46.7	1.47	Poor
		False	448	53.3		

**F=Frequency, %= P ercentage**

Table 2: The high mean scores of postpartum hemorrhage prevention knowledge and assess as (good) in the only three items: (Definition of primary PPH, (Uterotonics Drugs for the prevention of PPH during 3rd stage of labor), and (Uterine message). While, five items are at a fair level : (Definition of secondary PPH), (How do you evaluate PPH), (Signs of PPH), (Assessment of Postpartum abdominal uterine tons), and (Causes of PPH). Six items are at a poor level: (Definition of PPH), (Classification of PPH), (Control Cord Traction for vaginal births), (Risk factors of PPH), (Risk factors of PPH), (Using Injectable Ergometrine methylegometrine for appropriate client), and (Misoprostol drug).

**Table 3: Association Between Participants' Level of Knowledge and Sociodemographic Variables**

No.	Variables	$\chi^2$	df	p-value	c.s
1.	Age	9.077	5	0.106	N.S
2.	Educational level	2954	4	0.566	N.S
3.	Years of working in the delivery room	6.168	5	0.290	N.S
4.	Attending courses and workshops in PPH	0.741	1	0.389	N.S
5.	Current workplace in the hospital	4.131	3	0.248	N.S

$\chi^2$  = Chi Square, df = degree of freedom, C.S. = Comparison Significant , NS = Non Significant

at p - value  $\leq$  0.05.

Table 3: indicates that there is no association between the participants' knowledge level and sociodemographic variables at a p-value less than 0.05 that include: age, educational level, work experience at delivery room for years, attending courses and workshops about PPH, and current work place at hospital.

## Discussion

The aims of the current study were to assess knowledge about postpartum hemorrhage prevention among female nurses and midwives and to determine the relation between them in terms of knowledge and sociodemographic variables: Age, Qualification, Working years in the delivery room, Attending courses and workshops in PPH, and Current workplace in the hospital.

Current findings are in line with those of (Mahmood et al., 2025) in Mosul, Iraq. They reveal moderate knowledge about PPH with critical deficits in the area of prevention. The lowest level of competency was in the prevention of PPH 61.7%. They recommended that mandatory simulation-based training and WHO protocol integration were urgently needed [10]. Also, current findings agree with (Mohammad, 2020;Jumaah et al., 2020) at Al-Najaf City in Iraq [11] [12]. Another study was conducted by (Abdulaziz, 2024) at Maternity Teaching Hospital in Sulaimani City, Iraq before and after being exposed to an educational program showed the majority of nurses and midwives had poor knowledge of PPH while, after the educational program, their knowledge increased significantly [13]. Similarly, (Bidiruet et al., 2025), in Ethiopia reported that the majority of midwives had inadequate knowledge and practices related to management of postpartum hemorrhage [14].

(Almutairi et al., 2025), conducted in Jeddah, Saudi Arabia, proved that nurses' knowledge and performance skills for primary postpartum hemorrhage care were improved after receiving training through simulation mode. It is recommended that all the nurses working in maternity care facilities should participate in an in-service training program using the simulation mode so that they could demonstrate an active role in the prevention and management of PPH [15]. Similarity, (Hassen et al., 2024), conducted in Egypt, found that the percentage of participants that had an unsatisfactory level of knowledge regarding nursing interventions for the prevention and management of PPH, i.e., 4.0% & 6.0%, respectively, through pre-applying the WHO guideline, compared to those who had a satisfactory level of total knowledge, i.e., 78.0% & 94.0%, respectively, post-applying guideline of WHO [16]. (Elbadrawy et al., 2022) conducted a study in Egypt [17], and

(Henry et al., 2022), conducted in Kenya, concluded that the nurse-midwives had a moderate level of knowledge regarding the concepts, information, and skills associated with PPH [18].

Contrasting this finding with the current understanding, (Kharshandi et al., 2024) in Meghalaya documented that nurses in both rural and urban health facilities possessed a high level of knowledge regarding the prevention and management of Post-Partum Hemorrhage [19].

Concerning the second aim of this study showed there wasn't relationship between the knowledge of the studied participants towards PPH prevention and their Sociodemographic Factors: Age, Level of Qualification, Working in the delivery room, Attending courses and workshops in PPH, and Current Workplace in the hospital. This is in disagreement with the study findings of (Mohammed, 2024) revealed the statistically significant correlation of knowledge with the duration of service in the delivery room, as well as the cumulative years of service [20]. Also, these findings are in disagreement with those of (Bidiru et al., 2025), which indicated that associated factors that had statistically strong significant associations with knowledge as: Work experience, guidelines, job training, and educational level [14].

This may be due to the fact that the current study was single-centered as opposed to multicentered. Knowledge on PPH is generally very low in many settings and thus does not make a distinguishing factor, either by age or qualification level-for instance, diploma versus degree. The lack of relationship could indicate that knowledge depends more on systemic issues, such as access to regular training, in-service workshops, and current guidelines, than individual tenure or current, possibly under-resourced, unit. Additionally, in Iraqi gynecology and obstetric hospitals, nursing and midwifery care is provided mainly by female staff, particularly in labor and delivery wards. Moreover, they may be assigned to work in any ward of hospital.

Enhancement of knowledge of the healthcare workers is the first step in improving the quality of care provided to the patients, so that they can be managed at an early stage (Mohammed et al., 2022) [21]. Programs have been made to improve the theoretical knowledge in terms of defining PPH, causes, and steps towards prevention, as well as practical training in the form of nursing skills using various teaching methodologies. Indeed, programs have proved to be successful in terms of improving the knowledge of nurses/midwives in handling issues related to the prevention and control of PPH (Abdulaziz, 2024; Almutairi et al., 2025; Mohamadirizi et al., 2025) [13] [15] [22]. By this, gap in the knowledge of PPH prevention can be fulfilled in nurses/midwives.

## Conclusions

The assessment of the knowledge of the Nurses-Midwives regarding PPH prevention revealed that the majority of the Nurses-Midwives lacked enough knowledge and even there is no relation between them and the Sociodemographic variables presented in the questionnaire such as: Age, Qualification, Working years in the delivery room, Attending courses and workshops in PPH, and current workplace in the hospital. All the Nurses/Midwives working in the Gynecology and Obstetrics Teaching Hospital in Kerbala City should be trained in the way to improve their knowledge and skills regarding the prevention of Postpartum hemorrhage.

## Recommendations

1. Simulation-based training should be implemented to improve the knowledge and practice of the nurse-midwife in the prevention of PPH.
2. Nursing and midwifery courses should be improved and standard clinical guidelines for PPH prevention readily accessible for use in maternity facilities.
3. Periodic assessment of knowledge of nurses and midwives recommended
4. Additional studies are required to ascertain the efficacy of education in the prevention of PPH on a larger sample of various contexts.

## Ethical consideration

Ethical approval was obtained from the ethical committee of the Nursing college in Kerbal University, and hospital. Oral and written informed consent was obtained from each participant before participation. Information obtained in due course was kept confidential.

**Conflict of Interest:** There is no conflict of interest in this study.

**Funding:** Study was no funded

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