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## To assess the knowledge and practice regarding Post-Partum Hemorrhage (PPH) prevention and its management among nurses working in selected rural and urban health care facilities, Meghalaya

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### Abstract

A cross sectional non experimental descriptive study was carried out to assess the knowledge and practice regarding Post-Partum Haemorrhage (PPH) prevention and its management among 130 nurses (65 nurses from rural health care facilities and 65 from urban health care facilities) working in selected rural and urban Health care facilities, Meghalaya using multistage sampling technique. Majority of nurses, particularly in urban settings, demonstrated good knowledge levels (83.1%). Rural nurses showed satisfactory practice (67.7%), both rural and urban nurses exhibited similar practice scores. There is a significant difference between knowledge score of the nurse in rural and urban health care facilities at ( $t(128) = -2.4, p=0.02^*$ ) in the rural knowledge score with mean and standard deviation (Mean  $\pm$  SD) is  $17 \pm 2.7$ , while the urban group had a mean and standard deviation of knowledge score (Mean  $\pm$  SD) is  $18.1 \pm 2.3$  at 95% confidence interval of difference. Whereas there is no statistical significant difference between the practice score of the nurses in the rural and urban health care facilities. Logistic regression revealed associations between unsatisfactory practice levels and reduced knowledge in rural settings, emphasizing the impact of age on practice. In urban areas, unsatisfactory practice levels are associated with lower odds of good knowledge. These results also highlight the importance of addressing and improving practice levels to enhance knowledge and effectively manage and prevent Post-Partum Hemorrhage (PPH) among nurses in both rural and urban settings.

**Conclusion:** The study underscores the global importance of implementing health interventions to prevent and treat PPH complications, enhancing maternal health outcomes.

**Keywords:** Knowledge, Practice, Post-Partum Hemorrhage (PPH), Rural and Urban Health Care Facilities

### Introduction

Post-Partum hemorrhage (PPH), which is severe bleeding after childbirth, is the main cause of maternal death worldwide. Globally, PPH affects roughly 14 million women annually and causes 70,000 maternal deaths<sup>[1]</sup>. According to World Health Organization (WHO) estimates, PPH accounts for around 25% of maternal mortality worldwide, resulting in over 100,000 deaths per year<sup>[2]</sup>. Addressing the problem of PPH is critical for lowering maternal mortality rates and enhancing women's well-being worldwide. Organizations such as the WHO are attempting to address this issue through programs such as the Postpartum Hemorrhage Summit. This summit brings specialists and professionals together to create strategies and guidelines for the prevention, management, and treatment of PPH.

### Need of the Study

The frequency of PPH and its link to maternal morbidity and mortality necessitate the development of efficient prevention and therapeutic strategies. Understanding these gaps allows focused interventions, educational programs, and training initiatives to be devised to improve healthcare providers' knowledge and abilities in managing PPH effectively. The study can give significant insights for policymakers, healthcare professionals, and stakeholders to enhance maternal health services and outcomes in the state by analyzing the knowledge and practice of healthcare providers in Meghalaya on Post-Partum Hemorrhage prevention and management.

## Objectives

1. To compare the knowledge regarding Post-Partum Hemorrhage (PPH) prevention and its management among the nurses working in selected rural and urban health care facilities.
2. To compare the practice regarding Post-Partum Hemorrhage (PPH) prevention and its management among the nurses working in selected rural and urban health care facilities.
3. To find out the association between knowledge and practice regarding Post-Partum Hemorrhage (PPH) prevention and its management with selected demographic variables.

## Research Methodology

A Quantitative research approach was adopted for the present study; the research design adopted was a Non-Experimental Cross sectional Descriptive Design. The sampling technique employed was multistage sampling technique. A total of 130 nurses i.e 65 nurses from rural health care facilities and 65 nurses from urban health care facilities; working in the Obstetric and Gynaecological Ward in selected from various health Care facilities in Meghalaya. A structured self-administered questionnaire consisting of 6 items: Included socio demographic data such as Age in years, Gender,

Educational qualification, Total experience in the labour room (in years), Work place location and Training /workshop attended related to Post-Partum Hemorrhage (PPH), a structured self-administered questionnaire consisting of 22 items on assessment of the nurse's knowledge about Post-Partum Hemorrhage (PPH) prevention and its management, a semi structured questionnaire consisting of 8 items: on assessment of the nurse's self-reported practice regarding Post-Partum Hemorrhage (PPH) prevention and its management. Karl Pearson's correlation coefficient approach and the Spearman-Brown formula were used to determine the tool's reliability and the obtained reliability coefficient was 0.80. Ethical considerations was sought from the NSAC (NEIGRIHMS Research and Ethics Committee) and IEC (Institution Ethics Committee) of NEIGRIHMS (North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences). Formal permission was obtained from the Principal of the College of Nursing, NEIGRIHMS, as well as from the Directorate of Health Services (DHS), Shillong, Meghalaya, the District Medical and Health Office (DMHO), and the Hospital Administrator.

## Results and Discussion

### Findings related to demographic variables of the nurses

**Table 1:** Frequency and percentage distribution of the nurses in the rural and urban health care facilities according to the socio demographic variables, N=130

Demographic variable	Rural (N=65)		Urban (N=65)	
	F	%	F	%
<b>Age (in years)</b>				
20-30	24	36.9	23	35.4
31-40	34	53.3	33	50.8
41-50	07	12.5	09	13.8
<b>Gender</b>				
Female	61	93.8	64	98.5
Male	04	06.2	01	01.5
<b>Educational Qualification</b>				
ANM	11	16.9	01	01.5
GNM	38	58.5	55	84.6
B.Sc. Nursing/Post Basic	16	24.6	09	13.8
<b>Total years of experience in Labour room (in years)</b>				
1-5	46	70.8	52	80
6-10	09	13.8	09	13.8
11-15	09	13.8	03	04.6
≥16	01	01.5	01	01.5
<b>Training or Workshop attended related to PPH</b>				
Yes	36	55.4	05	07.7
No	29	44.6	60	92.3
<b>Place of training</b>				
Skilled Birth Attendant	32	49.2	0	0
Bridge Course	02	03.1	0	0
Dakshata Training	01	01.5	03	04.6
In-Service Training	01	01.5	02	03.1

Table 1, In the rural health care facilities, out of 65 nurses around 34 (53.3%) belong to the age group of 31-40 years, 61 (93.8%) of participants were female and 4 (6.2%) were males, 38 (58.5%) have completed their GNM training, 46 (70.8%) have 1-5 years' experience in the labour room, and 29 (44.6%) have not attended their training related to Post-Partum Hemorrhage (PPH). Whereas for the nurses working in the urban health care facilities out of the 65 nurses, 33 (50.8%) belong to the age group of 31-40 years, 64 (98.5%)

participants were female and only 1 (1.5%) was a male participants, 55 (84.6%) have completed their GNM training, 52 (80%) have 1-5 years' experience in the labour room, and 60 (92.3%) have not attended any training related to Post-Partum Hemorrhage (PPH).

### Findings related to the nurses' knowledge on Post-Partum Hemorrhage (PPH) prevention and its management

**Table 2:** Frequency and percentage distribution of knowledge on Post-Partum Hemorrhage (PPH) prevention and its management among nurses working in rural and urban health care facilities N=130

Level of Knowledge	Score range	Rural (N=65) F %		Urban (N=65) F %	
<b>Good level</b>					
knowledge	>16	47	72.3	54	83.1
<b>Average level</b>					
knowledge	10-15	18	27.7	11	16.9

Table 2, 47 (72.3%) of the participants in the rural health care facilities had good knowledge, 18 (27.7%) had average knowledge regarding prevention and its management of Post-Partum Hemorrhage (PPH). The table further show the

knowledge of the nurses in the urban health care facilities that 54 (83.1%) of the participants had good knowledge, 11 (16.9%) had average knowledge and regarding prevention and its management of Post-Partum Hemorrhage (PPH).

**Table 3:** Item wise frequency and percentage distribution of knowledge on Post-Partum Hemorrhage (PPH) prevention and its management among nurses working in rural and urban health care facilities. N=130

Items	Rural (N=65) F %		Urban (N=65) F %	
Symptoms of shock following PPH	64	98.5	62	95.4
Dose of oxytocin during Active Management of Third Stage of labour (AMTSL)	63	96.9	61	93.8
On CCT one hand should counter pressure or support by placing the other hand	62	95.4	58	89.2
Uterotonic drug of choice for AMTSL	57	87.7	62	95.4
Important steps of Active management of third stage of labour	56	86.2	62	95.4
Causes of Immediate PPH	55	84.6	61	93.8
PPH be prevented in high risk pregnant mothers during labour	54	83.1	62	95.4
Signs of Uterine Atony	53	81.5	56	86.2
Immediate risk factor for Post-Partum hemorrhage	52	80.0	51	78.5
Temperature that oxytocin be stored in the refrigerator	50	76.9	56	86.2
Amount of blood lost during normal labour in case of PPH	46	70.8	60	92.3
Uterotonic drugs given in Active Management of Third stage of labour	48	73.8	53	81.5
Primary PPH likely occurs	46	70.8	54	83.1
Most common Side effects of tablet misoprostol	46	70.8	57	87.7
Delivery of a trapped placenta usually be achieved	46	70.8	54	83.1
Dose of tablet misoprostal to be given in order manage PPH	42	64.6	51	78.5
Delayed PPH occur	41	63.1	45	69.2
Uterine massage should be given after labour	34	52.3	33	50.8
Amount of blood lost during caesarian in case of PPH	31	47.7	50	76.9
The Estimated blood loss during primary PPH in anemic pregnant mothers	21	32.3	18	27.7
Immediate step that a nurse should reassess a mother recovering from shock post PPH	14	21.5	14	21.5
Fluids transfused for the immediate treatment of hypovolemia	12	18.5	31	47.7

Table 3, The frequency of the number of participants answering to the knowledge questionnaires regarding Post-Partum Hemorrhage (PPH) among the nurses working in rural and urban health care facilities are 12 (18.5%) of the total participants who worked in rural health care facilities correctly answered the topic on fluid management in shock following

PPH. In contrast, a higher proportion of nurses working in urban health care facilities, 31 (47.7%), correctly answered the same question. This shows that, when compared to their rural counterparts, urban nurses had a better awareness of fluid management in shock following PPH. The majority of participants, both from rural and urban health care facilities, displayed excellent awareness of shock signs and symptoms. In particular, 64 (98.5%) rural nurses and 62

(95.4%) urban nurses correctly answered the item on signs and symptoms of shock. This demonstrates a high level of awareness and understanding among the participants on the signs and symptoms of shock following PPH. According to the findings, a lower number of nurses in both rural and urban health care facilities properly answered questions about fluid management in shock following PPH. However, regardless of location, a substantial majority of participants displayed good understanding of the signs and symptoms of shock. These findings indicate a possible area for improvement in rural nurses' awareness of fluid management in shock following PPH.

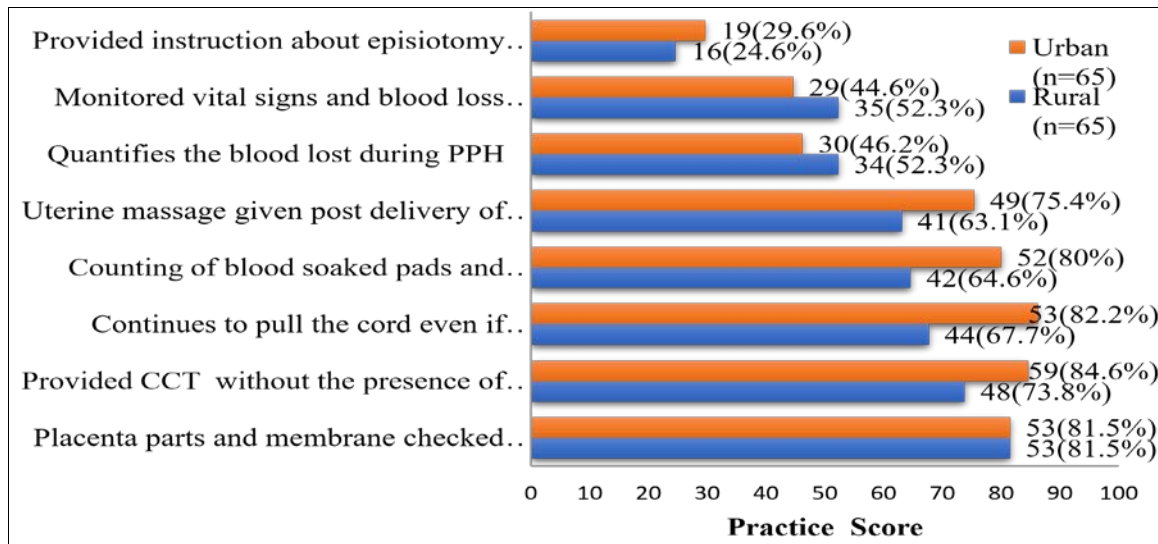
**Finding related to the nurses’ practice on Post-Partum Hemorrhage (PPH) prevention and its management**

**Table 4:** Frequency and percentage distribution regarding the practice on Post-Partum Hemorrhage (PPH) prevention and its management among nurses in rural and urban health care facilities, N=130

Level of Practice	Score range	Rural (N=65) F %		Urban (N=65) F %	
Satisfactory	≥ 5	44	67.7	52	80
Unsatisfactory	≤ 4	21	32.3	13	20

**Table 4:** 44 (67.7) % of the participants in the rural health care facilities had satisfactory practice score and 21 (32.3%) had poor practice score regarding prevention and its management of Post-Partum Hemorrhage (PPH). The table also represents the practice score of the nurses working in

the urban health care facilities, 52 (80%) of the participants had satisfactory practice score and 13 (20%) had poor practice score regarding prevention and its management of Post-Partum Hemorrhage (PPH).



**Fig 1:** A Bar diagram showing item wise frequency and percentage distribution of the correct practice responses on Post-Partum Hemorrhage (PPH) prevention and its management among nurses in the rural and urban health care facilities. N=130

Figure 1, There was a low score for the practice item regarding provision of instruction of episiotomy wound care, checking uterine tone and prevention of infection to the post natal mothers; only 16 (24.6%) from the rural and 19 (29.6%) from the urban reported that they do provide instruction of episiotomy wound care to the post natal mothers. Whereas, there is considerably high frequency on the number of participants reporting on the item whether the placenta parts and membrane was checked after delivery; 53 (81.5%) respectively from nurses working both in rural and urban health care facilities self-reported that they do check the placenta and its membrane after delivery.

**Findings related to difference of knowledge and practice of nurses regarding Post-Partum hemorrhage (PPH) prevention and its management between rural and urban health care facilities**

Table 5, The t-value, presented as  $t(128) = -2.4$ , illustrates the size of the difference between the two groups' mean knowledge scores. The negative sign implies that the rural groups' mean knowledge score is lower than the urban group. The t-test p-value is stated as  $p = 0.02^*$ ; indicating that the knowledge gap between rural and urban nurses is statistically significant.

**Table 5:** Independent t- test related to knowledge of nurses regarding Post-Partum hemorrhage (PPH) prevention and its management between rural and urban health care facilities, N=130

Settings	Mean	SD	"T" Value	DF	P-Value
Rural	17	2.7	-2.4	128	0.02*
Urban	18.1	2.3			

\*Significant =  $p \leq 0.05$

**Table 6:** Independent t-test related to the practice of nurses regarding Post-Partum hemorrhage (PPH) prevention and its management between rural and urban health care facilities, N=130

Settings	Mean	SD	"T" Value	DF	P-Value
Rural	4.8	1.8	-1.7	128	0.09
Urban	5.3	1.5			

\*Significant =  $p \leq 0.05$

Table 6, The t-value, presented as  $t(128) = -1.7$ , illustrates the extent of the difference between the mean practice scores of the two groups. The t-test p-value is stated as  $p = 0.09$ . The findings of the independent t-test indicate that there is no significant difference in the practice scores of nurses working in rural and urban healthcare facilities.

**Table 7:** Frequency and percentage distribution regarding the practice response regarding Post-Partum Hemorrhage (PPH) prevention and its management among the nurses working in rural and urban health care facilities, N=130

Criteria	Rural (N=65) F %		Urban (N=65) F %	
<b>Placenta parts and membrane checked after delivery</b>				
No response	06	09.2	05	07.7
To check for missing part of the placenta and prevent PPH	23	35.4	48	73.8
To check for missing parts of the placenta	35	53.4	12	18.5
Prevent bleeding	01	01.5	0	0
<b>Provided CCT without the presence of uterine contraction</b>				
No response	04	06.2	03	04.6
Provide CCT without uterine contraction	09	13.4	08	12.3
Does not continue CCT without uterine contraction	52	80.0	55	84.6
<b>Continues to pull the cord even if placenta does not descend within 30 to 40 seconds of CCT</b>				
No response	04	06.2	02	03.1
Continues to pull the cord	15	23.1	08	12.3
Does not continue to pull cord	45	69.2	55	84.6
To rule out shock	01	01.5	0	0
<b>Counting of blood soaked pads and weighing during management of PPH</b>				
No response	11	16.9	04	06.2



To estimate blood lost	44	67.7	52	80.0
Does not count and weight	10	15.4	08	13.8

Conti\*, N=130

**Table 7:** Continue

Criteria	Rural (N=65) F %	Urban (N=65) F %
<b>Uterine massage given post-delivery of the baby</b>		
No response	16	24.6
To promote uterine contraction	41	63.1
Does not give uterine massage	07	10.8
To prevent bleeding	01	01.5
<b>Quantifies the blood lost during PPH</b>		
No response	11	16.9
Counts and weight blood soaked pads	11	16.9
Using a measuring mug	16	24.6
Visual approximation	07	10.8
Wrong response	14	21.5
Does not estimate blood lost	06	09.2
<b>Monitored vital signs and blood loss while managing PPH</b>		
No response	12	18.4
Every 15 mins	32	49.2
Every 30 mins- 1 hourly	19	29.2
Every 2 hourly	02	03.1
Every 4 hourly	0	0
<b>Provided instruction about episiotomy wound care, checking uterine tone and prevention of infection to the mothers</b>		
No response	10	15.4
To promote wound healing and prevent late PPH	11	16.9
To promote wound healing and prevent infection	40	61.5
To prevent complication	04	06.5

Table 7, About 35.4% of the nurses working in rural health care facilities and 73.8% of the nurses working in urban health care facilities has responded correctly to the question related to checking of placenta parts and membrane post-delivery. 80% of the nurses working in health care facilities in the rural and 84.6% of the urban has responded correctly to the question on whether to provide CCT without the presence of uterine contraction. Also 45% of the nurses working in health care facilities in the rural and 55% of the urban has responded correctly to the question on whether to continue to pull the cord even if placenta does not descend within 30 to 40 sec of CCT. 67.7% of the nurses working in health care facilities in the rural and 80% of the urban have responded correctly to the question on the reason as to why Counting of blood soaked pads and weighing during management of PPH.

Furthermore, 63.1% of the nurses working in health care facilities in the rural and 72.3% of the urban had responded

correctly to the question on the reason as to why uterine massage is given post-delivery of the baby. Also, 24.6% of the nurses working in health care facilities in the rural and 03.1% of the urban has responded correctly to the question on the how to quantify the blood lost during PPH. Around 49.2% of the nurses working in health care facilities in the rural and 29.2% of the urban has responded correctly to the question on the interval for monitoring vital signs and blood loss while managing PPH. 16.9% of the nurses working in health care facilities in the rural and 29.2% of the urban have responded correctly to the question on why should nurses provide instruction regarding episiotomy wound care, checking uterine tone and prevention of infection to the mothers.

**Finding related to the association between knowledge of nurses regarding Post-Partum Hemorrhage (PPH) prevention and its management and selected variables**

**Table 8:** Findings related to univariate logistic regressions on factors associated with knowledge of nurses regarding Post-Partum Hemorrhage (PPH) prevention and its management in rural health care facilities. N=65

Variables	Knowledge Average Good	Crude OR (95%)	P-Value
<b>Age (in years)</b>			
20-30	05 (20.8%)	19 (79.2%)	1
31-40	11 (32.4%)	23 (67.6%)	1.20 (0.2 -7.16)
41-50	02 (28.6%)	05 (71.4%)	1.82 (0.54-6.15)
<b>Gender</b>			
Female Male	18 (29.5%)	43 (70.5%)	1
	0	04 (06.2%)	0
<b>Educational Qualification Diploma</b>			
B. Sc Nursing and above	15 (23.07%)	32 (49.23%)	1
	01 (06.3%)	15 (93.8%)	1.417 (0.39-5.12)
<b>Total experience in the labour room (in years)</b>			
0-5	13 (28.3%)	33 (71.7%)	1
≥ 6	05 (26.3%)	14 ((73.7)	0.907 (0.27-3.02)
<b>Training/Workshop attended related to PPH</b>			

No Yes	07 (24.1%)	22 (75.9%)	1	0.56
	11 (30.6%)	25 (69.4%)	0.72 (0.24-2.19)	
<b>Practice Level</b>				
Satisfactory	07 (15.9%)	37 (84.1%)	1	0.003*
Unsatisfactory	11 (52.4%)	10 (47.6%)	0.17 (0.05-0.56)	

1=Reference category, significant at  $p<0.05^*$

Table 8, The table depicts that among the variables, only Unsatisfactory Practice level demonstrated a statistically significant association with the Knowledge Level (OR: 0.17, 95% CI: 0.05-0.56,  $p=0.003^*$ ). Nurses with Unsatisfactory

Practice level had significantly lower odds of having Good Knowledge level compared to those with satisfactory practice levels.

**Table 9:** Findings related to univariate logistic regressions on factors associated with practice of nurses regarding Post-Partum Hemorrhage (PPH) prevention and its management in rural health care facilities. N= 65

Variables	Practice Satisfactory	Unsatisfactory	Crude OR (95%)	P-Value
<b>Age (in years)</b>				
20-30	21 (87.5%)	03 (12.5%)	1	
31-40	20 (58.8%)	14 (41.2%)	0.107 (0.01-0.73)	0.023*
41-50	03 (42.9%)	04 (57.1%)	0.525 (0.10-2.72)	0.443
<b>Gender</b>				
Female Male	41 (67.2%)	20 (32.8%)	1	
	03 (75.0%)	01 (25.0%)	1.463 (0.14-14.97)	0.748
<b>Educational Qualification</b>				
Diploma	16 (24.6%)	11 (17%)	1	0.595
B.Sc. Nursing and above	28 (73.7%)	10 (26.3%)	1.417 (0.39-5.12)	
<b>Total experience in the labour room (in years)</b>				
0-5	33 (71.7%)	13 (28.3%)	1	
≥ 16	11 (57.9%)	08 (42.1%)	0.542 (0.17-1.65)	0.281
<b>Training/Workshop attended related to PPH</b>				
Yes No	20 (55.6%)	16 (44.4%)	1	
	24 (82.8%)	05 (17.2%)	0.26 (0.08-0.83)	0.024*
<b>Knowledge Level</b>				
Average Good	07 (38.9%)	11 (61.1%)	1	
	37 (78.7%)	10 (21.3%)	5.81 (1.79-18.87)	0.003*

1=Reference category, significant at  $p<0.05^*$

Table 9, The data shows that nurses aged 31-40 years and 41-50 years had significantly lower odds of having Satisfactory Practice compared to the reference group (20-30 years) after adjusting for other factors (OR: 0.107, 95% CI: 0.01-0.73,  $p=0.023^*$ ). Not attending training/ workshops related to PPH was significantly associated with higher odds of Unsatisfactory Practice (OR: 0.26, 95% CI: 0.08-0.83,  $p=0.024^*$ ) compared to attending such events. Nurses with

Good knowledge had significantly higher odds of satisfactory practice (OR: 5.81, 95% CI: 1.79-18.87,  $p=0.003^*$ ) compared to those with average knowledge. This indicates that nurses with an "Average" knowledge level regarding PPH prevention and management were 5.81 times more likely to have a Satisfactory Practice level compared to those with lower knowledge levels.

**Table 10:** Findings related to multivariate logistic regressions on factors associated with practice of nurses regarding Post-Partum Hemorrhage (PPH) prevention and its management in rural health care facilities. N= 65

Variables	Practice Satisfactory	Unsatisfactory	Crude OR (95%)	P value	Adjusted Odds Ratio (AOR)	Adjusted P-Value
<b>Age (in years)</b>						
20-30	21 (87.5%)	03 (12.5%)	1	0.023*	1	
31-40	20 (58.8%)	14 (41.2%)	0.107 (0.01-0.73)		0.145 (0.01-1.88)	0.072
41-50	03 (42.9%)	04 (57.1%)	0.525 (0.10-2.72)		0.544 (0.09-3.14)	0.497
<b>Training/ Workshop attended related to PPH</b>						
Yes	20 (55.6%)	16 (44.4%)	10.26	0.024*	10.346	0.128
No	24 (82.8%)	05 (17.2%)	(0.08-0.83)		(0.08-1.35)	
<b>Knowledge Level</b>						
Average Good	07 (38.9%)	11 (61.1%)	15.81 (1.79-18.87)	0.003*	16.442 (1.72-24.0)	0.006*
	37 (78.7%)	10 (21.3%)				

1=Reference category; significant at  $p<0.05^*$

Table 10, The results showed that nurses aged 31-40 years showed lower odds of having Satisfactory Practice compared to the reference group (20-30 years) in both crude (OR: 0.525, 95% CI: 0.10-2.72,  $p=0.443$ ) and adjusted analyses (AOR: 0.145, 95% CI: 0.01-1.88,  $p=0.072$ ). The variable Average Knowledge Level continued to display a

significant association with the practice level even after adjusting for other factors. Nurses with an Average knowledge level were more likely to have a Satisfactory Practice level (AOR: 6.442, 95% CI: 1.729-24.00,  $p=0.006^*$ ).

**Table 11:** Findings related to univariate logistic regressions on factors associated with knowledge of nurses regarding Post-Partum hemorrhage (PPH) prevention and its management in urban health care facilities, N=65

Variables	Knowledge Average Good		Crude OR (95%)	P-Value
<b>Age (in years)</b>				
20-30	03 (13.6%)	20 (87.0%)	1	
31-40	05 (15.2%)	28 (84.8%)	1.19 (0.25 - 5.56)	0.82
41-50	03 (33.3%)	06 (66.7%)	0.36 (0.07 - 1.92)	0.23
<b>Gender</b>				
Female Male	11 (17.2%)	53 (82.8%)	1	0.99
	0	01 (100%)	0	
<b>Educational Qualification</b>				
Diploma	10 (18.2%)	45 (81.8%)	1	0.53
B.Sc. Nursing and above	01 (10%)	09 (90%)	0.50 (0.057-4.45)	
<b>Total experience in the labour room (in years) 1-5</b>				
≥ 6	10 (19.2%)	42 (80.8%)	1	0.34
	01 (7.7%)	12 (92.3%)	0.350 (0.41-3.015)	
<b>Training/Workshop attended related to PPH</b>				
No	10 (16.7%)	50 (83.3%)	1	0.85
Yes	01 (20.0%)	04 (80.0%)	0.80 (0.08-7.93)	
<b>Practice Level</b>				
Satisfactory	06 (11.5%)	46 (88.5%)	1	0.029*
Unsatisfactory	05 (38.5%)	08 (61.5%)	0.21 (0.05-0.85)	

1=Reference category; significant at  $p<0.05^*$

Table 11, The data shows that nurses aged 41-50 years showed lower odds of having Good knowledge compared to the reference group (20-30 years) (OR: 0.36, 95% CI: 0.07-1.92,  $p=0.23$ ). Male nurses had 100% good knowledge, showing a significant association compared to female nurses in the univariate analysis (OR: 0,  $p=0.99$ ). Nurses with

Unsatisfactory.

Practice levels showed lower odds of having Good knowledge compared to those with Satisfactory Practice levels in the univariate analysis (OR: 0.21, 95% CI: 0.05-0.85,  $p=0.029^*$ ).

**Table 12:** Findings related to univariate logistic regressions on factors associated with practice of nurses regarding Post-Partum hemorrhage (PPH) prevention and its management in urban health care facilities. N= 65

Variables	Practice Satisfactory Unsatisfactory		Crude OR (95%)	P-Value
<b>Age (In years)</b>				
20-30	23 (100%)	0	1	
31-40	23 (69.7%)	10 (30.3%)	0	0.99
41-50	06 (66.7%)	03 (33.3%)	0.87 (0.181-4.189)	0.86
<b>Gender</b>				
Female Male	52 (81.3%)	12 (18.8%)	1	1
	0	01 (100%)	0	
<b>Educational Qualification</b>				
Diploma Nursing	45 (81.8%)	10 (18.2%)	10.519	0.396
B.Sc Nursing and above	07 (70.0%)	03 (30.0%)	(0.114-2.362)	
<b>Total experience in the labour room (In years)</b>				
0-5	42 (80.8%)	10 (19.2%)	10.79 (0.184-3.425)	0.76
≥6	10 (76.9%)	03 (23.1%)		
<b>Training/Workshop attended related to PPH</b>				
No	48 (80%)	12 (20%)	1	1
Yes	04 (80%)	01 (20%)	1 (0.012 - 9.784)	
<b>Knowledge Level</b>				
Average Good	06 (54.5%)	05 (45.5%)	1	0.002*
	46 (85.2%)	08 (14.8%)	4.792 (1.176-19.516)	

1=Reference category; significant at  $p<0.05^*$

Table 12, The data shows that nurses aged 31-40 years showed lower odds of having satisfactory practice compared to the reference group (20-30 years) with (OR: 0.87, 95% CI: 0.181-4.189,  $p=0.99$ ). Nurses who did not attend training/workshops related to PPH had 20% unsatisfactory practice, indicating a significant association in the univariate analysis (OR: 1, 95% CI: 0.012-9.784,  $p=1$ ). Nurses with Good knowledge had significantly higher odds of Satisfactory Practice compared to those with Average knowledge in the univariate analysis (OR: 4.792, 95% CI: 1.176-19.516,  $p=0.002^*$ ).

## Discussion

In the current study 34 (53.3%) of the nurses in the rural health care settings and 33 (50.8%) from the urban health care settings are of the age group of 31-40 years which disagree with the study conducted by Mohammad HR (2020) in Iraq where from 150 nurse-midwives 67 (44.7%) are of the age group of 20-29 years and age category (30-39) years which constituted (22%)<sup>[10]</sup>. According to educational qualification, 38.5% of nurses in rural health care settings and 55.6% of nurses in urban health care settings have finished their GNM which agrees

with Rahel *et al.*, (2015) who reported that the Majority of nurses (84.6%) were diploma holder. Similar studies done by Rousseau A *et al.* (2015) stating "Professional qualification and experience in a maternity unit are significant factors influencing nurses' knowledge and skills, respectively, in the prevention and its management of PPH"<sup>[11]</sup>. Related to the total years of experience in labour room (in years) maximum of the nurses have 1-5 years of experiences with 46 (70.8%) in the rural health care settings and 52 (80%) in the urban health care settings which is similar to the study done by Mohammad H R<sup>[10]</sup>. Related to training or workshop attended related to PPH, 36 (55.4%) of the nurses in the rural health care facilities have attended the training or workshop related to PPH where as 60 (92.3%) of the nurses from the urban health care facilities have not attended any sort of training or workshop related to PPH management. The study further shows that knowledge score of the nurses in the rural health care facilities was 47 (72.3%) had good knowledge and the nurses in the urban health care facilities had 54 (83.1%) as good knowledge which was similar to the study that was done by Lamia H and Deksisab A (2019)<sup>[12]</sup>. Related to the practice the study shows that the nurses working in the rural health care facilities had 44 (67.7) % satisfactory practice score and nurses working in the urban health care facilities had 52 (80%) had satisfactory practice score.

This finding does not agrees with the study conducted in Sudan by Al-Matari H *et al.* (2017) found that more than half of the nurses' total knowledge toward postpartum hemorrhage prevention was poor, while nearly two-thirds of the nurses' total skills were poor<sup>[13]</sup>.

Related to the comparison of the knowledge of the nurses working in the rural and urban health care facilities there was a significant difference between the knowledge score of the Nurses in rural and urban healthcare facilities. Whereas on comparing the practice of the nurses working in the rural and urban health care facilities there was no significant difference between the practice score of the nurses in rural and urban healthcare facilities. The logistic regression analysis conducted on knowledge and practice of nurses regarding Postpartum.

Hemorrhage (PPH) prevention and management in rural and urban healthcare facilities; the Knowledge Level and Practice Level in rural health care facilities the univariate Logistic Regression Analysis; the variable Unsatisfactory Practice Level showed a statistically significant association with Good Knowledge level (AOR: 0.17, 95% CI: 0.05-0.56,  $p=0.003$ ). The remaining variables, including "Age (in years): 41-50 and 20-30," "Gender: Male", "Educational qualification: GNM and ANM", "Total experience in the labour room: 11-15 years", and "Training/Workshop attended related to PPH", did not show statistically significant associations with Good Knowledge level ( $p>0.05$ ). The variable Average Knowledge level showed a statistically significant association with Satisfactory Practice level (OR: 14.86, 95% CI: 2.64-83.54,  $p=0.002^*$ ). The variable "Training/Workshop attended related to PPH" showed a statistically significant association with Satisfactory Practice level (OR: 0.26, 95% CI: 0.081-0.836,  $p=0.024^*$ ). Multivariate Logistic Regression Analysis: the variable Unsatisfactory Practice level continued to show a statistically significant association with Good Knowledge Level even after adjusting for other factors (AOR: 0.17, 95% CI: 0.050.56,  $p=0.003^*$ ). The variable Average

Knowledge level remained significantly associated with Satisfactory Practice level even after adjusting for other factors (AOR: 6.442, 95% CI: 1.729-24.00,  $p=0.006^*$ ). In rural health care facilities, nurses with Unsatisfactory Practice are associated with lower levels of knowledge regarding PPH prevention and management. Additionally, nurses with average knowledge levels are more likely to have satisfactory practices. Providing training and knowledge enhancement programs for nurses in rural settings may improve their practices and ultimately enhance maternal care. The findings from a study conducted in the Tigray Region of Ethiopia support these results, a significant association was found between training related to the active management of the third stage of labour and both knowledge and practice levels among midwives. Similarly, in the present study analysis, the variable Unsatisfactory Practice level was significantly associated with Good Knowledge level<sup>[8]</sup>.

### Conclusion

The current study's findings reveal that nurses in both rural and urban healthcare facilities have a high degree of awareness about the prevention and its management of Post-Partum Hemorrhage (PPH). Also a sizable proportion of nurses display effective PPH management practices. These findings are consistent with comparable studies conducted in Sudan, indicating the issue's universality and the critical role of nurses in PPH prevention and care. Furthermore, the study found a substantial difference in knowledge ratings between rural and urban nurses. Demographic characteristics such as age and training/workshop attendance have also been linked to nurses' practices in both environments. These findings emphasize the necessity of continuing education and tailored training programs for nurses to improve their knowledge and skills, notably in rural areas. The study emphasizes the crucial role of nurses in managing PPH in a timely and effective manner, as they are frequently the first healthcare professionals on the scene during bleeding episodes. Their interventions are critical in reducing maternal morbidity and mortality linked with PPH. Overall, the researcher through this study emphasizes the significance of continued education, training, and knowledge sharing among nurses in order to improve PPH prevention and its management measures.

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