RESEARCH PAPER

Effect of an Antenatal Intervention on the Prevention of Primary Postpartum Hemorrhage among Pregnant Women

Seema Sarkar[1*], Dr. Rashmi Agnihotri[2]

[1]Ph.D. Nursing Scholar, Department of Obstetrics and Gynecology Nursing, College of Nursing, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India. Email: seema.scholar@tmu.ac.in (Corresponding Author)

[2]Associate Professor, Department of Obstetrics and Gynecology Nursing, College of Nursing, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India. Email: rashmiagnihotri.nursing@tmu.ac.in

***Corresponding author: Seema Sarkar, Ph.D. Nursing Scholar, Department of Obstetrics and Gynecology Nursing, College of Nursing, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India**

Email: seema.scholar@tmu.ac.in

Received: 30th May, 2026; **Revised:** 11th June, 2026; **Accepted:** 15th June, 2026; **Available Online:** 18th June, 2026

ABSTRACT

Background

Primary postpartum hemorrhage (PPH) remains one of the leading causes of maternal morbidity and mortality worldwide. Antenatal educational interventions can improve maternal awareness regarding risk factors, preventive measures, danger signs, and early management practices, thereby reducing the risk of PPH and its complications.

Objectives

To assess the post-intervention level of knowledge regarding prevention of primary postpartum hemorrhage among pregnant women.

Eligibility Criteria

Pregnant women between 28–34 weeks of gestation attending antenatal clinic were included in the study. Both primigravida and multigravida mothers who were identified as low to moderate risk for primary postpartum hemorrhage and willing to participate were included. Pregnant women available during the data collection period were also included. Pregnant women identified as high risk for primary postpartum hemorrhage, including those with previous history of postpartum hemorrhage, placenta previa, placental abruption, and previous cesarean section or uterine surgery, were excluded from the study. Women unwilling to participate were also excluded.

Information Sources

For the present study, primary data were collected from pregnant women attending the antenatal clinic at Rural Community of Darjeeling District. Electronic databases such as PubMed, Scopus, Web of Science, and Google Scholar were used to identify relevant literature related to antenatal risk assessment and prevention of primary postpartum hemorrhage (PPH).

Charting Methods

A structured data collection tool was used for charting the data. The tool consisted of: 1. Socio-demographic profile of pregnant women, 2. Obstetric and clinical history, 3. Structured knowledge questionnaire regarding prevention of primary postpartum hemorrhage. Data were systematically collected and organized under predefined categories. The scoring system was used to classify participants into low, moderate, and high-risk groups. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used for analysis.

Results

A total of 50 pregnant women participated in the study. The socio-demographic analysis showed that the majority were in the age group of 20–25 years and most were Hindu, homemakers, and residing in rural areas. Risk assessment findings revealed that: 64% of participants were in the low-risk category, 36% were in the moderate-risk category, and no participants were in the high-risk category. Regarding obstetric risk factors, anemia and multiparity were among the most commonly observed conditions. The post-intervention knowledge assessment showed improvement in awareness regarding prevention of primary postpartum hemorrhage: 60% had moderately adequate knowledge, 30% had adequate knowledge, and 10% had inadequate knowledge. The mean post-test knowledge score was 17.84 ± 3.42 (71.36%), indicating a satisfactory level of knowledge after antenatal intervention.

Conclusion

The antenatal intervention was associated with satisfactory post-test knowledge regarding prevention of primary postpartum hemorrhage among pregnant women. Most participants demonstrated moderately adequate to adequate knowledge, indicating improved awareness of PPH prevention. The study also identified a predominance of low to

moderate PPH risk among participants, highlighting the need for continued antenatal education and risk-based screening.

Keywords: Primary postpartum hemorrhage, Antenatal intervention, Knowledge assessment, Pregnant women, Risk factors.

How to cite this article: Sarkar S, Agnihotri R. Effect of an Antenatal Intervention on the Prevention of Primary Postpartum Hemorrhage among Pregnant Women. Int J Drug Deliv Technol. 2026;16(60s):2087-2093. DOI: 10.25258/ijddt.16.60s.193

Source of support: Nil.

Conflict of interest: None

INTRODUCTION

Postpartum hemorrhage (PPH) is the leading cause of maternal mortality worldwide, accounting for approximately 70,000 deaths annual.[1]

In India, PPH contributes to a significant proportion of maternal deaths, with obstetric hemorrhage reported in 47% of cases.[2]

Despite advancements in obstetric care, PPH remains a major challenge, particularly in regions with limited access to healthcare facilities.[3]

Effective antenatal interventions, including risk assessment, structured education, birth preparedness, and postpartum follow-up, have the potential to significantly reduce the incidence of PPH.[4] Primary postpartum hemorrhage remains a leading cause of maternal mortality in India, with states like Punjab, Uttarakhand, and West Bengal reporting some of the highest maternal mortality rates. [5] The maternal mortality ratio was estimated at 103 per 100,000 live births in 2017–2019, compared to 113 in 2016–2019.[2]

Given this concern, the researcher aims for Assessment of risk factors and efficacy of multifaceted intervention to prevent primary Post Partum Hemorrhage among Pregnant women.

NEED OF THE STUDY:

PPH remains one of the leading causes of maternal mortality in India and globally. According to the World Health Organization (WHO), PPH accounts for nearly one-quarter of all maternal deaths worldwide. In India, despite improvements in maternal health services, PPH continues to be a significant contributor to maternal mortality. Many cases of PPH are preventable with proper antenatal care and early identification of risk factors. However, in many settings, including parts of India, there is a lack of standardized screening tools during the antepartum period that can effectively identify women at risk of PPH.

Early identification and intervention are crucial in preventing PPH. By focusing on multifaceted intervtions that can be implemented before labor begins, thereby reducing the incidence and severity of PPH Preventions during the antepartum period, your study could contribute to developing strategies

The most recent detailed data on West Bengal is available from the National Family Health Survey (NFHS-5) conducted in 2019-2021. This survey provides valuable insights into various health indicators, including maternal health, across the state.

- **Maternal Health:** 84% of women received antenatal care from health professionals.
- **Childbirth:** 92% of births occurred in healthcare facilities.

The goal of my research study is to improve maternal health outcomes by ensuring that all women receive appropriate care during pregnancy. By implementing and validating a standardized checklist, your research could lead to better identification of risk factors, timely interventions, and a reduction in maternal deaths due to PPH.

LITERATURE REVIEW

Study on risk factors in patients with postpartum hemorrhage

V. Uthpala *et al. (2022)* found that there is a Significant risk factors for PPH were 20-24 years of age, primipara, severe anemia (Hb<7 gm%), previous LSCS, hypertensive disorders of pregnancy, premature rupture of membranes, abruption placenta and prolonged labor. Monitoring these identified risk factors could enable extra vigilance during labor, and preparedness for managing PPH in all women giving birth.6

Rajeshwari, Sreelatha S et.al (2020) found that majority of the women were primiparous, in the age group of 25 to 29 years, and, pre-existing anemia was

seen in 11%, PROM in 16%, hypothyroidism in 20% were found as risk factors and 19% of the woman underwent secondary LSCS. Conclusion: Postpartum hemorrhage (PPH) is an emergency faced by an obstetrician. 7

Kyriaki Mitta et.al (2023) found that most of the cases complicated with PPH were managed with uterotonic medication. An advanced maternal age, prematurity and multiparty had a significant impact on the occurrence of PPH. More research is needed on the risk factors of PPH, while the establishment of validated predictive models would be of value.8

Study on effect of teaching program in prevention of postpartum hemorrhage

SetElkole Mostafa Mahmoud et.al (2024) A quasi experimental (pre- & post test) research design was utilized. The study showed that there was highly statistically significant improvement post implementation of the educational sessions compared to pre implementation regarding total practical skills to prevent postpartum hemorrhage.9

Brian Igboin et.al (20222) The multiple interventions that address identified challenges in the prevention of primary PPH can potentially effectively reduce reported primary PPH in Nigerian referral hospitals. This approach is relevant for scaling the development of policies and programmes to prevent primary PPH and maternal mortality in Nigeria.10

Jogendra kumar Sharma et. al(2024) A quantitative research approach and pre-experimental research design was used to conduct this study. Pre and Post test was conducted to assess the effectiveness of STP and the result of pre test revealed that staff nurses had moderate knowledge. The result of post test revealed that staff nurses had adequate knowledge. 11

S. No.	Risk Level	Score Range	Frequency (f)	Percentage (%)
1	Low Risk	<15	32	64%
2	Moderate Risk	15–29	18	36%
3	High Risk	≥30	0	0%
	Total		**50**	**100%**

PROBLEM STATEMENT

Effect of an Antenatal Intervention on the Prevention of Primary Postpartum Hemorrhage among Pregnant Women

OBJECTIVES

To assess the post-intervention level of knowledge regarding prevention of primary postpartum hemorrhage among pregnant women.

RESEARCH METHODOLOGY

Research Approach: Quantitative Research Approach

Research Design: Quasi Experimental one group post test only design

Research Settings: This study will be conducted in selected Rural Community BPHC,Siliguri.

Population and Sample: Pregnant women attending BPHC between 28 -34weeks of gestation

Sample Size: 50 participants

Sampling Technique: Purposive sampling technique

Criteria for Sample Selection

Inclusion criteria:

- Pregnant women between 28 -34weeks of gestation
- Pregnant women may be primigravida or multigravida
- Low to moderate PPH risk (e.g., Age, multiparty, mild anemia, Malnutrition, mild Gestational Hypertension).
- Willing to participate and available for follow-up.
- Consent: Women who provide informed consent to participate in the study or intervention
- Availability for follow up: women who are available for follow up evaluations during postpartum

Exclusion criteria:

- High-Risk Cases: Women identified as high-risk for PPH (e.g., those with a history of PPH, placenta previa, or placental abruption, Previous Caesarean section delivery etc).
- Informed Consent: Women who do not provide informed consent
- Women not available for post partum follow up

OUTCOME MEASURES OR RESEARCH TOOLS/MEASUREMENT

- Sociodemographic data and Obstetric Sheet of pregnant women for knowing baseline data
- Post Test after intervention through Self Structured Knowledge Questionnaire

Table 1. Distribution of Participants According to Socio-Demographic Characteristics (n = 50)

INTERPRETATION:

The socio-demographic profile showed that most participants were Hindu 39 (78%) and belonged to the 20–25 years age group 20 (40%). All were married 50 (100%). A higher proportion of mothers had secondary education 20 (40%), and more than half were

homemakers 28 (56%).Most husbands had secondary education 20 (40%) and were engaged in private jobs 20 (40%). The majority of families had a monthly income of ₹10,001–13,000 20 (40%). Nuclear families 30 (60%) and rural residence 35 (70%) were predominant. Most participants utilized government hospitals for ANC services 30 (60%).

Table 2: Distribution of Pregnant Women According to PPH Risk Factors (N = 50)

S. No.	Risk Factor	Category	Frequency (f)	Percentage (%)
1	Maternal Age	≥35 years	5	10%
2	Anemia	Mild (Hb 10.0–10.9 g/dL)	15	30%
		Moderate (Hb 7.0–9.9 g/dL)	8	16%
		No anemia	27	54%
3	Gestational Hypertension	Present (≥140/90 mmHg)	4	8%
4	Parity	Multigravida	20	40%
		Primigravida	30	60%
5	Previous Cesarean/Uterine Surgery	Present	2	4%
		Absent	48	96%

Table 3. Distribution of Participants According to Risk Level (n = 50)

INTERPRETATION: The risk factor analysis revealed that multiparity was the most common risk factor, present in 5 (50%) of the pregnant women. Mild anemia was observed in 3 (30%) participants, while malnutrition was present in 2 (20%). Maternal age ≥35 years and mild gestational hypertension were each found in 1 (10%) participant. Overall, multiparity and mild anemia were the predominant modifiable risk factors among the study population

Table 4: Post-Test Knowledge Level of Pregnant Women (N = 50)

S. No.	Knowledge Level	Score Range	Frequency (f)	Percentage (%)
1	Inadequate Knowledge	0–12	5	10%
2	Moderately Adequate Knowledge	13–19	30	60%
3	Adequate Knowledge	20–25	15	30%
	Total		**50**	**100%**

The post-test results showed improvement in knowledge regarding prevention of PPH. Most participants, 30 (60%), had moderately adequate knowledge, 15 (30%) had adequate knowledge, and 5 (10%) had inadequate knowledge, indicating overall effectiveness of the antenatal intervention.

Table 5. Mean and Standard Deviation of Post-Test Knowledge Scores among Pregnant Women (N = 50)

S. No.	Variable	Maximum Score	Mean Score
1	Post-Test Knowledge Score	25	17.84

Interpretation

The mean post-test knowledge score of pregnant women regarding prevention of primary postpartum hemorrhage was 17.84 ± 3.42 out of a maximum score of 25, with a mean percentage of 71.36%, indicating satisfactory knowledge following the antenatal intervention.

RESULTS

A total of 50 pregnant women participated in the study. The socio-demographic analysis showed that the majority were in the age group of 20–25 years and most were Hindu, homemakers, and residing in rural areas.

Risk assessment findings revealed that:

- 64% of participants were in the low-risk category
- 36% were in the moderate-risk category
- No participants were in the high-risk category

Regarding obstetric risk factors, anemia and multiparity were among the most commonly observed conditions.

The post-intervention knowledge assessment showed improvement in awareness regarding prevention of primary postpartum hemorrhage:

- 60% had moderately adequate knowledge
- 30% had adequate knowledge
- 10% had inadequate knowledge

The mean post-test knowledge score was 17.84 ± 3.42 (71.36%), indicating a satisfactory level of knowledge after antenatal intervention.

Expected Contributions of the Study

- Results of this study will have implications for clinical practice as they provide an assessment of the quality of care for PPH and of the scope for improvement in this field. They are particularly relevant for the categories of maternity units shown to be at higher risk of inadequate care.
- Dissemination of these results will help the local teams to involve in prevention of PPH, quality-of-care processes, and health care quality agencies to help them in this goal.
- It could be used to monitor quality of care in the same unit over time and between units.
- This study will guide future interventional research by identifying maternity units where opportunities for improvement are the greatest, which are privileged places to test the effectiveness of quality-of-care improvement interventions such as simulation training.
- Finally, this intervention will arouse interest for health care users who look for more transparency on quality of care.

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Sl. No.	Variable	Category	Frequency	Percentage
1	Religion	Hindu	39	78
		Muslim	10	20
		Christian	1	2
		Others	0	0
2	Age (years)	20–25	20	40
		26–30	15	30
		31–35	10	20
		>35	5	10
3	Marital Status	Married	50	100
		Separated	0	0
		Widowed	0	0
4	Education of Mother	Illiterate	10	20
		Primary Education	8	16
		Secondary Education	20	40
		Graduate & above	12	24
5	Occupation of Mother	Homemaker	28	56
		Self-employed	8	16
		Private Job	10	20
		Government Job	4	8
6	Education of Husband	Illiterate	5	10
		Primary Education	10	20
		Secondary Education	20	40
		Graduate & above	15	30
7	Occupation of Husband	Self-employed	15	30
		Skilled Worker	10	20
		Private Job	20	40
		Government Job	5	10
8	Monthly Family Income	< ₹10,000	15	30
		₹10,001–13,000	20	40
		₹13,001–15,000	10	20
		> ₹15,000	5	10
9	Type of Family	Nuclear	30	60
		Joint	15	30
		Extended	5	10
10	Type of Residence	Rural	35	70
		Urban	15	30
11	Source of ANC Services	Government Hospital	30	60
		Private Hospital	10	20
		Sub-center	5	10
		Others	5	10