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Original Article

Predictors of Secondary Postpartum Hemorrhage: A Hospital-Based Cross-Sectional Study

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Abstract

Background: *Hemorrhage has been a leading cause of maternal deaths in Bangladesh over the past decade. Postpartum Haemorrhage (PPH) is one of the leading causes of maternal death worldwide. It is a life-threatening condition and a serious obstetric emergency. The aim of the study is to explore the predictors of secondary postpartum haemorrhage in a medical college hospital.*

Materials and methods: *A hospital-based cross-sectional study was carried out with 40 purposively selected women aged 18 and older who were diagnosed with secondary postpartum hemorrhage and admitted more than 24 hours after childbirth or during the puerperal period. A pre-tested semi-structured questionnaire was used to interview these women in the Department of Obstetrics and Gynaecology at Sylhet MAG Osmani Medical College Hospital in Bangladesh.*

Results: *Three-quarters of the participants (75.0%) were in the 18–30 age range, with an average age of 27.6±4.7 years.Among the patients, 20.0% reported issues during a previous pregnancy, and 65.0% experienced complications in their last delivery.Among the patients, 32.5% delivered in a hospital, while 67.5% gave birth at home. Of the total, 25.0% underwent a cesarean section, while 75.0% had a vaginal delivery. Additionally, 70.0% of the patients with secondary postpartum hemorrhage experienced varying degrees of anemia, ranging from mild to severe. Retained placental fragments were the primary cause of secondary PPH, accounting for 52.5% of cases, while endometritis and subinvolution each contributed to 15% of the cases.*

Conclusion: *Enhancing awareness of the predictive factors for secondary PPH could significantly contribute to the recognition and management of postpartum morbidity and mortality.*

Key words: Obstetric emergency; Predictors; Secondary postpartum hemorrhage.

INTRODUCTION

Postpartum Hemorrhage (PPH) is a significant pregnancy complication and one of the major causes of maternal death globally.[1,2] The RCOG guidelines define primary postpartum hemorrhage (PPH) as blood loss of 500 mL or more from the genital tract following childbirth. PPH is categorized into three levels: minor (500 mL to 1 L) moderate major (>1 L to 2 L) and severe major (>2 L).[3] The World Health Organization (WHO) estimates that Postpartum Hemorrhage (PPH) is a leading cause of maternal morbidity and mortality globally, accounting for nearly 25% of all maternal deaths.[4] In a study found that 34% of secondary PPH cases are due to retained placental fragments, 27% result from uterine wound dehiscence, 24% from retained clots, and 15% from endometritis or subinvolution of the placental site.[5] For women identified with risk factors for secondary PPH, preventive measures should be taken during both the antenatal and intrapartum periods to reduce the risk.[6]

The risk of PPH is increasing in the form of secondary PPH, which occurs after 24 hours and up to 6 weeks postpartum, often after women have already been discharged home.[2] Secondary PPH is typically caused by retained products of conception, subinvolution of the placental bed, or infection. These factors may lead to infection or prevent the uterus from contracting effectively.[7] Common risk factors for secondary postpartum hemorrhage include multiparity, multiple pregnancy, prolonged third stage of labor, prelabor rupture of membranes at term, history of manual placental removal, previous antepartum or primary postpartum hemorrhage, prior secondary PPH, unskilled or unsafe delivery practices, and puerperal sepsis.[8-11] A patient with secondary postpartum hemorrhage may present with the following symptoms: pervaginal bleeding that is bright red and variable in volume, tachycardia, hypotension, anemia, fatigue, lower abdominal cramping pain, an enlarged and tender uterus, foul-smelling, copious lochial discharge, fever and open cervical OS.[8,12,13]

Studies conducted in Nepal and Africa found that approximately one-third of all Postpartum Hemorrhage (PPH) cases were classified as secondary PPH.[14,15] This amount is expected to be even higher among patients who deliver at home or are attended by unskilled birth attendants. Unsupervised pregnancies, along with unskilled or home deliveries, significantly increase the risk of both primary and secondary PPH.[8,16] In many cases of maternal death associated with PPH, delays in diagnosis and appropriate treatment have been identified. Therefore, early detection and localization of the bleeding site are crucial for effective hemostatic management in patients with PPH.[17] It can be inferred that skilled supervision during delivery, including active management of the third stage of labor, reduces the risk of secondary postpartum hemorrhage.[18]

MATERIALS AND METHODS

This hospital-based cross-sectional study was conducted to assess the predictors of secondary postpartum hemorrhage in a purposively selected medical college hospital, the Department of Obstetrics and Gynaecology at Sylhet MAG Osmani Medical College Hospital in Bangladesh.

The study included 40 patients aged ≥18 years with secondary PPH who were admitted after 24 hours of childbirth or during the puerperial period before being interviewed. The study excluded patients with a history of bleeding disorders (Haemophilia and Thrombocytopenia), abnormal per-vaginal bleeding caused by systemic illnesses (Hypothyroidism, liver cirrhosis and chronic renal failure) and those using anticoagulants.

Study participants were interviewed in-person at their convenience using a pretested semi-structured questionnaire between January 2018 and December 2019. A thorough history was taken from the patient upon admission, and a clinical examination was then conducted.

The data were input, coded, and analyzed using IBM SPSS Version 25 (New York, USA). Descriptive statistics are shown as frequencies (Percentages) for categorical data and means (±SD) for continuous data. The Z test was used to determine the significance of comparisons. A p-value of less than 0.05 at a 95% Confidence Interval (CI) was considered statistically significant for all tests performed.

Each participant provided informed written consent. Data confidentiality was thoroughly maintained and unauthorized access to data was prohibited. All procedures were carried out in accordance with the ethical norms outlined in the 1964 Declaration of Helsinki. Ethical approval for the study was obtained from the 'Institutional Review Board' (IRB) of Sylhet Women's Medical College, Sylhet, Bangladesh.

RESULTS

Table I shows that three-fourths of the patients (75.0%) were in the 18–30 age group, while one-fourth (25.0%) were over 30, with a mean age of 27.6 ± 4.7 years. About one-third of the women and their husbands were illiterate (37.5% and 32.5%, respectively). Most of the women were homemakers (92.5%), while nearly half of their husbands were day laborers (48.4%). Two-thirds (67.5%) of the patients came from various rural areas. The average monthly family income was 16,127.3 ± 2,254.8 taka, with nearly half (47.5%) earning between 10,001 and 25,000 taka per month.

Figure 1 display that 22.5% of the women were primipara and 77.5% were multipara.Over three-fourthsof the patients (77.5%) utilized Antenatal Care (ANC) services, with nearly half (51.6%) attending regular ANC visits. Among the patients, 20.0% reported issues during a previous pregnancy, and 65.0% experienced complications in their last delivery (Table II).

Figure 2 indicates that all women (100%) reported per-vaginal bleeding as a symptom. Other frequently cited clinical presentations included fever (25.0%) and foul-smelling vaginal discharge (12.5%).

The place of delivery was a hospital for 32.5% of the patients, while 67.5% delivered at home.Of the patients, 25.0% had a caesarean section and 75.0% had a vaginal delivery.70.0% of patients with secondary postpartum hemorrhage experienced varying degrees of anemia, ranging from mild to severe.Retained placenta fragments were the primary cause of secondary PPH, accounting for 52.5% of cases. Other causes included endometritis and sub-involution, each contributing to 15% of the cases, respectively. More than half (57.5%) of patients with secondary PPH required one or more units of blood transfusion based on the severity of their anemia.During treatment, only 5% of patients required ICU support (Table III).

Table I Patient's socio-demographic outlines (n=40)

Outlines		Frequency (n)	Percent (%)
Age groups (in years)	≤30	30	75.0
	>30	10	25.0
	Mean±SD	27.6±4.7	
Education	Illiterate	15	37.5
	Literate	25	62.5
Husband's education	Illiterate	13	32.5
	Literate	27	67.5
Occupation	Homemaker	37	92.5
	Job holder	2	5.0
	Business woman	1	2.5
Husband's occupation	Day laborer	15	48.4
	Job holder	11	27.5
	Businessman	9	22.5
	Others	5	12.5
Residence	Rural	27	67.5
	Urban	13	32.5
Monthly family incomes (In BDT)	≤10,000	13	32.5
	10,001-25,000	19	47.5
	>25,000	8	20.0
	Mean±SD		16,127.3±2, 254.8

Table II Factors related to maternal health during last pregnancy (n=40)

Factors		Frequency (n)	Percent (%)
Utilization ANC services	Yes	31	77.5
	No	9	22.5
Frequency of ANC visits (n=31)	Regularly	16	51.6
	Irregularly	15	48.4
Issues during the prior pregnancy	Yes	8	20.0
	No	32	80.0
Issues during the prior delivery	Yes	26	65.0
	No	14	35.0

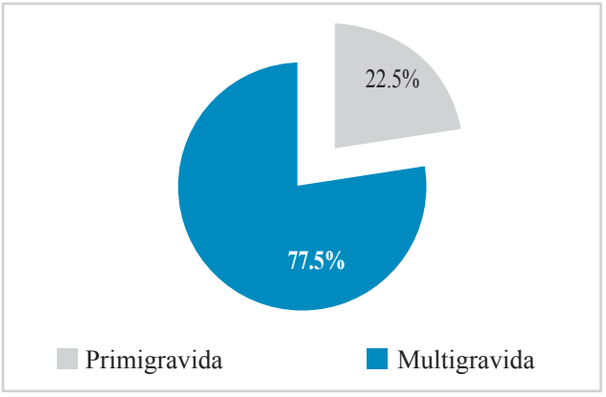

Figure 1 Parity of the women (n=40)

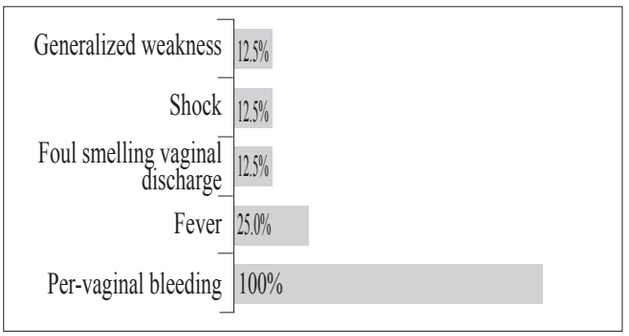

Figure 2 Patients based on clinical presentation

Table III Predictors of secondary postpartum hemorrhage (n=40)

Predictors		Frequency (n)	Percent (%)
Last delivery place	Home	27	67.5
	Hospital (Govt. & Private)	13	32.5
Mode of last delivery	Vaginal	30	75.0
	Caesarean section	10	25.0
Presence of anaemia	Yes	28	70
	No	12	30.0
Types of anaemia (n=28)	Mild	12	42.9
	Moderate	11	39.2
	Severe	5	17.9
Causes of secondary PPH	Retained bits of placenta	21	52.5
	Endometritis	6	15.0
	Sub-involution	6	15.0
	Genital tract injury	5	12.5
	DIC	2	5.0
	Caesarean scar dehiscence	1	2.5
		*Multiple responses	
Patients based on blood transfusion	Not needed	17	42.5
	≥1 unit of blood transfused	23	57.5
Patient's needed ICU supports	Yes	2	5.0
	No	38	95.0

DISCUSSION

In this study, three-quarters of the participants (75.0%) were in the 18–30 age range, while one-quarter (25.0%) were over 30, with an average age of 27.6±4.7 years. Studies conducted in India found that the mean age of patients with secondary PPH was 27.0 year.[19,20] Approximately one-third of the women and their husbands were illiterate (37.5% and 32.5%, respectively). A study revealed that 43.3% of patients with secondary PPH were illiterate.[21] The majority of the women were homemakers (92.5%), while nearly half of their husbands worked as day laborers (48.4%). Two-thirds of the patients (67.5%) resided in various rural areas. The average monthly family income was 16,127.3±2,254.8 taka per month.

Of the women studied, 22.5% were primipara, while 77.5% were multipara. Similar findings were observed in another study, where 63.30% of the cases of secondary PPH were identified as multipara.[22] More than three-quarters of the patients (77.5%) utilized ANC services, with nearly half (51.6%) attending regular ANC visits. It was found that 26.7% of patients with secondary PPH received regular ANC during their recent pregnancy, while 40% received irregular ANC and 33.0% did not receive any ANC.[23]

This study showed that 20.0% of the patients reported complications during a previous pregnancy, and 65.0% experienced issues during their most recent delivery. All women (100%) reported per-vaginal bleeding as a symptom. Other commonly reported clinical presentations included fever (25.0%) and foul-smelling vaginal discharge (12.5%). It was found that per-vaginal bleeding accompanied by shock occurred in 11.1% of cases, while fever was present in 32.3% of cases of secondary PPH at presentation.[22]

Among the patients, 32.5% delivered in a hospital, while 67.5% gave birth at home. Of these, 25.0% underwent a cesarean section, and 75.0% had a vaginal delivery. This finding is consistent with another study that reported vaginal delivery in 68% of cases and cesarean section in 32% of cases.[9] In another study, 6.7% of the cases that delivered in the institution returned with secondary PPH, while 93.3% of the cases had delivered outside the institution.[24] The low incidence of secondary PPH following delivery in the institution can be attributed to the routine practice of active management of the 3rd stage of labor in every case, along with the aseptic precautions implemented during each delivery.

In the study, 70.0% of patients with secondary PPH exhibited varying degrees of anemia, ranging from mild to severe.It was found that anemia was present in 97.6% of cases of secondary PPH.[22]Retained placental fragments were identified as the primary cause of secondary PPH, accounting for 52.5% of cases. Other contributing factors included endometritis and subinvolution, each responsible for 15% of cases. It was identified retained products of conception as the most common cause of secondary PPH, occurring in 37.1% of cases, followed by endometritis in 22.2% of cases. Retained clots were also a contributing factor, presenting as secondary PPH in 20% of cases.[5,18,24] More than half (57.5%) of the patients with secondary PPH required one or more units of blood transfusion due to the severity of their anemia, while only 5% required ICU support during treatment. In this study, it was found that 66.7% of patients required fewer than 3 units of blood transfusion, while 33.3% needed one or more units of blood transfusion.[5] Another study found that 77.4% of women with secondary PPH received blood transfusions.[22]

CONCLUSION

It can be concluded that secondary PPH is associated with significant maternal morbidity, necessitating timely diagnosis and management to prevent life-threatening complications. Early identification of these risk factors could potentially prevent maternal morbidity and facilitate a safer postnatal experience for mothers.

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DISCLOSURE

All the authors declared no competing interest.

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