fortune Journals

Research Article

JOURNAL OF SURGERY AND RESEARCH

ISSN: 2640-1002

Evaluation of Near-miss Cases associated with Post-partum Hemorrhage in Cumilla Medical College and Hospital

Rezwan Sultana[1], Jasmin Ara Zaman[2], Afreen Kabir Kheya[3], Lizwana Nusrat Lia[4], Fathima Sultana[5]

Abstract

Background: Near-miss obstetric cases are a new indicator of maternal care and could be used to compare improvements in treatment more accurately.

Aim of the study: The study aims to evaluate the near-miss cases associated with Post-Partum Hemorrhage (PPH) and to assess its socio-demographic factors.

Methods: This prospective observational study was conducted at the Department of Obstetrics and Gynecology in Cumilla Medical College Hospital for six months (February 2019-July 2019) after approval of the protocol. A total of 100 near-miss cases with a diagnosis of PPH admitted in the Gynae & Obs. ward were selected. Detailed history taking. Findings of the general and systemic examination, relevant investigations, treatment modalities and their outcome were collected in a predesigned data sheet.

Results: A total of 100 patients with near-miss cases associated with PPH were included in the study. The mean age of the patients was 25.694.63 years. Among the study population, 25% were illiterate, and 60% were second-grade. The mean gestational age of the patients was 38+ weeks. 73% had a standard vaginal delivery, and 27% underwent a caesarian section. Most of the delivery (62%) was conducted by an untrained person at home. The maternal mortality rate was 6% due to irreversible shock. In 62% of cases, the primary cause of PPH was uterine atony, 18% of cases retained placenta, 14% of cases had trauma, and the rest, 6% cases had mixed causes.

Conclusion: The results indicate that regular antenatal care (ANC) and the conduction of delivery by skilled birth attendants can reduce the risk of PPH. PPH-associated mortality and morbidity can be prevented by critical judgment, early referral, and effective management.

Keywords: Evaluation; near-miss; post-partum; hemorrhage

Introduction

The World Health Organization defines a maternal near-miss case as "a woman who nearly died but survived a complication during pregnancy, childbirth or within 42 days of termination of pregnancy [1]. PPH remains a significant cause of both maternal morbidity and mortality worldwide and almost all (99%) occur in low-income and middle-income countries [2,3]. PPH refers to more than 500ml blood loss within 24 hours following vaginal delivery, more than 1000ml following caesarean delivery or the requirement of blood transfusion within 24 hours of delivery [4,5]. According to WHO,

Affiliation:

[1]Medical Officer, Department of Hand & Microsurgery, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh.

[2]Medical Officer, Green Road Urban Dispensary, New market, Dhaka, Bangladesh

[3]Medical Officer, Department of Pediatric Orthopedics, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh.

[4]Medical Officer, Green Road Urban Dispensary, New market, Dhaka, Bangladesh.

[5]Microbiologist, National Institute of Cardiovascular Disease (NICVD), Dhaka, Bangladesh.

***Corresponding author:**
Rezwan Sultana, Medical Officer, Department of Hand & Microsurgery, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh.

Citation: Rezwan Sultana, Jasmin Ara Zaman, Afreen Kabir Kheya, Lizwana Nusrat Lia, Fathima Sultana. Evaluation of Near-miss Cases associated with Post-partum Hemorrhage in Cumilla Medical College and Hospital. Journal of Surgery and Research. 7 (2024): 209-214.

Received: March 25, 2024
Accepted: April 03, 2024
Published: May 21, 2024

Sultana R, J Surg Res 2024
DOI:10.26502/jsr.10020362

5,29,000 maternal deaths occur worldwide annually, among them 1,27,000 deaths due to PPH [6]. In Bangladesh, 31% of MMR is due to PPH [7]. The concept of near-miss maternal mortality led to the development of statistical systems that can measure indicators of severe maternal morbidities. The practical implementation of the maternal near-miss concept should significantly contribute to improving the quality of obstetric care, reducing maternal deaths, and improving maternal health. Despite therapeutic advances, maternal morbidity and mortality continue to occur in developing countries [8]. About 300 million women living in the developing world currently suffer from short- or long-term illnesses and injuries related to pregnancy and childbirth [9]. Postpartum hemorrhage is the leading cause of maternal mortality. Every woman who carries a pregnancy beyond 20 weeks' gestation is at risk for PPH and its sequelae. Although maternal mortality rates have declined dramatically in the developed world, PPH remains an obstetric emergency in our country. "Near-miss morbidity related to PPH is underestimated but a more sensitive indicator of maternal health than mortality [10]. The study aims to evaluate the near-miss cases associated with Postpartum Hemorrhage (PPH) and to assess its socio-demographic factors.

Methodology & Materials

This prospective observational study was conducted at the Department of Gynecology and Obstetrics at Cumilla Medical College, Cumilla, Bangladesh. During six months (February 2019 to July 2019), 100 near-miss cases due to PPH were selected according to the inclusion and exclusion criteria. With informed consent, detailed history, physical examination and relevant investigations were recorded in the predesigned data sheet. The ethical approval was obtained from the institution's ethics committee.

Inclusion criteria:

- Maternal near-miss cases with PPH.

Exclusion criteria:

Near-miss cases other than PPH, like

- Ectopic pregnancy.
- Sepsis.
- Obstructed labour.
- Eclampsia.
- Rupture Uterus.

Data processing and analysis:

After collecting data, all the data were edited through checking and rechecking. Data analysis was done using the statistical package for social science (SPSS) 20/PC+ software system. Data were presented in the form of tables and graphs. Frequencies and percentages were calculated for categorical variables, and mean and standard deviation (SD) were calculated for continuous variables. Association was tested by using the chi-square test. In all cases, p-value <0.05 was considered statistically significant.

Result

A total of 100 patients of near-miss cases were included in the study. The mean age of the patients was 25.69±4.63 years. Among the study cases, 11% were in the ≤20 years age group, 73% were in the 21-30 years age group, and 16% were in the ≥31 years age group. Of the 100 study cases, 94.00% were Muslim, and 6.00% were Hindu. Among the study cases, 27% were illiterate, 19% had educational qualifications up to primary, 28% had educational qualifications up to SSC, and 26% had academic qualifications HSC and above. Of 100 study cases, 14% were rich, 24% were in a middle socioeconomic group, and 62% were poor. Among the study cases, a maximum of 70% were housewives, 12% were students, 12% were service holders, and 6% had other professions (Table 1). Among the study cases, 26% were first gravida, 60% were second-fourth gravida, and 14% were fourth gravida (Figure 1). For example, 78% of the majority have a gestational age between 37 and 39 weeks, 15% of individuals with a gestational age greater than 39 weeks, and 7% of individuals with a gestational age less than 37 weeks (Figure 2). Among the study cases, in 27% of cases fetus was delivered by the caesarian section, and the rest, 73% of delivery was a vaginal delivery. In 62% of cases, delivery of the fetus was conducted at home, and in 38% of cases, delivery was performed in the hospital. This study reveals a maternal mortality rate of 62%. Among the survey cases, 41% were presented within 6 hours of delivery, 37% were delivered within 6-12 hours, and 22% were given within 12 hours of delivery (Table 3). The most common cause is uterine atony, accounting for 62 cases or 62% of the total. Trauma is the next most frequent cause, with 14 cases (14%), followed by retained placenta with 18 cases (18%). The remaining cases, categorized as "others," account for six instances or 6% of the total haemorrhage cases (Table 4). Among the study cases, anaemia was present in 83%, and jaundice in 08% of cases. Among the study cases, 79% cases had a pulse >100 b/min, 07% cases had a temperature >100°F, 34% cases had a temperature <97.50°F, 77% cases had systolic blood pressure <100 mm Hg and 70% cases had diastolic blood pressure <60mm Hg (Table 5). Among the study cases, 68% had a respiratory rate <14 breath/min, 61% cases had oliguria, 34% cases were semiconscious, and 8% were unconscious (Table 6). Among the study cases, the uterotonic agent was used in 72% of cases, bimanual compression and massage were given in 84% of cases, a condom catheter was applied in 19% of cases, manual removal of placenta was performed in 18% of cases, repair of tear was performed in 14% cases. Hysterectomy was done in 02% of cases. Blood transfusion was given in 89% of the study cases (Table 7).

Sultana R, J Surg Res 2024
DOI:10.26502/jsr.10020362

Table 1: Demographical characteristics of the study population (N=100).

Variables	Frequency (n)	Percentage (%)
Age group (in years)		
≤ 20 Year	11	11
21-30 Year	73	73
≥31 Year	16	16
Religion		
Hindu	6	6
Islam	94	94
Educational status		
Illiterate	27	27
Primary	19	19
Secondary	28	28
HSC and above	26	26
Socioeconomic status		
Rich	14	14
Middle income	24	24
Poor	62	62
Occupation of the patients		
Others	6	6
Service	12	12
Housewife	70	70
Student	12	12

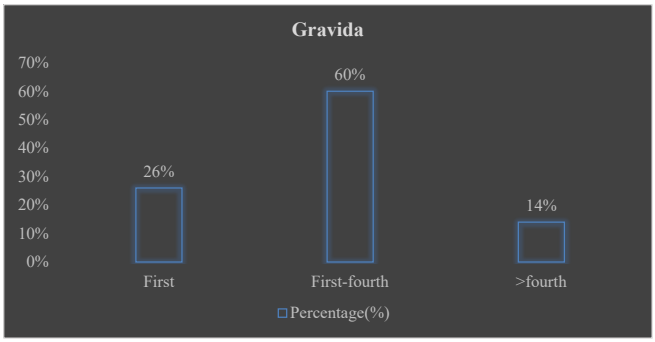

Figure 1: Gravida of the patients (n=100)

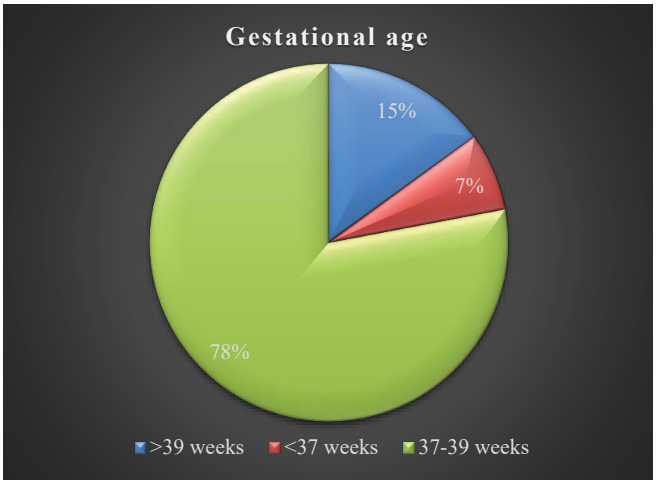

Figure 2: Gestational age of the patients at the time of delivery (n=100).

Table 2: Maternal history and outcome of the study.

Variables	Frequency (n)	Percentage (%)
Mode of delivery		
Caesarian section	27	27
Vaginal	73	73
Place of delivery		
Home	62	62
Hospital	38	38
Maternal outcome		
Death	6	6
Survived	94	94

Table 3: Gestational age of the patients at the time of delivery (n=100).

Time of presentation	Frequency (n)	Percentage (%)
<6 hours	41	41
6-12 hours	37	37
>12 hours	22	22

Table 4: Causes of PPH among the patients (n=100).

Primary causes of the hemorrhage	Frequency (n)	Percentage (%)
Uterine atony	62	62
Trauma	14	14
Retained placenta	18	18
Others	6	6

Citation: Rezwan Sultana, Jasmin Ara Zaman, Afreen Kabir Kheya, Lizwana Nusrat Lia, Fathima Sultana. Evaluation of Near-miss Cases associated with Post-partum Hemorrhage in Cumilla Medical College and Hospital. Journal of Surgery and Research 7 (2024): 209-214.

Sultana R, J Surg Res 2024
DOI:10.26502/jsr.10020362

Table 5: Clinical Table 1features of the patients (n=100).

Variables	Frequency (n)	Percentage (%)
Anemia		
Present	83	83
Absent	17	17
Jaundice		
Present	8	8
Absent	92	92
Pulse		
>100	79	79
<100	21	21
Temperature (°F)		
<97.50	34	34
97.50-100	59	59
>100	7	7
Systolic blood pressure		
>100	23	23
<100	77	77
Diastolic blood pressure		
>60	30	30
<60	70	70

Table 6: Clinical features of the patients (n=100).

Sign	Frequency (n)	Percentage (%)
Respiratory rate (breath/min)		
<14	68	68
>14	32	32
Oliguria		
Present	61	61
Absent	39	39
Level of consciousness		
Conscious	58	58
Semiconscious	34	34
Unconscious	8	8

Table 7: Management gives for near miss cases (n=100).

Management	Frequency (n)	Percentage (%)
Uterotonic agent	72	72
Bimanual compression and massage	81	81
Condom catheter	19	19
Manual removal of placenta	18	18
Repair of tear	14	14
Hysterectomy	2	2
Blood transfusion	89	89

Discussion

Postpartum haemorrhage (PPH) is the most common obstetric emergency and is responsible for 60% of all maternal deaths all over the world [11]. PPH is one of the most important issues that obstetricians encounter in obstetrical wards. PPH is a mortality-related issue, so observation and evaluation of near-miss cases associated with PPH is also important. The World Health Organization (WHO) defines a maternal near-miss case as "a woman who nearly died but survived a complication during pregnancy, childbirth or within 42 days of termination of pregnancy. The main objective of this study is to evaluate the association of near-miss cases with PPH. A total of 100 patients with near-miss cases due to PPH were included in the study. The study was an observational type of descriptive study. Among the 100 study patients, 11% were in ≤20 years age group, 73% were in 21-30 years age group, and 16% were in ≥31 years age group. The mean age of the cases was 25.69±4.63 years. A study conducted by Alemu and co-researchers also found the mean age of their near-miss cases to be 25.07±5.65, which is nearly similar to the finding of this study [12]. Another study conducted by Sotunsa and associates found a maximum (74.90%) of their study cases in the 20-35 years age group [13]. Another study conducted by Patnakar and co-researchers also found the mean age of their near-miss cases was 27.84+3.43 years [14]. Among the 100 near-miss study cases, 26% were first gravida, 60% were second-fourth gravida, and the rest, 14%, were > fourth gravida. Sayinzoga and associates, Sultana and associates and Sultan and associates [14]. According to Sayinzoga and associates, among their near-miss study cases, 28% were first gravida, 58.50% had gravid second-fourth, and 20.60% had gravid >fourth. Maximum (62%) of the study cases were from low socioeconomic conditions, 24% were in a middle socioeconomic group, and only 14% were rich. Maximum (70%) of the study cases were housewives, 12% were students, 12% were service holders, and 6% had another profession. Regarding the educational qualifications of the patients, 27% were illiterate, 19% were primarily educated, 28% had completed secondary education, and 26% had educational qualifications up to HSC or above. Nazmeen and co-researchers also found that most of their near-miss cases were in the low socioeconomic group and housewife occupation group [15]. Sultan and associates also found similar results regarding the educational qualifications of patients. Among their 410 near-miss study cases, 28.08% were illiterate, 43.66% had educational qualifications below secondary, and the rest had educational qualifications up to secondary and higher. A study conducted by Benimana and associates also found that most of their study cases were in the housewife occupation group [15]. A higher education level has yet to be found in any study about near-miss cases associated with PPH. The mean gestational age of the patients was 38+ weeks. 12% were on regular antenatal check-ups,

Sultana R, J Surg Res 2024
DOI:10.26502/jsr.10020362

48% were on irregular check-ups, and 40% had no antenatal check-ups. In 73% of cases, the mode of delivery was a vaginal delivery, and in 27% of cases, the mode of delivery was the caesarian section. Among the deliveries, 62% were conducted at home, mostly by TBA or untrained dai, and 38% were conducted in hospitals. A study conducted by Ngweny also found mean gestational age of their postpartum haemorrhage cases was 38.60 weeks, which is nearly consistent with the finding of this study [16]. A study conducted by Habitamu and associates and Ononge and associates also found almost similar results in their respective studies [17]. Among the 100 study cases, 41% presented within 6 hours of delivery, 37% were presented within 6-12 hours of delivery and 22% were presented within 12 hours of delivery. This finding is almost similar to the finding of Umashankar and co-researchers [17]. Among their study cases, 50% were presented within 6 hours following delivery, 30.65% presented between 6-2 hours following delivery and 19.35% presented after 12 hours following delivery. TBA or untrained dai is unable to assess the condition of the patient, so they cannot be referred in time. This study reveals uterine atony as the most common cause of PPH. Among the study cases, uterine atony, trauma, retained placenta and other causes were observed in 62%, 14%, 18% and 6% of cases, respectively. A meta-analysis conducted by Maswime and co-researcher also identified the atonic uterus as the main cause of near-miss cases due to postpartum haemorrhage. Umashankar and co-researchers also found similar results in their respective study [11]. Among their near-miss cases associated with PPH, 51.61% cases had PPH due to uterine atony, 22.58% cases had PPH due to retained placenta, 12.0% had PPH due to trauma, and the rest had other causes of PPH. Gul and coresearchers, Caul and co-researchers and Tasnim and co-researchers also observed uterine atony as the commonest cause of postpartum haemorrhage (PPH) in their respective studies [17]. Among the study cases, anaemia was present in 83% of cases; jaundice was present in 08% of cases; 79% of cases had pulse >100 b/min; 07% of cases had temperature >100°F, 34% of cases had temperature <97.50°F, 77% cases had systolic blood pressure <100 mm Hg and 70% cases had diastolic blood pressure <60mm Hg. 68% of cases had respiratory rate <14 breath/min, 61% cases had oliguria, 34% cases were semiconscious and 8% cases were unconscious. This finding is nearly similar to the findings of Nazmeen and associates and Edhi and associates. Nazmeen and associates observed anemia in 86.81% of cases, temperature >100°F in 14.30% of cases, and among their study cases, 5.50% were unconscious. Edhi and associates observed hypotension and increased pulse rate among their 100% cases of PPH [18]. Among the uterine atony patients, 20% were managed by a uterotonic agent, 50% by condom catheterization and 30% by the operative procedure. Among the operative procedures, 40% were done by B-lynch Brace suture, 20% by internal iliac artery ligation and the rest by hysterectomy. Blood transfusion was given in 89% of cases. This finding is similar to the finding of Ismail and associates and Thawal and associates [17,18]. According to Thawal and associates, among their study cases, uterotonic drugs were used in 70% of cases, and hysterectomy was done in 2.50% of cases. Ismail and associates observed blood transfusion among their 100% near-miss PPH cases, which is nearly similar to the finding of this study [18]. In my study, death occurred in 6 cases (6%) due to irreversible shock.

Limitations of the study:

The study was conducted in a centralized manner, involving only one centre. The sample size utilized in the research was relatively limited. Additionally, the study's duration was brief. Furthermore, the assessment of remote complications was hindered as a significant portion of participants were discharged shortly after the study.

Conclusion and Recommendations

PPH is the leading cause of maternal near-miss and can be effectively reduced by extra vigilance and planned multidisciplinary management. Poor infrastructure, lack of appropriate training for health care providers, and economic conditions are responsible for poor outcomes for pregnant women. So, it indicates that regular antenatal care (ANC) and the conduction of delivery by skilled birth attendants can reduce the risk of PPH. PPH-associated mortality and morbidity can be prevented by critical judgment, early referral, and effective management. Based on the study results, several recommendations emerge. Firstly, it is imperative to involve a substantial number of study participants for robust findings. Secondly, it is advised that every childbirth be overseen by a skilled birth attendant (SBA) as a measure to mitigate the risk of postpartum hemorrhage (PPH). Thirdly, the provision of consistent antenatal care (ANC) across all tiers of healthcare services is essential. Lastly, the implementation of an effective referral system is crucial for ensuring timely and appropriate medical interventions.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee.

References

1. Say L, Souza JP, Pattinson RC. Maternal near miss–towards a standard tool for monitoring quality of maternal health care. Best practice & research Clinical obstetrics & gynaecology 23 (2009):287-96.

2. Ronsmans C. Maternal Survival 1 Maternal mortality: who, when, where, and why. Lancet 368 (2006): 1189-200

Sultana R, J Surg Res 2024
DOI:10.26502/jsr.10020362

3. Say L, Chou D, Gemmill A, et al. Global causes of maternal death: a WHO systematic analysis. The Lancet global health 2 (2014): e323-33.

4. World Health Organization. WHO recommendations for the prevention and treatment of postpartum haemorrhage. World Health Organization (2012).

5. World Health Organization. Active management of the third stage of labour: new WHO recommendations help to focus implementation. World Health Organization (2014).

6. Van Hoover C, Freedman LP, Waldman RJ, de Pinho H, Pinho ME, Wirth ME. Who's got the power? transforming health systems for women and children. The Journal of Midwifery & Women's Health 51 (2006):132.

7. Prata N, Bell S, Quaiyum MA. Modeling maternal mortality in Bangladesh: the role of misoprostol in postpartum hemorrhage prevention. BMC pregnancy and childbirth 14 (2014): 1-0

8. Atrash HK, Alexander S, Berg CJ. Maternal mortality in developed countries: not just a concern of the past. Obstetrics & Gynecology 86 (1995): 700-705.

9. UNICEF.. The progress of nations. Unicef (1998).

10. Kamal S, Roy P, Singh S, et al. A study of maternal near miss cases at tertiary medical college of Jharkhand, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology 6 (2017): 2375-2381.

11. Umashankar KM, Dharmavijaya MN, Sudha R, et al. Effect of a primary postpartum haemorrhage on the "near-miss" morbidity and mortality at a Tertiary Care Hospital in Rural Bangalore, India. Journal of clinical and diagnostic research: JCDR 7 (2013): 1114.

12. Alemu FM, Fuchs MC, Martin Vitale T, et al. Severe maternal morbidity (near-miss) and its correlates in the world's newest nation: South Sudan. International journal of women's health 11 (2019): 177-190.

13. Maswime S, Buchmann E. A systematic review of maternal near miss and mortality due to postpartum hemorrhage. Int J Gynaecol Obstet 137 (2017): 1-7.

14. Gul F, Jabeen M. Frequency, causes and outcome of post partum haemorrhage at liaqat memorial hospital kohat, pakistan. Khyber Medical University Journal 10 (2018): 90-94.

15. Tasneem F, Sirsam S, Shanbhag V. Clinical study of post partum haemorrhage from a teaching hospital in Maharashtra, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology 6 (2017): 2366-2370.

16. Ngwenya S. Postpartum hemorrhage: incidence, risk factors, and outcomes in a low-resource setting. International journal of women's health 2 (2016): 647-650.

17. Thawal Y, Kolate DS, Patvekar MM, et al. Study of management of postpartum hemorrhage and its complications. International Journal of Reproduction, Contraception, Obstetrics and Gynecology 8 (2019): 1790-1795.

18. Ismail MT, Ramadan MC, Mohamed AS, et al. Clinical Intervention for Maternal Near Miss Cases in El Galaa Teaching Hospital. The Egyptian Journal of Hospital Medicine 72 (2018): 3839-3845.