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Evaluation of Near Miss Cases in Association with PPH in MMCH, Mymensingh, Bangladesh

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Abstract

Background: A near-miss obstetric morbidity means a woman who almost died but survived by chance due to any pregnancy related complication. Postpartum hemorrhage has been the leading cause of maternal mortality and morbidity worldwide. The near-miss morbidity due to PPH is an important indicator of maternal care and could be used to compare improvements in treatments more accurately than mortality rate alone. ***Objective:*** To evaluate the near miss cases due to PPH in MMCH. ***Methods:*** It will be a cross-sectional descriptive study on near miss patients admitted in the Department of Obst& Gynae of MMCH during six months study period. 50 patients will be purposively enrolled according to inclusion and exclusion criteria. Socio demographic character of the patients, clinical presentation, risk factors, mode of delivery, extent of morbidity, amount of blood transfusion, duration of hospital stay, need of ICU support, incidence of peripartum hysterectomy or other surgical interventions will be considered as major variable of the study. ***Results:*** Among 50 patients of near miss cases, 21-25 years group belonged to the highest (40%) 30 (60%) patients came from poor class. 32(64%) patients underwent irregular ANC. 27(54%) patients were multipara. 15(30%) had our hospital and 35(70%) patients had delivery in outside hospital. Besides, 27(54%) and 23(46%) patients had vaginal delivery and cesarean delivery respectively. Regarding clinical presentation 17(34%) and 8(16%) patients came with atonic uterus and retained placenta respectively. 32(64%) patients were managed conservatively and 18(36%) patients needed surgical management. 21(40.36%), 9(18%), 8(16%), 5(10%) patients required >3 unit blood transfusion, ICU admission, hysterectomy and laparotomy respectively. ***Conclusion:*** 'Near miss' events are important indicators for monitoring the quality of maternity services in health care facilities. Maternal near miss in association with PPH shows better results in case of our hospital managed patients whereas the worse outcome was observed in case of patients who were managed outside hospital.

Keywords: Postpartum hemorrhage, Near Miss Cases, PPH.

INTRODUCTION

A near miss is an unplanned event that did not result in human injury, illness or damage- but had the potential to do so [1]. A maternal near-miss case is defined as "a woman who nearly died but survived by chance due to a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy"[2]. Maternal near miss cases has been used to evaluate the quality of obstetric care as well as understanding of causes of maternal morbidity and mortality [3]. The prevalence of near miss cases estimated to be 5.6 to 7.5 /1000 hospital-based delivery and overall maternal near miss: mortality ratio is 9:1 [4]. Near miss case definition was based on validated specific criteria comprising of five diagnostic feature: - hemorrahge, hypertensive disorder of pregnancy, dystocia, sepsis and anemia [5]. Postpartum hemorrhage (PPH) has been a nightmare for obstetricians since centuries [6]. Despite therapeutic advances during this century and a growing perception of the safety of child birth, morbidity continue to occur in obstetric patients [7].

PPH remains the foremost cause of maternal mortality and morbidity worldwide and all women who carry a pregnancy beyond age of viability are at risk for PPH and its sequelae [8]. PPH is still the most direct cause of maternal death in the world [6]. PPH is a frequent complication of deliveries and its incidence is commonly reported as 2-4% after vaginal deliveries and 6% after caesarean sections [9]. World Health Organization statistics suggest that 25% of maternal death occurs due to PPH. Whereas in Bangladesh PPH constitutes to 31% of maternal mortality [10]. Trauma to the genital tract usually occurs following operative delivery; even after spontaneous delivery. Trauma involves usually the cervix, vagina, perineum and rarely rupture of the uterus occurs [12]. Retained tissues: bits of placenta and blood coagulation disorders may also cause primary PPH [13]. The risk of total PPH with a morbidly adherent placenta is markedly higher [14]. Regarding seconday postpartum hemorrhage the bleeding usually occurs between eighth and fourteenth day of delivery the causes are retained placental tissue, infection of deep cervico vaginal laceration, endometritis and caesarean section scar dehiscence [12]. Secondary hemorrhage from cesarean section wound usually occurs due to separation of slough, granulation tissue or withdrawal bleeding following estrogen therapy for suppression of lactation [15]. Worldwide women experience more than 50 million maternal health problems annually [19]. As many as 300 million women-more than one quarter of all adult women living in the developing world currently suffer from short or Iong term illness and injuries related to pregnancy and child birth [20]. The practical implementation of the maternal near miss concept can provide an important contribution to improve quality of obstetric care and to reduce maternal deaths due to PPH as well as to improve maternal health.

MATERIALS & METHODS

Study Design: Cross-sectional descriptive type of observational study.

Place of Study: The study was conducted among the near miss patients admitted into indoor patient Department of Obstetrics & Gynaecology in MMCH.

Period of Study: Six months.

Study Population: The study was conducted in the indoor patient Department of Obstetrics & Gynaecology, MMCH.

Sample size and statistical basis of it

To determine the sample size the following formula was followed: -

$$n = \frac{z^2 pq}{d^2}$$

As there is time and budgetary constraint 50 cases was taken for this study.

Sampling Methods: Sample was selected by purposive non random sampling technique.

Inclusion Criteria

- All maternal near miss cases due to PPH.

Exclusion Criteria:

- The patient who died during the course of treatment.

Operational Definition

- Maternal near miss: A woman who nearly died but survived due to a complication that occurred during pregnancy, child birth or within 42 days of termination of pregnancy [2].
- Maternal morbidity: Obstetrics morbidity originates from any cause relating to pregnancy or its management, any time during antepartum, intrapartum and postpartum period usually upto 42 days after confinement [3].
- Maternal mortality: Death of a woman while pregnant or within 42 days of the termination of pregnancy irrespective of the duration and the site of pregnancy form any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes [12].
- PPH: Any amount of bleeding from or into the genital tract following birth of the baby upto the end of the puerperium which adversely affects the general condition of the patient, evidenced by the rise in pulse, falling blood pressure is called post partum hemorrhage (PPH) [12].
- Primary PPH: Within 24 hours of delivery.
- Secondary PPH: Beyond 24 hours of delivery up to the end of puerperium.

Procedures of preparing and organizing materials:

Collected all case record forms were checked very carefully to identify any error in collecting data. Data processing work consisted of registration of schedules, editing, coding and computerization, preparation of dummy table, analysis and matching data. The technical matter of editing, coding and computerization was looked by myself.

Procedures of collecting data:

The patients would be interviewed face to face by the researcher for the purpose of collection of data. Then the patients would be examined by the researcher for certain signs and those would be recorded in the check-list. Few investigations would be done for supporting the diagnoses.

Procedures of data analysis and interpretation:

Statistical analysis was carried out by using the statistical package for social science version 20.0 for windows (SPSS Inc. Chicago, Illinois, USA). The main values were calculated for continuous variables. The quantitative observations were indicated by frequencies and percentages.

RESULTS

Table 1: Demographic characteristics of the study patients (n=50)

Age group	Frequency (%)
≤20	4 (8%)
21 – 25	20 (40%)
26 – 30	18 (36%)
31 – 35	6 (12%)
>35	2 (4%)
Mean age±SD (in years)	23.39±3.67
Age range (in years)	18 – 37
Household income (n=50)	
Poor Class	19(38%)
Middle Class	30(60%)
Affluent Class	01(2%)
Educational status	Frequency (%)
Only can sign/illiterate	13 (26%)
Upto primary	19 (38%)
Secondary	14 (28%)
Higher secondary	1 (2%)
Graduate & above	3 (6%)
Occupational status	Frequency (%)
Housewife	32 (64%)
Garments worker	8 (16%)
Service holder	4 (8%)
Business	2 (4%)
Farmers	4 (8%)

Table-1: Among 50 patients of near miss cases, 21-25 years group belonged to the highest (40%) which was subsequently followed by 26-30 years. 36%, 12%, 8% and 4% patients belonged to 31-35 years, >35 years and ≤20 years age group respectively. Among 50 patients, 30(60%), 19(38%) and 1(2%) patients came from poor class, middle class and affluent class respectively. Among 50 patients 19(38%), 14(28%) and 13(26%) achieved education upto primary, secondary and only can sign/illiterate respectively. Besides, 3(6%) and 1(2%) achieved graduate and above and higher secondary respectively. Among 50 patients 32(64%) were housewife whereas 8(16%) were garments worker. 4(8%) each were service holder and farmers. Rest 2(4%) were doing business.

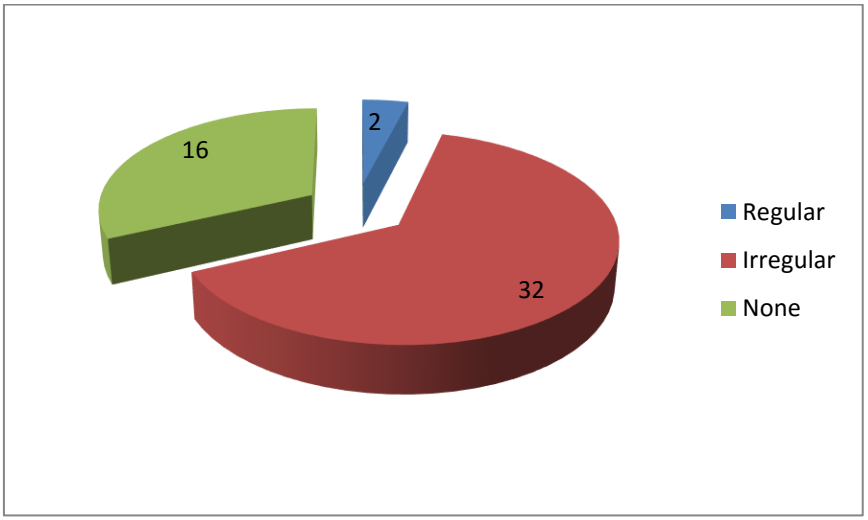

Figure 1: Distribution of patients according to ANC (n=50)

Figure-1: Among 50 patients, 32(64%), 16(32%) and 2(4%) underwent ANC irregular, regular and none respectively.

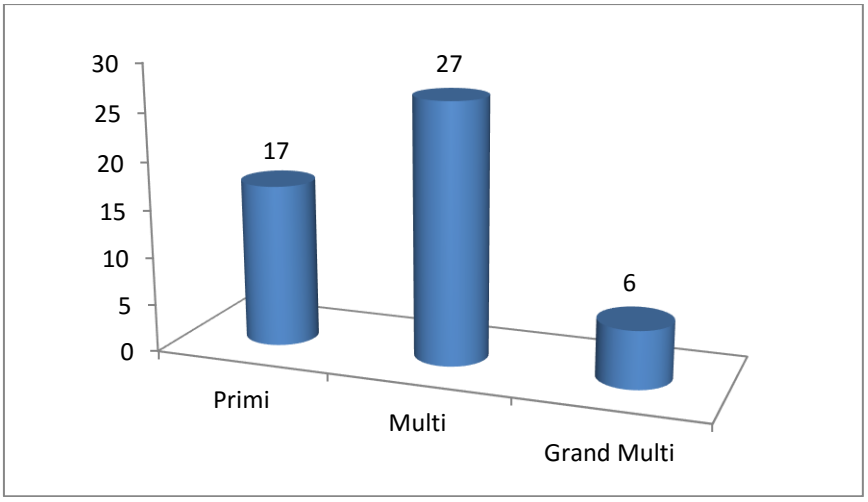

Figure 2: Distribution of patients according to gravida (n=50)

Figure-2: Among 50 patients, 17(34%), 27(54%) and 6(12%) were primi gravida, multi gravida and grand multi gravida respectively.

Table 2: Distribution of patients according to gestational age (n=50)

Gestational age (in weeks)	Frequency (%)
≤34	0 (0%)
35 - <37	9 (18%)
37 - <38	3 (6%)
38 - <39	12 (24%)
39 – 40	23 (46%)
>40	3 (6%)

Table-2: Among 50 patients 23(46%), 12(24%) and 9(18%) presented at gestational age 39-40 weeks, 38-<39 weeks and 35-<37 weeks respectively. 3(6%) each patients had gestational age 37-<38 weeks and <40 weeks.

Table 3: Distribution of patients according to various mode of delivery with place of delivery (n=50)

Mode of delivery	Our hospital (n=15)	Outside hospital (n=35)	Total (n=50)
Vaginal	6 (40%)	22 (62.86%)	27(54%)
Cesarean delivery	9(60%)	13(37.14%)	23 (46%)

Table-3: Out of 50 patients 15(30%) had our hospital and 35(70%) patients had delivery in outside hospital. Among 15 patients in our hospital 9(60%) and 6(40%) had cesarean and vaginal delivery. Besides among 35 cases delivered outside our hospital 22 (62.86%) and 13(37.14%) had vaginal and cesarean delivery respectively.

Table 4: Distribution of patients according to cause of PPH:

	In hospital delivery (n=15)	Outside hospital delivery (n=35)	Total (n=50)
Atonic uterus	4 (26.67%)	13 (37.14%)	17 (34%)
Retained bits of placenta	-	8 (22.86%)	8 (16%)
Morbidly adherent placenta	5 (33.33%)	2 (5.71%)	7 (14%)
Uterine scar rupture	1 (6.67%)	3 (8.57%)	4 (8%)
Genital tract injury	1 (6.67%)	4 (11.43%)	5 (10%)
Uterine inversion	-	1(2.86%)	1(2%)
Coagulopathy	4(26.67%)	1(2.86%)	5(10%)
Puerperal sepsis	-	3(8.57%)	3(6%)

Table-4: Out of 50 patients 17(34%), 8(16%), 5(10%) came with atonic uterus, retained placenta and genital tract injury respectively.

Table 5: Distribution of patients according to morbidity (n=50; in hospital n=15 and outside hospital delivery n=35)

	In hospital delivery (n=15)	Outside hospital delivery (n=35)	Total (n=50)
Transfusion >3 unit	5 (33.33%)	16 (45.71%)	21 (40.36%)
Organ system failure	1 (6.66%)	8 (22.86%)	9 (18%)
Extended intubation	3 (20%)	6 (17.14%)	9 (18%)
Coagulopathy	2 (13.33%)	1 (2.86%)	3 (6%)
Required ICU admission	2 (13.33%)	7 (20%)	9 (18%)
Hysterectomy	2(13.33%)	6(17.14%)	8(16%)
Laparotomy	1(6.67%)	4(11.43%)	5(10%)

Table-5: Out of 50 patients 21(40.36%) required blood transfusion >3 units, 9(18%) required ICU admission and 8(16%) required emergency hysterectomy.

Table 6: Distribution of patients according to management:

Management	In hospital delivery (n=15)	Outside hospital delivery (n=35)	Total (n=50)
Conservative	11 (73.33%)	21 (60%)	32 (64%)
Surgical	4 (26.67%)	14 (40%)	18 (36%)

Table-6: Out of 50 patients 32(64%) patients were managed conservatively and 18 (36%) patients under went surgical management.

DISCUSSION

The maternal mortality has been used traditionally as a measure of the quality of the health care. However, recently, the maternal morbidity, especially, the "near miss" morbidity, is being taken into account to assess the burden of the disease. Apparently, two-thirds of the obstetric morbidity is related to hemorrhage [20]. It has been estimated that PPH increases the risk of the morbidity 50 times and that it has 5 times higher morbidity than the mortality. This study attempted to analyze the data of the women who had PPH – in order to identify the causes, the mortality and the "near-miss" morbidity which were associated with it as well as the risk factors that contributed to the adverse outcomes [21]. A new concept to investigate the cause of this high variation level in different countries was introduced by the World Health Organization; based on markers of management and organ dysfunction as an adjunct to investigation of maternal deaths since they represent similar pathological and circumstantial factors leading to severe maternal outcome [22]. In our study there were 50 maternal near miss cases out of 2164 live births in 6 months which fit into the maternal near miss criteria of the WHO. Out of 50 cases 15(30%) had in hospital delivery and 35(70%) had outside hospital delivery. Similar results were observed in a previous study by Umashanar Km *et al*., [23]. Age distribution of patients show ed in table-1, that the majority 20(40%) patients out of 50, belonged to 21-25 years age group which was subsequently followed by 18(36%) patients in 26-30 years age group. Besides, the mean age of the respondents was 23.39±3.67 years (age range: 18-37 years). Table-1 showed that most of the patients (38%) studied upto primary school, table-3 & table-4 revealed that 64% patients were housewife and 46% patient had gestational age from 39 to 40 weeks respectively along with other parameters of the study like mode of delivery, parity of the mother showed in table-5 were compared with the study by Manjunatha S *et al*. Rate of MNM cases is more in the vaginal delivery(54%) than caesarean(46%) mode of deliveries compared to that study [24]. An assessment of the causes of PPH which is shown in table-6 revealed that the incidences of uterine atony, retained placentae and uterine inversions were significantly less among the women who had delivered at our hospital as compared to the women who had been referred with PPH after having delivered elsewhere. The regular use of an active management in the 3rd stage, as well as a prompt recognition of the complications, with the institution of the appropriate management, emerges as the obvious reason. The main causes of PPH among the hospital delivery groups were atony, retained placentae or morbidly adherent placentae; which are not always associated with the significant morbidity for the surgical intervention [25]. In our study, twenty-one (40%) patients were managed by multiple blood-transfusion and components transfusion in our study. Similarly, in Yelikar *et al*. study highest percentage of MNM cases managed by multiple blood component transfusion which is around 86% of cases [26]. Huseyin *et al* reported transfusion of blood products in 40% [27]. This shows the cases related to blood transfusion like PPH to save the mother are more common causes of maternal death and having the blood and its components in the blood bank and timely management can save the mothers. These cases were well managed by our hospital. Surgical intervention(s) were required in 18 cases (36%) (i.e.8 peripartum hysterectomies, 5 laparotomies, 1 traumatic PPH repair). Thirty-two percentage of cases were required the surgical interventions in a study by Manjunatha S *et al*, which is slightly lesser than present study [24]. MNM cases are more in women who did not receive adequate ANC in this study as well as other studies compared. In the study of Yaliker *et al* [26] the

MNM cases are more in unbooked cases (82%) compared to booked cases which is usually acceptable. MNM cases are more in second and third gravida compared Yelikar *et al* studies [26]. These cases need to be given more care in our hospital.

Limitations of the study

- This is single blinded, single centered study.
- Duration of study is short.
- Sample size is small.
- Follow up could not be given to assess the long-term morbidity of the patients.
- Does not proclaim the scenario of whole country

CONCLUSION

Conclusion: 'Near miss' events are important indicators for monitoring the quality of maternity services in health care facilities. A reduction of the maternal mortality rate can be achieved by developing evidence-based protocols. MNM is a vital tool that can go a long way in reducing mortality. PPH is the most common cause of maternal death all over the world. So maternal health care policies need to be concerned with near miss cases due to PPH. Besides the near miss morbidity as well as maternal mortality due to PPH could be reduced by ANC, birth plan and institutional delivery.

Recommendations

- A multi centered study in the divisional/ tertiary hospitals of whole Bangladesh.
- The study period should be long.
- Multi disciplinary approach of research work can make a study more precise and authentic in this regard.

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