DOI: https://doi.org/10.53350/pjmhs2216577

ORIGINAL ARTICLE

Determination of Frequency of Near Miss Morbidity in Obstetrical patients presenting in Emergency at Arif Memorial Teaching Hospital: A Descriptive Case Series

UZMA AZIZ[1], ASIMA MUNAWAR[2], MADIHA AFZAL[3], ASMA YASIN[4], ASIFA NOREEN[5]
[1]Assistant Prof. Department of Gynae/Obs Arif Memorial Hospital / Rashid Latif Medical College Lahore.
[2]Senior Registrar. Department of Gynae/Obs Arif Memorial Hospital / Rashid Latif Medical College Lahore.
[3]Assistant Professor Department of Gynae/Obs Arif Memorial Hospital / Rashid Latif Medical College Lahore.
[4]Professor Department of Gynae/Obs Arif Memorial Hospital / Rashid Latif Medical College Lahore.
[5]Senior Registrar Department of Gynae/Obs SIMS / Services Hospital Lahore.
Correspondence to Dr. Uzma Aziz, Email: uzmaazizjaved@gmail.com , Cell: 0323-4549197

ABSTRACT

Background: The definition of near miss event is: acute obstetric complication that endangers the survival of an obstetric patient immediately but not resulting in her death by chance or because of the hospital based obstetric care she receives during antenatal, intrapartum or postpartum period either after delivery or termination of pregnancy.
Aim: To find frequency of near miss morbidity in pregnant females presenting at emergency department in critical condition at Arif Memorial Teaching Hospital was the objective of our study.
Methods: This was a descriptive case series that was conducted at department of Obstetrics and Gynecology Arif Memorial Teaching Hospital/Rashid Latif Medical College Lahore for one year from March 2021 till February 2022 after approval from Ethical Review board of RLMC. A total of 310 females meeting inclusion criteria were included in this study. After taking informed consent, their age, obstetric history, gestational age (on USG), parity, and demographic details was obtained. All patients were followed till delivery. Near-miss was identified as per operational definition and cause was recorded. All patients were managed efficiently as per standard protocol. Data was analyzed by using SPSS version 20.
Results: Most of the cases were with mean age of 31.43 ± 7.25 years with age range of 16 as minimum and 45 as maximum age. The mean gestational age at presentation was 36.63 ± 2.82 weeks with minimum and maximum gestational age as 32 and 41 weeks. According to operational definition near miss morbidity was diagnosed in 30 (9.65%) in which severe anemia was seen in 11 (36.67%) preceding by 6 (20%) as severe hemorrhage, hypertensive disorder each, 5 (16.67%) females had sepsis and 2 (6.67%) had uterine rupture.
Conclusion: The frequency of near miss morbidity in pregnant females presenting at emergency department in critical condition at Arif Memorial Hospital was relatively high and common cause was severe anemia.
Keywords: Frequency, near miss morbidity, Obstetrical patients, emergency department, critical condition

INTRODUCTION

It is the maternal mortality rate and infant mortality rate that is the true representative of health care system of any community[1,2]. A maternal mortality is identified as a devastating event in obstetrics with profound impact on the family of the patient along with healthcare personnel dealing with that particular patient.[2] Around half a million of the pregnant females around the globe die during the process of child birth thus making maternal mortality an unfortunate reality[3]. The low income countries like ours report most of the cases of maternal deaths. Keeping the facts and figures of acute pregnancy related complications faced by obstetric patients during antenatal, intrapartum and postpartum period in mind, it is the need of the hour to strengthen our health care system to prevent maternal morbidity and mortality[4].

A maternal near miss case is elaborated as an event where pregnant women would have nearly died but has survived a problem occurring during antenatal period, labour or puerperium[5]. Worldwide, maternal antepartum and postpartum hemorrhage, sepsis, unsafe abortions, pregnancy related hypertensive disorders and obstructed labour are identified as the five main etiological factors accounting for more than 80% of all maternal deaths. The leading factors for any near miss event are said to be the maternal haemorrhage and hypertensive disorders. In underdeveloped regions like Asia and Africa, maternal anemia is also identified as one of the root cause and contributor to maternal morbidity and mortality with 12.8% deaths in Asia and 3.7% in Africa respectively[6,7]. Viral infections have also been identified as one of the major factors responsible for maternal morbidity and mortality[8]. According to available national data, frequency of near miss varies considerably from 0.96%[9] to 5.3%[10].

The rationale of current study is to find frequency of near miss morbidity in pregnant females presenting at our work place i.e. AMTH. This study would not only add to national data but also help to identify high risk obstetric population having risk of maternal mortality hence developing screening protocol and revising treatment strategies to prevent the near miss morbidity in high risk females during antenatal visits.

The objective of the study was to find frequency of near miss morbidity in pregnant females presenting at emergency department in critical condition at Arif Memorial Teaching Hospital

Received on 02-03-2022
Accepted on 04-05-2022

MATERIALS AND METHODS

After taking the approval letter from the ethical committee of Rashid Latif Medical Complex, this descriptive case series was carried out at Obstetrics and Gynecology department Arif Memorial Teaching Hospital/Rashid Latif Medical complex Lahore for a period of one year from March 2021 till February 2022. 310 pregnant females participated in this research after taking written informed consent and by taking expected frequency of near miss morbidity in pregnant females as 5.3%[10] with 95% confidence level and 2.5% margin of error. Non probability consecutive sampling was done. Females aged 16-45 years of age with any parity presenting in emergency department during pregnancy for any mode of delivery (will be assessed clinically) were included in the study. Females presenting with cardiac disease (on ECG), renal failure (Serum creatinine > 1.0mg/dl), chronic liver disease (ALT/AST raised 3 times normal and cirrhotic liver on USG) **or** with history of trauma were excluded.

Operational definition:

Near miss: A pregnant female who nearly died but survived an obstetric complication occurring during antenatal, intrapartum (during labour) or postpartum period due to any one of the 5 critically ill conditions (when the cause is directly attributable to pregnancy)

1. Severe haemorrhage progressing towards shock with systolic BP<90mmHg, emergency obstetrical hysterectomy, coagulation disorders (INR ≥ 1.3) or need for transfusion of greater than or equal to 2 liters of blood or blood products.
2. Maternal hypertension leading to pre-eclampsia (BP >140/90mmHg and proteinuria >1g/24hrs), eclampsia or HELLP syndrome (pregnant woman having hemolysis on peripheral blood film with serum LDH >600 IU/l; serum aspartate aminotransferase greater than 70 IU/l; and platelet count below 100,000/ul)

3. Sepsis defined as a body temperature less than 36°C or more than 38°C with clinical symptoms and signs of shock i.e. systolic blood pressure < 90 mmHg and heart rate > 120 beats per minute.
4. Impending uterine rupture (assessed clinically)
5. Severe anemia (HB< 6 g/dl) in female patients without any evidence of massive blood loss.
6. The age, obstetric history, gestational age (on USG), parity, and demographic details of the participants were obtained. All patients were followed till delivery. Near-miss was identified as per operational definition and cause was recorded. All patients were managed efficiently as per standard protocol.

For analysis of data SPSS version 20 was used. Frequency and percentage was used for qualitative data like near miss morbidity and its causes. For measurement of quantitative variables like gestational age at presentation, maternal age in years, mean ± standard deviation was used. Parity was presented as frequency (%). Data was stratified for variables age, parity and gestational age and considering p-value ≤ 0.05 significant, post stratification Chi-square test was applied.

RESULTS

The mean age of study participants was 31.43±7.25 years with age range of 16 as minimum and 45 as maximum age. There were 213(68.71%) females whose age was 16-35 years and 97(31.29%) cases were 36-45 years old. The mean gestational age at presentation was 36.63 ± 2.82 weeks with minimum and maximum gestational age as 32 and 41 weeks. A total of 91(29.35%) cases had gestational age <37 weeks and 219 (70.65%) females had 37-41 weeks of gestation. There were 173(55.81%) cases who had parity < 3 and 137(44.19%) females had parity ≥ 3 (Fig.1).

According to operational definition near miss morbidity was diagnosed in 30 (9.65%) in which high severe anemia was seen in 11(36.67%) preceding by 6(20%) as severe hemorrhage, hypertensive disorder each, 5(16.67%) females had sepsis and 2(6.67%) had uterine rupture (Fig-2, 3).

When data was stratified for age, among females who had near miss 19(63.3%) cases were 16-35 years of age, 11(36.7%) females were 36-45 years of age while among females who had not near miss morbidity 194(693%) cases were 16-35 years of age and 86(30.7%) cases were 36-45 years of age. Statistically, the frequency of near miss morbidity was found to be similar in both age groups, keeping p-value < 0.05 (Table 1).

The frequency of near miss morbidity was statistically similar in both gestational age groups, p-value < 0.05 i.e. 6(20%) had < 37 weeks of gestation and 24(80%) had 37-41 weeks of gestation (Table 2). The frequency of near miss morbidity was statistically same regardless of parity, p-value < 0.05 i.e. 15(50%) cases had parity <3 and ≥ 3 each (Table 3).

Table-1: Comparison of near miss morbidity with respect to age groups

Age groups	Near miss morbidity		Total
	Yes	No	
16-35 years	19(63.3%)	194(69.3%)	213(68.7%)
36-45 Years	11(36.7%)	86(30.7%)	97(31.3%)
Total	30(100%)	280(100%)	310(100%)

Chi-square = 0.447 P-value = 0.504

Fig-1: Distribution of parity

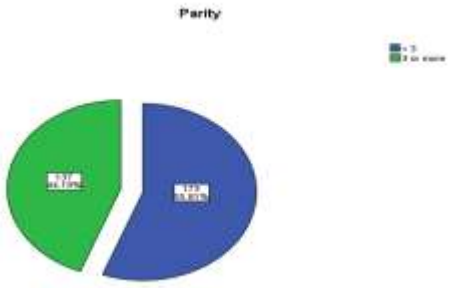

Fig-2: Distribution of near miss morbidity

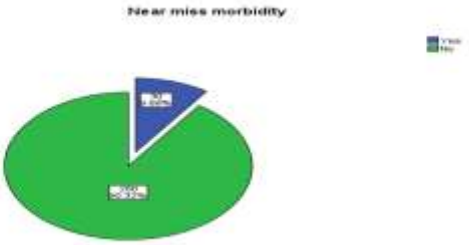

Fig-3: Distribution of complications

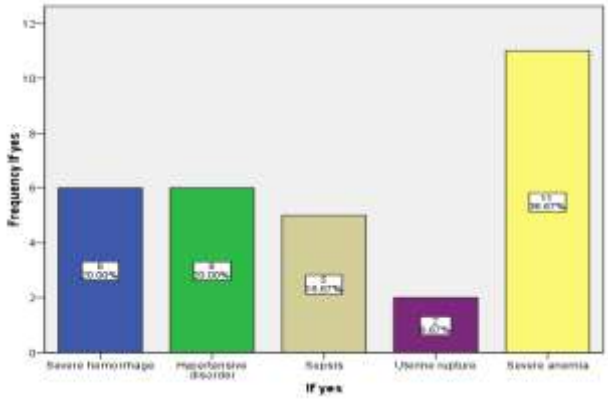

Table-2: Comparison of near miss morbidity with respect to gestational age

Gestational age (weeks)	Near miss morbidity		Total
	Yes	No	
< 37 weeks	6(20%)	85(30.4%)	91(29.4%)
37-41 weeks	24(80%)	195(69.6%)	219(70.6%)
Total	30(100%)	280(100%)	310(100%)

Chi-square = 1.402, P-value = 0.236

Table-3: Comparison of near miss morbidity with respect to parity

Parity	Near miss morbidity		Total
	Yes	No	
< 3	15(50%)	158(56.4%)	173(55.8%)
3 or more	15(50%)	122(43.6%)	137(44.2%)
Total	30(100%)	280(100%)	310(100%)

Chi-square = 0.454, P-value = 0.500

DISCUSSION

WHO defines near miss case as a pregnant female, experiencing a life threatening condition and then surviving during antenatal period, labour or puerperium[11]. In Latin America, near miss events are main public health concerns these days[12].15 cases of maternal near miss ended up in the maternal death as reported by a study[13].

As maternal near miss helps to determine the factors leading to a fatal outcome, it can fairly be used as an indicator to assess the quality of maternal health services in a society and adoption of measures aimed to improve maternity care[14]. In 1991, Stones et al introduced the term near miss which is classified as follows[15]:

i) Clinical criteria which indicates a particular disease
ii) Procedural/Interventional criteria
iii) Organ dysfunction criteria.

The maternal near miss ration(no of near miss cases/1000 live births) is 27.8/1000 LB which is much high when compared with organ dysfunction(10.2) or procedure criteria (2.1) such as surgery, termination of pregnancy or blood transfusion. On the other hand, if organ dysfunction is taken as criteria, maternal mortality is increased with 1 case for every six near miss cases. On contrary to that, in 35 cases of near miss, only one case of maternal death was seen if clinical symptoms were taken as a reference criteria[16]. WHO

standardized the criteria of near miss in 2009. This new WHO criteria is equally effective and valid[17].

A multi-center trial across Latin America in 2010 concluded that age>35 years, primigravida, single mother, or having a previous cesarean section are the clinical and epidemiological factors that have self-sufficient link with maternal near miss occurrence [12].

In 2006-07, data from a health survey in Brazil concluded that education less than eight standards and age >40 years are associated with increased risk of maternal near miss. But no association was found between race, socio economic status, residing area, or previous child birth. However, these researches were conducted before WHO maternal near miss criteria that are currently used[18].

A study reported that mean age of maternal near miss (MNM) cases was 28.4±8.5, whereas the mean gestational age of MNM was 35.66±8.6 weeks[19]. Over all we found the mean age of cases was 31.43±7.25 years with age range of 16 as minimum and 45 as maximum age. The mean gestational age at presentation was 36.63±2.82 weeks with minimum and maximum gestational age as 32 and 41 weeks.

In current study according to operational definition near miss morbidity was diagnosed in 30(9.65%) in which high severe anemia was seen in 11(36.67%) preceding by 6(20%) as severe hemorrhage, hypertensive disorder each, 5(16.67%) females had sepsis and 2(6.67%) had uterine rupture. In current the near miss morbidity was higher than reported local statistics i.e. 0.96% to 5.3%. Recently a retrospective research showed that the incidence of maternal near miss ratio was 11.9/1000 LB, maternal mortality ratio (MMR) was 580/100000 live births and maternal near miss to mortality ratio was 2.05:1, while maternal hemorrhage was the main cause of near miss (43.5%), after this severe anemia (15.38%), uterine rupture (15.38%), maternal hypertension (12.82%), sepsis (5.12%) and infections like hepatitis (2.56%). Hence it can be concluded that hemorrhage was identified as the top cause of near miss events[20]. Another study reported that the major obstetrical factors responsible for MNM were maternal uncontrolled hypertension (49.8%), obstetrical hemorrhage (38.3%) and labour dystocia (32.5%). Contrary to that, cardiovascular disorder was the leading non-obstetrical factor found to be responsible for near miss cases (48.8%)[21].

Yasmin et al. performed another prospective observational study to determine the frequency of maternal near miss cases and studied the demographic features, causes, procedures and perinatal outcome of the maternal near miss. The study showed 122 cases of near miss with maternal near miss being 45.2/1000 LB. Majority of the cases were multipara(61.5%). In their 3rd trimester and in the age group of 20-35 years (71.3%). Leading factors of near miss in the present study were hemorrhage (44.3%), hypertensive disorders (34.4%). Labour dystocia (14.8%), infection (2.4%) and low Hb (4.1%). So this research labeled excessive blood loss and maternal uncontrolled hypertension to be the leading reasons for maternal near miss events. Consequently proper and timely detection of factors happening around near miss can give us clue about the underlying etiological factor for it, help us to treat it at its initial stage and prevent maternal mortality[22].

In 2015, a descriptive population-based research was done to determine the diversity of maternal near miss cases reporting that 1120 (4.2%) pregnant women developed potentially life-threatening conditions and 136(0.5%) suffered from life-threatening conditions. The mortality index was 14% overall, 13.6% for hypertensive disorders and 2.0% for obstetric haemorrhage[23]. Naz et al. performed another local descriptive study to determine the frequency and nature of maternal near-miss cases and to compare near miss morbidity and maternal mortality. The result showed a 1.05% frequency of near miss. The lead factor for near miss was obstetrical hemorrhage in 23(32.39%), raised blood pressure in pregnancy in 21(29.58%), obstructed labour in 13(18.315), infection in 7(9.86%) cases of near miss while severe anemia not related to hemorrhage in 3(4.23%) cases of maternal near miss morbidity[24]. The incidence of MNM ratio was 5.6: 1. Here again the main cause of near miss was hemorrhage (44.2%) of maternal near miss event, followed by maternal uncontrolled hypertension (23.6%) and infection (16.3%)[25].

CONCLUSION

The frequency of near miss morbidity in pregnant females presenting at emergency department in critical condition at Arif Memorial Teaching Hospital was relatively high and common cause was found to be severe anemia. So we have some novel screening protocols and should revise treatment strategies to prevent the near miss morbidity in high risk females during antenatal visits.

Acknowledgment: The authors are grateful to Prof. Sohail Khurshid Lodhi and Prof. Yousaf Latif for their guidance in the current research.
Ethical approval: Ethical approval was sought and obtained from the Institution Review Board (IRB) OF Rashid Latif Medical College.
Conflict of interest statement: No conflict of interest.
Funding Source: There was no internal and external funding.

REFERENCE

1. Abha S, Chandrashekhar S, Sonal D. Maternal Near Miss: A Valuable Contribution in Maternal Care. J Obstetr Gynecol Ind. 2016;66(1):217-22.
2. Sarma HKD, Sarma HK, Kalita AK. A prospective study of maternal near-miss and maternal mortality cases in FAAMCH, Barpeta; with special reference to its aetiology and management: first 4 months report. J Obstet Gynaecol Barpeta. 2015;1(2):100-6.
3. Kaur S, Minhas S, Sharma B, Sood R. Maternal near miss and maternal mortality as health indicators in a tertiary care hospital. J Evolut Med Dent Sci. 2014;3(41):10354-62.
4. Shaheen F, Begum A. Maternal "Near Miss". J Rawalpindi Med Coll. 2014;18(1):130-2.
5. Yasmin G, Najam R, Ghazi S, Lalwani A. Maternal near miss events: a prospective observational study in a tertiary care centre. Int J Reproduc, Contracep, Obstetr Gynecol. 2016;5(9):3088-93.
6. Walraven G, Telfer M, Rowley J, Ronsmans C. Maternal mortality in rural Gambia: levels, causes and contributing factors. Bull World Health Organ. 2000;78:603-13.
7. Rajaram P, Agrawal A, Swain S. Determinants of maternal mortality: a hospital based study from south India. Indian J Matern Child Health. 1995;6(1):7.
8. Roopa P, Verma S, Rai L, Kumar P, Pai MV, Shetty J. "Near Miss" Obstetric Events and Maternal Deaths in a Tertiary Care Hospital: An Audit. J Pregnancy. 2013;2013(2013):Article ID 393758, .
9. Naz T, Akhter N, Naib JM, Gul N. Maternal near-miss morbidity and mortality—a continuum. J Med Sci. 2012;22(4):171-6.
10. Mustafa R, Hashmi H. Near-miss obstetrical events and maternal deaths. J Coll Physicians Surg Pak. 2009;19(12):781-5.
11. 9. Hill K, Thomas K, AbouZahr C, Walker N, Say L, Inoue M, et al. Estimates of maternal mortality worldwide between 1990 and 2005: an assessment of available data. Lancet. 2007;370(9595):1311-9.
12. Ronsmans C, Graham WJ, group LMSSs. Maternal mortality: who, when, where, and why. Lancet. 2006;368(9542):1189-200.
13. Say L, Souza JP, Pattinson RC. Maternal near miss–towards a standard tool for monitoring quality of maternal health care. Best Pract Res Clin Obstet Gynaecol. 2009;23(3):287-96.
14. Souza JP, Cecatti JG, Faundes A, Morais SS, Villar J, Carroli G, et al. Maternal near miss and maternal death in the World Health Organization's 2005 global survey on maternal and perinatal health. Bull World Health Organ. 2010;88(2):113-9.
15. Penney G, Brace V. Near miss audit in obstetrics. Curr Opin Obstet Gynecol. 2007;19(2):145-50.
16. Nashef SA. What is a near miss? Lancet. 2003;361(9352):180-1.
17. Stones W, Lim W, Al-Azzawi F, Kelly M. An investigation of maternal morbidity with identification of life-threatening'near miss' episodes. Health Trends. 1991;23(1):13-5.
18. Souza JP, Cecatti JG, Parpinelli MA, Sousa MHd, Serruya SJ. Revisão sistemática sobre morbidade materna near miss. Cad Saúde Pública. 2006;22(2):255-64.
19. Cecatti JG, Souza JP, Neto AFO, Parpinelli MA, Sousa MH, Say L, et al. Pre-validation of the WHO organ dysfunction based criteria for identification of maternal near miss. Reprod Health. 2011;8(1):22.
20. Souza J, Cecatti J, Parpinelli M, Sousa M, Lago T, Pacagnella R, et al. Maternal morbidity and near miss in the community: findings from the 2006 Brazilian demographic health survey. BJOG. 2010;117(13):1586-92.
21. Abdel-Raheem SS, Mahran DG, Al-Attar GS, Qayed MH, Zareh ZE, Othman EE-DR. Magnitude and pattern of maternal near-miss cases admitted to Women's Health Hospital, Assiut University. J Curr Med Res Pract. 2016;1(3):92.
22. Bansal M, Lagoo J, Pujari K. Study of near miss cases in obstetrics and maternal mortality in Bastar, Chhattisgarh, India. Int J Reprod Contracept Obstet Gynecol. 2017;5(3):620-
23. Byass P, D'Ambruoso L, Ouédraogo M, Qomariyah SN. Assessing the repeatability of verbal autopsy for determining cause of death: two case studies among women of reproductive age in Burkina Faso and Indonesia. Popul Health Metr. 2009;7(1):6.
24. Yasmin G, Najam R, Ghazi S, Lalwani A. Maternal near miss events: a prospective observational study in a tertiary care centre. Int J Reprod Contracept Obstet Gynecol. 2017;5(9):3088-93.
25. Soma-Pillay P, Pattinson RC, Langa-Mlambo L, Nkosi BS, MacDonald AP. Maternal near miss and maternal death in the Pretoria Academic Complex, South Africa: A population-based study. S Afr Med J. 2015;105(7):578-83.
26. Naz T, Akhter N, Naib JM, Gul N. Maternal Near-Miss Morbidity And Mortality—A Continuum. J Med Sci. 2014;22(4):171-6.
27. PS R, Verma S, Rai L, Kumar P, Pai MV, Shetty J. "Near Miss" Obstetric Events and Maternal Deaths in a Tertiary Care Hospital: An Audit. J Pregnancy. 2013;2013