

CLINICAL SPECTRUM AND FETOMATERNAL OUTCOMES IN NEAR MISS PATIENTS PRESENTING TO A TERTIARY CARE HOSPITAL

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Abstract

Background and Objectives: Maternal near miss events are life threatening obstetric conditions which need urgent medical help in order to prevent maternal death. Audit of near miss events is a surveillance tool which is used to assess the quality of antenatal care in a setting and help in identifying causes to improve the maternal outcome. The objective was to find out the frequency, clinical spectrum and fetomaternal outcome in near miss patients presenting to a tertiary care hospital.

Methods: This was case-series observational study, conducted in Lady Willingdon Hospital, Lahore from January 2022 to December 2022. Eighty women were included. Each case was analyzed regarding age, gestational age, parity, examination findings, laboratory diagnosis, management plan, fetomaternal outcome, level of post-operative care, number of blood transfusions and complications.

Results: Most patient's were from age bracket 30-40 years, gestational age 28-36 weeks, parity P2-P4. The leading causes of near miss events were hemorrhage (48.75%), followed by hypertensive disorders (31.25%), viral hepatitis (8.75%), uterine rupture (6.25%), sepsis (5%) and ruptured ectopic pregnancy (3.75%). As maternal outcome, there were four deaths. Our fifty-eight patients (72.5%) required regular level-1 care, eighteen patients (22.5%) required high dependency unit level-2 care and four patients (5%) required intensive care unit level-3 care. Seventy-one babies were delivered. Sixty-one were born alive while ten were still born. Neonatal ICU admissions were twenty-seven, out of these twenty-two were discharged from nursery and early neonatal deaths were five.

Conclusion: Near miss events, if treated timely at well-equipped facility may prevent progression to life threatening situations.

Keyword: Near miss events, hemorrhage, hypertension, antenatal care

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Maternal death can be considered as “just the tip of the iceberg”, with maternal near miss

being the large base of the iceberg.¹ The World Health Organization defines the maternal near miss as “a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy”.^{2,3} Signs of multi-organ failure that lead to life-threatening situations are used to identify maternal near misses. These events are life threatening obstetric conditions which need urgent medical help in order to prevent the evident maternal death.³ Clinical survey and audit of “near miss events” is a surveillance tool which is used to assess the quality of antenatal obstetric care in a setting and helps in identification of causes of poor maternal outcome.^{1,4,5} This surveillance indicator matching

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tool acts like a mirror to reflect the main causes of maternal deaths.^{5,6} It actually provides with an opportunity to improve the quality of health care by timely intervention to control the causative agents at the first stage itself. After safe anaesthesia, blood transfusion services and antibiotic coverage, today obstetrics is safe and very much concerned with the health and well-being of both the mother and the fetus.^{7,9} Therefore, there is interest in using these audits, clinical surveys and approaches as a guide way to facilitate the provision of best quality antenatal obstetrics care in order to achieve the main goal of maternal safety and ultimate reduction in maternal mortality in the current health care system of developing countries.¹⁰⁻¹³

The rationale of the study is to assess clinical spectrum and outcome of near miss events to know the classification of near-miss morbidity as it is the first step in analyzing factors that may differentiate survival from death on the continuum from morbidity to mortality. Three different approaches are either a set of clinical criteria, a set of laboratory-based criteria, or a set of management-based criteria. Timely referral, availability of proper medical resources at healthcare facility and identification of high-risk pregnancies may improve the management status of severe morbidities in order to further prevent maternal mortality.

The objectives of this study were to evaluate the causes of near miss maternal morbidity in the hospital which occurred either in admitted patients or were referred from elsewhere and to study the maternal and fetal outcomes in all near miss cases.

METHODS

This research was conducted in Obstetrics and Gynaecology Department of Lady Willingdon Hospital, Lahore from January 2022 to December 2022. Patients who presented with following clinical conditions like ante-partum hemorrhage / post-partum hemorrhage in shock, eclampsia with altered state of consciousness or loss of consciousness, ruptured uterus/ruptured ectopic pregnancy in shock, acute viral hepatitis/HELLP syndrome, septic abortion, pulmonary

edema/pulmonary embolism/cardiac patients/stroke were included in the study. Low risk patients with normal ongoing pregnancy having no medical disorder were excluded from the study. An informed consent was taken to include their data in the study. Eighty patients were evaluated through a proforma and physical examination. Each case was analyzed regarding booking status, referral status, age, parity, clinical findings, laboratory diagnosis, management plan, maternal and fetal outcome, level of post-operative care number of blood transfusions and complications. Descriptive analysis of the collected data was performed with the help of SPSS version 20. Mean and standard deviation was calculated for quantitative variables i.e. age, gestational age and parity. Frequency and percentages were calculated for presence of near miss (hemorrhage, hypertensive disorder, viral hepatitis, uterine rupture, sepsis, ruptured ectopic pregnancy), maternal and fetal outcomes. The tables were constructed regarding all variables.

RESULTS

Mostly patient's age bracket 30-40 years, gestational age 28-36 weeks, parity P2-P4.(Table 1) The

Table 1: Descriptive statistics of patients presenting in tertiary care hospital (n=80)

		N	Percentage
Age	20-30 years	32	40%
	30-40 years	46	57.5%
	>40 years	2	2.5%
	Mean	31.5	
	SD	4.57	
Gestational age	<12 weeks	5	6.25%
	12-24 weeks	2	2.5%
	24-28 weeks	4	5.0%
	28-36 weeks	59	73.75%
	36-40 weeks	10	12.5%
	Mean	32.2	
SD	7.64		
Parity	P1	5	6.25%
	P2-P4	64	80%
	P5& above	11	13.75%
	Mean	2.2	
	SD	1.31	

Table 2: (A) Clinical spectrum, (B) laboratory-based spectrum and (C) management option of patients presenting at a tertiary care hospital

(A) Clinical spectrum	n	Percentage
PPH	9	11.25%
Placenta previa spectrum	22	27.5%
Eclampsia	12	15.0%
Ruptured uterus	5	6.25%
Ruptured ectopic pregnancy	3	3.75%
Viral hepatitis	7	8.75%
Pulmonary edema/embolism	2	2.5%
Cardiac patient	1	1.25%
HELLP syndrome	6	7.5%
Placental abruption	6	7.5%
Septic abortions	4	5.0%
Stroke	1	1.25%
Uterine inversions	2	2.5%

(B) Laboratory parameter	n	Percentage
Low hemoglobin	77	96.25%
Hb < 7 g/dl	4	5.0%
Hb 7.1-9 g/dl	34	42.5%
Hb 9.1-11 g/dl	39	48.75%
Low platelets	13	16.25%
<50,000	1	1.25%
50,000-100,000	9	11.25%
100,000-150,000	3	3.75%
Disseminated intravascular coagulopathy (DIC) score \geq 5	8	10%
Deranged RFTs	6	7.5%
Deranged LFTs	17	21.25%

(C) Management option	n	Percentage
Use of cardiac support drugs	6	7.5%
Use of ventilatory support	4	5.0%
Use of blood transfusion	35	43.75%
Dialysis needed	1	1.25%
Resuscitation (CPR) required	4	5.0%

leading causes of near miss events were hemorrhage (48.75%), followed by hypertensive disorders (31.25%), viral hepatitis (8.75%), uterine rupture (6.25%), sepsis (5%) and ruptured ectopic pregnancy (3.75%).

As maternal outcome was concerned, there were four (5.0%) deaths unfortunately. Our fifty-eight patients (72.5%) required regular level-1 care post-operatively. Our eighteen patients (22.5%) required high dependency unit level-2 care, six (7.5%) out of these, required continuous use of cardiac life support drugs. Four

Table 3: Maternal and Fetal outcomes among patients presenting at a tertiary care hospital Lahore.

Maternal outcome	n	Percentage
Spontaneous vaginal deliveries	35	43.75%
Caesarean sections	29	36.25%
Laparotomy	10	8.0%
Conservative	2	2.5%
Alive	76	95%
Deaths	4	5.0%
Fetal outcome	n	%
Total babies delivered	71	
NICU admissions	27	38.0%
Discharged from NICU	22	30.9%
Early neonatal deaths	5	7.0%
Born alive	61	85.9%
Still born	10	14.1%

patients (5.0%) required intensive care unit level-3 care, these patients were put on ventilatory support. Cardiopulmonary resuscitation was performed in four patients (5.0%). One patient (1.25%) needed dialysis. Our thirty-five (43.75%) patients needed blood transfusions. Seventy-seven patients (96.25%) had low hemoglobin, thirteen (16.25%) had low platelets, eight (10%) had disseminated intravascular coagulopathy, six (7.5%) had deranged RFTs and seventeen (21.25%) had deranged LFTs. (Table 2) Our sixty-six (82.50%) near-miss patients were un-booked while fourteen (17.50%) were booked cases. Regarding fetal outcome, seventy-one babies were delivered. Sixty-one (85.9%) were born alive while ten (14.1%) were still born. Neonatal ICU admissions were twenty-seven (38.0%), out of these twenty-two (30.9%) were discharged from nursery and early neonatal deaths were five (7.0%).

DISCUSSION

Reduction in maternal mortality is one of the main targets of Millennium Developmental Goals followed by Sustainable Developmental Goals, but despite of best efforts by health sector, it still remains a major challenge in developing and resource poor nations like Pakistan.¹¹ Maternal mortality is considered as a clinical indicator to assess the level of antenatal obstetric care anywhere in a country. But we don't forget the reality that many more patients face serious life-threatening conditions which put them at high-risk category

of maternal death from which they survive at the end.^{7,11} These are the actual near miss cases who should be investigated properly and with the passage of time, now a days, it should be used as investigating tool to save such women.^{5,7,11-13}

In this study, 14971 patients had delivered in our hospital in one year time period. Out of these, 80 patients were categorized as maternal near miss events. The frequency of near-miss cases was 0.53%. Fourteen patients were booked (17.50%) and sixty-six patients were un-booked (82.50%). In this study regarding clinical spectrum, the leading causes of maternal near miss events were hemorrhage (48.75%), followed by hypertensive disorders (31.2%), viral hepatitis (8.75%), uterine rupture (6.25%), ruptured ectopic pregnancy (3.75%) and sepsis (5%). Almost similar results were found by Shahid et al. where hemorrhage was responsible for 48% and hypertensive disorders accounted for 27% of near miss cases but frequency of near-miss cases was 5.2%.¹⁴ A study by Kamboj et al. observed the same results.⁵ A study by Akrawi et al. recorded hemorrhage (35.2%), hypertensive disorders (40.8%), viral hepatitis (8.30%), ruptured uterus (3.5%) and sepsis (7.7%) responsible for near miss morbidity.¹⁰ In our study, viral hepatitis was also one of the leading causes for near miss events and similar results were found by Kamboj et al.^{5,10} Contrary to all this, a study by Niaz et al. at Faisalabad revealed frequency 14.67% and reported causes were hemorrhage (3.1%) followed by hypertensive disorder (1.3%), anemia (4.8%) and uterine rupture (2.2%).² Another study Sultana et al. conducted at district hospital Karachi found hemorrhage (26%), hypertension (20%), anemia (20%), ruptured uterus (18%) and sepsis (16%) responsible collectively.¹⁵

As far as the maternal outcome was concerned, there were four deaths unfortunately. One was cardiac patient with mitral regurgitation, second one was with suspicion of pulmonary embolism and third was scarred placenta percreta and fourth one presented with stroke.

As far as management-based spectrum was concerned, our eighteen patients required high dependency unit level-2 care and six out of these patients required

continuous use of cardiac life support drugs. Our four patients required intensive care unit level-3 care and these patients were put on ventilatory support. Cardiopulmonary resuscitation was performed in four patients. One patient needed dialysis. We got medical liaison from Mayo Hospital for our three patients. As hemorrhage was the major source of morbidity in this study, so our thirty-five patients required blood transfusions. These results were similar as presented by Kamboj et al. regarding hysterectomy, CPR, dialysis and blood transfusions but are contrary regarding use of cardiac drugs and ventilatory support.⁵

As far as laboratory parameters were concerned, it was noted that seventy-seven patients had low hemoglobin, thirteen patients had low platelets, eight patients had disseminated intravascular coagulopathy (DIC) score > 5, six patients had deranged raised RFTs and seventeen patients had deranged elevated LFTs. These results were more or less similar to Kamboj et al.⁵

As far as the fetal outcome is concerned, total seventy-one babies were delivered. Out of these, sixty-one were born alive while ten were still born. Neonatal ICU admissions were twenty-seven, out of these twenty-two babies were discharged from nursery and early neonatal deaths were five. These results were more or less consistent with Kamboj et al.⁵

Un-booked and referred patients were interviewed post-operatively and it was found that lack of proper antenatal care at several places, poor referral facility, weak transport system and improper use of health care services led to life-threatening situations and near-miss events. Limitation of the study includes that it revolves around patients presented to one tertiary care hospital. It should include multiple care centers to get a broader picture of the spectrum. But its strength includes that it is conducted in a tertiary care setting where patients from periphery are being referred and it involves the surrounding drainage area and helps in identification of different loop holes in the care system.

CONCLUSION

Referral teaching hospitals cater high risk pregnancies with end result of higher number of near

miss events.¹⁶ Developing nations and poor resource countries like Pakistan share a high burden of maternal morbidity and mortality due to lack of proper antenatal care at several places, poor referral facility, weak transport system and improper use of health care services. Most of the above said near miss events, if treated timely at proper facility level may hinder or slow down progression to life threatening situations.

Ethical Approval:

The ethical Approval was obtained from King Edward Medical University, Lahore. (ERB Reference No. PF-098/LWH)

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REFERENCES

1. Leitao S, Manning E, Greene RA, Corcoran P. Maternal morbidity and mortality: an ice-berg phenomenon. *BJOG* 2022;129(3):402-411.
2. Niaz A, Liaqat A, Naem S, Tahira T. Frequency of near-miss morbidity in pregnant women coming to Allied Hospital, Faisalabad. *APMC* 2021; 15(3): 199-202.
3. Firoz T, Chou D, von Dadelszen P, et al. Measuring maternal health: Focus on maternal morbidity. *Bull World Health Organ.* 2013; 91: 794–796.
4. Geller SE, Koch AR, Garland CE, MacDonald EJ, Storey F, Lawton B. A global view of severe maternal morbidity: moving beyond maternal mortality. *Reprod Health.* 2018;15(1):98.
5. Kamboj A, Mandrelle K. Fetomaternal outcomes in near-miss events in obstetrics. *Int J Reprod Contracept Obstet Gynecol* 2022;11(1):172-176.
6. Shrestha J, Shrestha R, Tuladhar R, Gurung S, Shrestha A. Maternal near miss in a tertiary care teaching hospital. *Ame J Public Health Res.* 2015; 3(5A):17-22.
7. WHO | The WHO near-miss approach. WHO. https://www.who.int/reproductivehealth/topics/maternal_perinatal/nmconcept/en/. Accessed May 9, 2021.
8. Kaye DK, Kakaire O, Osinde MO. Systematic review of the magnitude and case fatality ratio for severe maternal morbidity in sub-Saharan Africa between 1995 and 2010. *BMC Preg Childbirth.* 2011;11:65.
9. Chhabra P. Maternal near miss: an indicator for maternal health and maternal care. *Indian J Community Med* 2014; 39: 132–7.
10. Akrawi VS, Al-Hadithi TS, Al-Tawil NG. Major determinants of maternal near-miss and mortality at the Maternity Teaching Hospital, Erbil City, Iraq. *Oman Med J* 2017;32(5):386-395.
11. The Millennium Development Goals Report 2008. Available at: https://www.un.org/millenniumgoals/2008highlevel/pdf/newsroom/mdg%20reports/MDG_Report_2008_ENGLISH.pdf. Accessed on 25 September 2021.
12. Tuncalp O, Hindin MJ, Souza JP, Chou D, Say L. The prevalence of maternal near-miss: a systematic review. *BJOG* 2012;119(6):653-661.
13. Opong SA, Bakari A, Bell AJ, Bockarie Y, Adu JA, Turpin CA, Obed SA, Adanu RM, Moyer CA. Incidence, causes and correlates of maternal near-miss morbidity: a multi-centre cross-sectional study. *BJOG.* 2019; 126(6):755-62.
14. Shahid A, Rizwan S, Khawaja N. Near miss events frequency and most common causes. *Pak J Med Health Sci.* 2015;9:920-22.
15. Sultana R, Jameel A, Amjad A. Obstetrical Near Miss and maternal deaths at district hospital Karachi, Pakistan. *Pak J Surg* 2014;30(3):272-8.
16. England N, Madill J, Metcalfe A, Magee L, Cooper S, Salmon C, et al. Monitoring maternal near miss/ severe maternal morbidity: A systematic review of global practices. *PLoS One.* 2020;15(5):e0233697.