

## Original Article

**'Back From Beyond' An Audit of Maternal Near Miss Cases****Saima Rafique<sup>1</sup>, Bibi Sameea<sup>2</sup>, Abeera Fatima<sup>3</sup>, Maria Ashfaq<sup>4</sup>, Safoora Anjum<sup>5</sup>, Kainat Javeed<sup>5</sup>**<sup>1</sup>Associate Professor, <sup>2</sup>Senior Registrar, <sup>3</sup>Demonstrator Al-Aleem Medical College, <sup>4,5</sup>Assistant Professor  
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**Abstract****Objective:** The objective of the study is to audit the near miss cases, layer out the outcome in terms of severity, and figure out the interventions to be implemented.**Methodology:** This was a retrospective descriptive study conducted in the Department of Obstetrics and Gynecology university teaching hospital (ULTH) from June 2019 of May 2021. The WHO criteria for near miss cases were used. The data of near-miss cases and mortality cases reviewed on a specially designed proforma. Data was analyzed, frequency and percentage charts were made for data analysis using SPSS version 21.**Results:** There was a total number of 1,873 live births and out of them, 48 (2.56%) cases were of near miss and 2 (0.10%) was maternal mortality. The major causes of near-miss cases were severe preeclampsia (31%), postpartum hemorrhage (22.9%), puerperal sepsis (22%) eclampsia (18.7%) and ruptured uterus (2%). Majority of cases 83% never had no antenatal checkup and belonged to poor socioeconomic class (62.5%). Massive transfusion (29%), invasive ventilation (8%), obstetrical hysterectomy (6%), and renal failure (2%), were among the severe maternal morbidities.**Conclusion:** Maternal-near miss is a good indicator of the obstetric care a woman receives in a healthcare system. Poor socioeconomic status and unable to book for antenatal care were observed to be the near miss contributor. Awareness about the need for a routine antenatal checkup and free medical care can be a solution. This may require commitment at the government level so that every mother can have a safe childbirth experience.**Keywords:** Maternal near miss, maternal mortality, WHO near miss criteria, Eclampsia

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**Introduction**

Near-miss Obstetric morbidity includes all women who have faced severe life threatening complications during pregnancy, childbirth or within 42 days of delivery. Most pathologies in these cases exhibit a series of warning signs and symptoms that, if identified and treated, can result in the cessation of a cascade of severe acute maternal morbidity and mortality. WHO has defined and developed a uniform set of identification criteria for maternal near miss cases.<sup>1</sup> The goal is to make it easier to review these cases in order to monitor and improve the quality of obstetric care. These cases mostly belong to women of poor socioeconomic status and are a call for attention of obstetricians and Gynecologists to spotlight the areas of concern for rectification, and thus helping in reduction of unwanted severe threats to maternal life in tenure of pregnancy, delivery and puerperium. Layering out the pathologies involved in

near miss events can help in determining the factors responsible for them and to assess the quality of healthcare services. The knowledge of near-miss spectrum prevailing in our population will help in planning of targeted preventive programming for the healthcare system. Access to a good quality emergency obstetric care (EmOC) helps to improve the maternal outcome.<sup>2</sup> Reduction in the maternal mortality is an essential component of sustainable developmental goal.<sup>3</sup> MMR has been used by healthcare workers as the standard tool to assess the quality of obstetric services in an area. Later the focus of scale of measurement has been shifted from maternal mortality to near miss cases which is a more valuable indicator of maternal health.<sup>4</sup> Near-miss cases were reported using different criteria in health care facilities across the world which are important and proved helpful in identifying the cascades to maternal near-miss cases and deaths. The criteria used were disease specific,<sup>5</sup> management based

(critical care based),<sup>6</sup> both disease specific and management based combined, and the more specific criteria of organ dysfunction.<sup>7</sup> Establishing the local protocols according to our health care system in accordance with the international guidelines will be more practical. The aim of this study is to evaluate the different types of pathologies involved in Near miss cases and to evaluate their severity by using different outcome parameters in a tertiary care Hospital.

## Methodology

It was a retrospective descriptive study conducted in the department of Obstetrics and Gynecology at the University of Lahore Teaching Hospital (ULTH) Lahore from the period of June 2019–May 2021. The audit does not disclose the identity of any patient, no ethical issue involves this study. ULTH is one of the Hospital affiliated with university college of medicine, a private sector medical college. In this study, all cases after 20 weeks of gestation in all three categories were included. We designed a special proforma using WHO criteria for near miss cases. Patient's characteristics including mode of admission, socioeconomic status, gravidity, parity, referral facility, duration of pregnancy, comorbidities of hypertension, diabetes and any specific points were recorded. Clinical spectrum of pathologies postpartum hemorrhage (uterine atony and placenta previa and morbidly adherent placenta), pregnancy hypertensive disorders (severe preeclampsia and eclampsia), puerperal sepsis (cases of retained placental pieces, dai handled cases) were studied for their severity in terms of parameters of ICU admissions, need of blood transfusions, invasive ventilation, Hemodialysis, MgSO<sub>4</sub> infusions and Obstetric hysterectomy. These patients were managed by multidisciplinary team in level III care involving Consultant Obstetrician, Medical specialist and Hematologist and Intensive care consultant. Urgent lifesaving intervention included magnesium sulfate infusion, massive blood

All the data was collected via self-made study proforma and analysis was done by using SPSS version 26.

## Results

During the study period the total Obstetric admissions were 1873 out of which 13 were in postpartum period (< 7 days). Out of these 1873 cases there were 48(2.56%) near-miss cases and two cases 2(0.10%) of maternal deaths. 818 were elective cesarean sections and 517 were emergency cesarean sections and 485 were vaginal births. The maternal near miss incidence rate

MNM IR =  $48 \times 1000/1873 = 25.6$  per 1000 live births. The maternal near miss to mortality ratio MNM: IMD was 12:1 and the Mortality index was  $2/48 = 0.04$ . Incidence of maternal mortality was 1.06/1000 live births. Most of the cases 40(83.3%) un-booked and 8(16.7%) were booked. Mostly women were multiparous 30(62.5%). Majority of the cases belongs to poor socioeconomic status 33(68.8%). As per causes of the near miss severe pre-eclampsia and puerperal sepsis were commonest 15(31.2%) and 12(25.0%) respectively, followed by PPH 11(22.9%), eclampsia 09(18.8%) and rupture of uterus 01(2.1%). Table I

**Table I: Descriptive statistics of demographic characteristics (n=48)**

Variables	Frequency (%)
<b>Booking status</b>	Booked 8(16.7%)
	Un-booked 40(83.3%)
<b>Parity</b>	Primipara 18(37.5%)
	Multipara 30(62.5%)
<b>Socioeconomic status</b>	Poor 33(68.8%)
	Middle 12(25.0%)
	Upper 03(6.2%)
<b>Causes of near miss</b>	PPH 11(22.9%)
	Eclampsia 09(18.8%)
	Severe eclampsia 15(31.2%)
	Puerperal Sepsis 12(25.0%)
	Rupture of uterus 01(2.1%)

Causes of near miss were statistically insignificant according to socioeconomic status (p=0.622). Table II

**Table II: Causes of near miss according to the socioeconomic status (n=48)**

Causes of near miss	SES			p-value
	Poor	Middle	Upper	
PPH	9	2	1	0.622
Eclampsia	9	2	0	
Severe eclampsia	6	4	2	
Puerperal Sepsis	8	4	0	
Rupture of uterus	1	0	0	
Total	33	12	3	

Summary of Near-miss morbidity according to gestational age, mode of delivery and outcome shown in table III

## Discussion

This study showed the maternal near miss incidence rate MNM IR was 25.6 per 1000 live births. The maternal near miss to mortality ratio MNM:IMD was 14:1 and the

Table III: Summary of Near-miss morbidity according to gestational age, mode of delivery and outcome (n=48)						
Variables	PPH	Eclampsia	Severe PE	Puerperal Sepsis	Rupture Uterus	p-value
ICU Admissions	3	9	6	3	0	0.001
Invasive Ventilation	0	2	1	0	0	
Blood transfusion						
>5	7					
3 to 4	4		6	2	1	0.001
<3	0	2	8	5		
Obstetrical Hysterectomy	3	0	0	0	0	
Hemodialysis			1			0.001
MgSO4	0	9	14	0	0	
Gestational age						
>37 weeks	7	2	3	7	0	
34-37 weeks	3	5	9	4	1	0.001
<34 weeks	1	2	n 3	1	0	
Mode of delivery						
Emergency LSCS	3	7	12	6	1	0.001
Emergency LSCS + Obstetrical Hysterectomy	3	0	0	0	0	
EI LSCS	2	0	0	1	0	
Simple vaginal Delivery	2	1	3	4	0	
Instrumental delivery	1	1	0	1	0	

mortality index was 0.04. The incidence of maternal mortality was 1.06/1000 live births. Both cases of maternal death 2 (0.10%) were due to severe puerperal sepsis. ) 1 of them was dai handled case of Obstructed labor, received with high grade fever and swollen perinium and hot vagina. She underwent an emergency cesarean section, triple regime antibiotic and intensive unit care but she died of severe sepsis. The second case was an Emergency cesarean section due to the previous 2 caesarean section, which were done in periphery, received in labor. There were dense intraoperative adhesions and gut was badly adherent to the rectus and the uterus. Surgeon managed to do adhesiolysis but the gut was injured. Injury recognized and repaired and baby was delivered but in post op period she developed distensions and after 7 days in Intensive care she died of severe sepsis not responding to antibiotics.

Maternal near-miss to mortality ratio and mortality index both show the quality of health care facility. In a recent Pakistani study in Karachi the near-miss incidence was 31.4/1000 live births, which is comparably higher than the local literature. and our study. One of the reasons for less number of near miss-cases was that the government of Pakistan allocated the dedicated medical centers for COVID positive cases, so many cases which were referred due to being positive were not included in the study. In another Pakistani study MNM IR was 52.2/1000 live births and incidence of mortality was 2.9/1000 live births and maternal near-miss to mortality ratio was reported to be 17.7:1 higher as compared to our study which shows maternal near-miss to mortality

ratio of 12:1.8 In an Indian study maternal near-miss to mortality ratio was 7.2:1 and the leading cause of maternal near-miss was hemorrhage (42.5%) and hypertensive disorders of (23.5%).<sup>9</sup> The breakdown of specific diseases in the near-miss cases of our study showed hypertensive disorders severe preeclampsia and eclampsia combined 49%, puerperal sepsis 25%, postpartum hemorrhage 22%. In a Brazilian study of near-miss cases hypertensive disorders of pregnancy were on the top of the list (67.2%),<sup>10</sup> among cases of postpartum hemorrhage (27%) were cases of morbidly adherent placenta and managed successfully by obstetric hysterectomy under direct consultant care. These of cases of postpartum hemorrhage were because of higher order caesarean sections which were complicated by morbidly adherent placenta. The rate of cesarean sections is increasing in all over the world. The morbidity of higher order repeat cesarean sections is greater than lower order repeat cesarean sections.<sup>11</sup> The cases needed invasive ventilation were 6.25%, cases needing more than 5 blood transfusions were 14.5% and 2% cases needed hemodialysis because of renal failure. The cases of maternal death 0.01% were because of puerperal sepsis covering the top of the list of causes of maternal mortality in our study. The unskilled primary health workers giving early obstetric care under septic unhygienic environment and inability to diagnose the warning signs leads to late referral. Septic shock was irreversible in both cases of mortality despite of intensive care. The majority of 62% of near-miss cases involved people with low socioeconomic

status who were unbooked, and they were mostly referred from Lahore's outskirts. Although in the studies Manyahi JR et al<sup>12</sup> Ugwu GO et al<sup>13</sup> and Alemu FM et al<sup>14</sup> found higher mortality rate as compared to this study and this difference may be because of the very small sample size of near miss cases.

Focusing on the causes leading to these unwanted events in obstetrics are because of delays at three levels.<sup>12</sup> In our study the core reason responsible for maternal near-miss cases was found to be the primary delay backed up by illiteracy and unawareness, leading to delay in availing health care facilities. Our hospital was providing care for the poor patients from Zakat funds, but still the undocumented expenses of access to hospital had to be managed by the patients so mostly near-miss cases reported with delay which is secondary delay, inaccessibility to health care due to lack of transport, cost, or socioeconomic issues backed up by poverty.

A number of initiatives have been undertaken in our hospital to improve our response to obstetric emergencies over the last few years. We started surveillance of obstetric patients in outskirts of Lahore and screening the potential near-miss case and providing transport to our hospital and providing treatment under zakat funds, which is a positive initiative. The numbers of doctors in the labour room have been augmented. Teaching standards were revised. Data maintenance was ensured. In addition, caretakers, labour room nurses, and midwives were given additional training at regular intervals. However, a future study will need to quantify the impact of these quality initiatives on obstetric treatment. Being more specific the triple regime antibiotic regime was ensured for cases handled in periphery by untrained birth attendants under septic conditions. Cases of hypertensive disorders from periphery were offered admission and monitoring and safe delivery before sending them back to decrease the chances of being lost to follow up and presenting in complications. This was a single center study, such study conducted in multi center setting may generate better results. Furthermore, because the study was conducted during the COVID pandemic and a large number of patients were referred to government-allocated centers, it does not represent all cases reported to hospitals.

## Conclusion

This study revealed the edge of the rope from where the dilemma starts. Primary delays due to the elements of

lack of awareness in women who suffers plus lack of proper referral system with health care providers capable of picking the early warning signs of high-risk pregnancies. Making protocols, standardizing hospital operating procedures will alone not be sufficient to deal with the misery. Poverty and illiteracy need to addressed to cope up with the situation. Here we also suggest the need of development of intensive care of international standards with 24/7 availability of intensivists other than just the anesthetists covering the intensive care. The intensive care regulated by a team of intensivists is missing in many hospitals of Pakistan and other underdeveloped countries which if covered up may change the maternal sufferings to less as today.

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