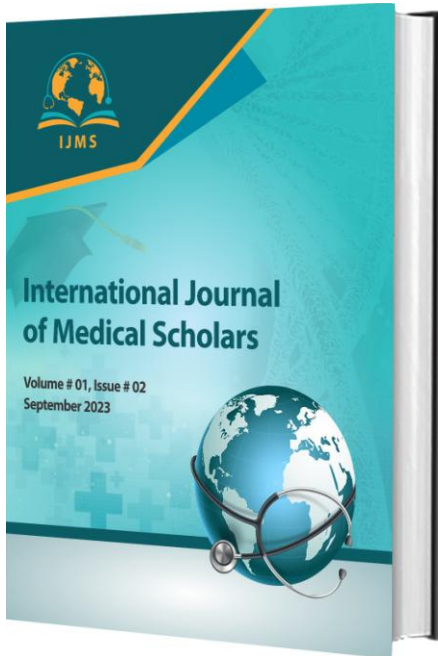


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**Near miss obstetrics events in South
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Original Article

Near miss obstetrics events in South Punjab

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ABSTRACT

Objective: to evaluate the characteristic of near miss obstetrical cases in tertiary care hospital.

Methods: Patients were informed about the study's purpose was explained to patients. The study focused on women presenting with life-threatening maternal complications who met the WHO near-miss criteria, which includes clinical, management-based, and laboratory parameters for identification.

Results: Regarding complications, sepsis and anemia were the most frequent, affecting 32.1% and 29.2% of patients, respectively. Mean hospital duration was 5.51 days, with the majority of patients (3-5 days) falling within this range. Furthermore, the analysis revealed that both surgical procedure and diagnosis acted as confounders for complications.

Conclusion: The near miss concept efficiently uncovers association and similarities among women characteristics who survived pregnancy-related life-threatening complications, with a most of patients reported from rural residential areas.

Keywords: Anemia, Hemorrhage, Obstetrical events, Near miss, Sepsis

1. INTRODUCTION

A "near miss" in pregnancy, also known as a maternal near miss, term used where a woman experiences a severe complication during pregnancy, within 42 days of termination of pregnancy, childbirth, but survives¹. These complications are often life-threatening and require urgent medical attention and intervention to prevent maternal mortality². Some examples of conditions that may result in a near miss during pregnancy include severe hemorrhage (excessive bleeding), eclampsia (seizures), severe sepsis (infection), ruptured uterus, and severe pre-eclampsia (high blood pressure and organ damage)³.

Since its inception around 2015, Millennium Development Goal (MDG) number 5 aimed to enhance maternal health and address related issues⁴, with progress steadily declining in recent years, currently hovering around 75% below the set target for maternal health and mortality⁵.

Severe acute maternal morbidity (SAMM) has been extensively studied as a complement to maternal mortality to assess the quality of obstetrical care in certain institutions⁶, with the quality of healthcare information being estimated through the review of maternal near-miss cases and the ratio of maternal deaths; these cases represent potentially life-threatening conditions, with some women narrowly escaping mortality, resulting in either near-miss events or maternal deaths⁷.

In under developed countries like India and Pakistan, 75%⁸ of women already facing obstetrical complications critically ill upon arrival at tertiary care centers due to delays in seeking healthcare, lack of awareness about warning signs, and insufficient family support. Access to healthcare facilities is further hindered by socioeconomic challenges, exacerbating the

situation⁹. Addressing these issues requires comprehensive training for medical staff at rural and peripheral health centers to effectively manage obstetrical emergencies and near-miss cases¹⁰.

The study could serve as a foundation for further research collaborations aimed at exploring the underlying factors contributing to near miss obstetric events in South Punjab, Pakistan. This could lead to the development of more targeted interventions and strategies to improve maternal and neonatal health outcomes in the region.

2. METHODOLOGY

Patients were explained about purpose of study purpose and provided informed written consent. Ethical approval was obtained from the hospital's ethical board. The study focused on women presenting with life-threatening maternal complications who met the WHO near-miss criteria, which includes clinical, management-based, and laboratory parameters for identification. Data collected included the complications, risk factors, number of live births, and associated with maternal near-miss cases.

The clinical criteria for diagnosing severe maternal morbidity include acute cyanosis, respiratory rates exceeding 40 breaths per minute or falling below 6 breaths per minute, oliguria, gasping, clotting factor, stroke, loss of consciousness, pre-eclampsia, jaundice, and fits. Laboratory criteria encompass Bilirubin levels equal to or greater than 6.0mg/dl, <60% oxygen saturation within 60 minutes, thrombocytopenia in acute time with platelet counts at or below 50,000 platelets, and Creatinine levels equal to or exceeding 3.5mg/dl. Management criteria involve addressing acute renal failure, hysterectomy for infections and PPH, administering

vasoactive drugs, intubating patients for ventilation support, and transfusing at least 5 units of packed red blood cells.

Maternal near miss defined as women who have experienced acute obstetric complications posing a threat to their lives but survived due to hospital care or chance, excluding non-pregnant individuals from the study. Obstetrical indices such as the incidence of maternal near miss (number of near miss cases per 1000 live births), were examined alongside factors including gestational age, socioeconomic status of women, at the time of the event, obstetrical complication type, and duration of hospital stay.

Data analysis was conducted using SPSS version 23, with significance defined as p-values less than or equal to 0.05.

3. RESULTS

In this study involving 106 patients, the mean age was 28.17 years with a standard deviation of 4.91. Notably, 74.5% of the patients, amounting to 79 individuals, hailed from rural areas. The most prevalent diagnoses were eclampsia, antepartum hemorrhage (APH), and postpartum hemorrhage, observed in 35.8%, 18.9%, and 14.2% of cases, respectively. Emergency hysterectomy emerged as the predominant surgical intervention, performed in 60.3% of cases. Regarding complications, sepsis and anemia were the most frequent, affecting 32.1% and 29.2% of patients, respectively. The hospital duration was 5.51 days, with the majority of patients (3-5 days) falling within this range.

Table-I: Study characteristics

Characteristics	Frequency (%)
Residence	
Urban	26 (24.5%)
Rural	80 (75.5%)
Diagnosis	
Membrane Rupture	13 (12.2%)
Eclampsia	37 (34.9%)
APH	19 (17.9%)

PPH	16 (15%)
Sepsis	7 (6.6%)
Ectopic	7 (6.6%)
Medical illness	6 (5.6%)
Labor related problem	2 (1.8%)
Type of Surgical	
Hysterectomy in emergency	63 (59.4%)
Laparotomy	12 (11.3%)
Hysterectomy	19 (17.9%)
EUA	6 (5.6%)
SVD	7 (6.6%)
Complication	
Anemia	30 (28.3%)
Sepsis	35 (33%)
CVA	11 (10.3%)
Aspiration	6 (5.6%)
Liver injury	9 (8.4%)
Bladder injury	10 (9.4%)
Antennal failure	6 (5.6%)
Hospital stay	
2-3 days	18 (16.9%)
3-5 days	42 (39.6%)
5-7 days	26 (24.5%)
>7 days	20 (18.8%)

Table-II: Associated complications

Effect modifier		Complications						Total	P-value	
		Anemia	Sepsis	CV A	Aspiration	Liver damage	Bladder injury			Antennal failure
Area	Urban	11	7	2	1	2	1	3	27	0.573
	Rural	20	27	8	6	6	8	4	79	
Diagnosis	Rapture membrane	11	0	0	0	0	0	0	11	0.000
	Eclampsia	12	18	8	0	0	0	0	38	
	APH	0	4	2	3	6	5	0	20	
	PPH	2	4	0	2	0	2	5	15	
	Sepsis	3	3	0	0	0	0	0	6	
	Ectopic	1	4	0	1	0	1	1	8	
	Medical problem	0	0	0	1	2	1	1	5	
	Labor related problem	2	1	0	0	0	0	0	0	
Surgical Procedure	Emergency Hysterectomy	16	15	10	5	6	7	5	64	0.003
	Laparotomy	10	1	0	0	0	0	0	11	
	Obstetrical Hysterectomy	4	8	0	2	2		2	20	
	EUA	1	4	0	0	0	0	0	5	
	SVD	0	6	0	0	0	0	0	6	
	2-3 days	5	7	2	2	1	0	0	17	
Hospital stay	3-5 days	11	13	5	3	3	5	3	43	0.715
	5-7 days	11	5	1	1	3	3	1	25	
	>7 days	4	9	2	1	1	1	3	21	

4. DISCUSSION

The study was conducted in the South Punjab region of Pakistan, characterized by limited healthcare facilities and low education rates. Quality of care was assessed by evaluating complications and near miss cases, with the study taking place in a tertiary care hospital with well-managed high-risk wards and ICUs. Typically, less than 10% of near miss cases necessitate admission to intensive care units or high dependence unit, with admission criteria based on recommended guidelines or hospital policy¹¹.

In this study, sepsis was 34% of patients and anemia in 31% of patients observed as the primary complications associated with maternal near miss (MNM), contrasting with the findings of Naik et al¹², whose study identified hypertensive disorders and hemorrhage as the main complications. However, irrespective of the specific complications, remedial therapy, early identification, and timely treatment remain important factors in improving patient outcomes in potentially life-threatening conditions.

Another study conducted by Jayarathnam et al¹³ on a population from a developed country reported that postpartum hemorrhage, sepsis, PPH and pre-eclampsia, are the major complications that lead to maternal near miss. Concordance of this study with shows that the Australian population has three times fewer near miss cases compared to the Pakistani population. Difference may be attributed to factors such as better healthcare facilities, improved awareness about antenatal care, and higher socioeconomic status.

According to a study by Shrestha et al¹⁴ the near miss prevalence cases was

found to be 2.3%, with hemorrhage accounting for 41.6%, dystocia for 2.7%, and 19.4% for sepsis of these cases; the study underscores the necessity of implementing an effective audit system to mitigate both near misses and maternal morbidity and mortality, defining near miss cases as those instances where individuals narrowly avoid potentially life-threatening conditions.

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Ali et al¹⁶ conducted a study in Sudan, which revealed that low healthcare facility accessibility and inadequate care levels, compounded by a unawareness in antenatal care and follow up, are the primary issues. Hemorrhage emerged as the predominant complication, accounting for 40.8% of near-miss cases, followed by sepsis or infection at 21.55%. Adisasmita et al¹⁷ study on the Indonesian population echoed these findings, highlighting deficiencies in patient care and healthcare facility availability.

A paradigm shift in maternal health care strategy has been globally observed, with a WHO survey conducted in the 1990s and again in 2011 showing an increase in the presence of skilled health personnel from 58% to 68%¹⁸. Additionally, a study conducted by Mustafa R et al¹⁹ in 2006 on the Pakistani population reported that among women facing life-threatening conditions, one out of every seven succumbed, with the

most common events being hemorrhage (51%), anemia (21.1%), and dystocia (14.8%).

Limitations: The study may only capture near miss events within a specific time frame, potentially missing fluctuations or trends in near miss obstetrics occurrences over a longer period.

5. CONCLUSION

The near miss concept efficiently uncovers association and similarities among women characteristics who survived pregnancy-related life-threatening complications, with a most of patients reported from rural residential areas, where literacy rate and socioeconomic status play significant roles. Anemia and sepsis emerged as the leading complications of maternal death and near miss events, mirroring observations from previous Pakistani reports, indicating a consistent underlying disease process.

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