RISK FACTORS OF MATERNAL NEAR MISS AMONG FEMALES: A SYSTEMIC REVIEW

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ABSTRACT

Background: Maternal near-miss (MNM) is a critical indicator for evaluating maternal healthcare quality, reflecting cases where women survive life-threatening obstetric complications. This review aimed to identify the leading risk factors associated with MNM based on recent global observational studies. **Methods:** A systematic search was conducted across PubMed, Scopus, Web of Science, and Google Scholar for studies published between 2020 and 2024. Observational studies assessing maternal near-miss and its risk factors using WHO or similar criteria were included. A total of 30 studies were reviewed from diverse settings, including low-, middle-, and high-income countries. **Results:** Hypertensive disorders (n=25 studies), obstetric hemorrhage (n=21), lack of antenatal care (n=18), and socio-demographic disadvantages such as rural residence and poor education (n=15) emerged as the most frequent risk factors. Additional contributors included anemia (n=14), previous cesarean section (n=12), and delays in accessing care. Protective factors identified were timely antenatal visits, spontaneous labor, and quality hospital-based multidisciplinary care. **Conclusion:** MNM remains highly prevalent, especially in LMICs, with preventable factors playing a dominant role. Targeted public health interventions to improve antenatal care coverage, early risk identification, and emergency obstetric services are essential to reduce the burden of MNM and improve maternal outcomes.

INTRODUCTION

A "maternal near-miss (MNM)" denotes to the circumstances when a woman nearly dies but survives, experiences the problem during pregnancy, during delivery or in 42 days after the end of the pregnancy [1].

The global incidence of MNM at 18.67, 3.10 per 1000 in Europe and 16.92 per 1000 in Asia [2]. There was a large risk of MNM events developing toward mother mortality. therefore, WHO method of monitoring MNM would be greatly helpful [3]. Pakistan, reported 186 maternal mortality ratio (MMR) for every 100,000 live births in 2019, a 32% increase in MMR of 140 deaths in 100,000 live births in 2017 [4]. MNM take place 20 times more than actual maternal death and affect maternal health in wide ways reaching up to severe Maternal Morbidity [5].

Maternal education, educational attainment, socioeconomic level, distance from healthcare facilities, time to get care, residential area, referrals from other health facilities, inadequate prenatal care (ANC) use, a history of complicated labor and past cesarean sections are among the many factors connected to MNM [6]. The socioeconomic factors continue to have a huge impact on women's approach to care facilities. Even in most countries with free medicine, there are remarkable differences in the use of medicines especially among mothers and their offspring's [7]. Women suffering from life threatening diseases also sometimes experience delays while moving towards advanced medical attention. The absence of medico-logistical infrastructure in under-developed countries is a big problem. Limited reference systems and quality of treatment facilities is an obstacle to access to care [8].

The data regarding MNM prevalence is quite inconsistent, such as, a study from Malaysia reported a prevalence of "**1.68%**" [9], while a study from Ethiopia documented a much higher rate of "**28.7%**" [10]. Similarly, the risk factors associated with MNM also differ significantly between studies. Prevention and treatment of MNM rely on a functional and accessible healthcare. Thus, the identification of variables during pregnancy and delivery may be critically important for preventing mother death. This systematic research tried to discover pre-determinant socio-economic, demographic and obstetric traits signifying MNM among women aged 15–49 in Pakistan.

METHODS

Search Strategy

The PubMed, Scopus, Web of Science, and Google Scholar databases were systematically searched for relevant studies published online from 2020 to 2024. The search strategy focused on 2 key words or phrases: ("maternal near miss" AND (risk factors or determinants). In addition to database searches, the **reference lists of selected articles** were manually screened to identify additional eligible studies. The full-text articles were read to confirm eligibility and to collect relevant information from the selected abstracts. Only articles written in English were included in this study. The reasons for exclusion criteria are listed in the PRISMA flowchart.

Key risk factors identified included:

Hypertensive Disorders, Maternal Infections, Socio-demographic Factors (Rural Residence, Lack of Education) Age: Younger women, particularly those under 20 years of age, and older women above 35 years had higher odds of MNM. Inadequate Antenatal Care: Women with inadequate or no antenatal care visits had a significantly higher risk of experiencing MNM, History of c-section, Anemia, Previous stillbirth and Delayed hospital arrival

ELIGIBILITY CRITERIA

Inclusion criteria:

- Studies that reported on maternal near miss based on WHO criteria or similar definitions.
- Studies identifying risk factors associated with MNM.
- Studies from both high- and low-income countries.

Exclusion criteria:

- Studies focusing only on neonatal/maternal deaths or unrelated maternal health conditions.
- Case reports, commentaries, and non-peer-reviewed articles.
- did not apply WHO maternal near miss definitions.

Data Analysis:

Based on the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) checklist, [11] this study was designed to review the body of the available literature on MNM published from 2020-2024. We have searched the electronic databases including PubMed, Scopus and Web of Science and manually checked references of the identified relevant papers. Data from the included studies were extracted and synthesized using a narrative approach due to the heterogeneity in study designs, populations, and outcome measurements. Key maternal risk factors for near-miss events were identified based on their frequency of occurrence across the 30 selected observational studies. Each study was reviewed for reported associations between specific clinical, obstetric, and socio-demographic variables and maternal near-miss cases, as defined by WHO or similar criteria. Recurring patterns were noted, and the most commonly reported risk factors were ranked according to how frequently they appeared across studies.

RESULTS

This systematic review included 30 observational studies published between 2020 and 2024, conducted across diverse settings including Ethiopia (10 studies), India (6), Pakistan (2), China, Bangladesh, Turkey, Malaysia, Ghana, Somalia, and multi-country analyses from LMICs. The prevalence of maternal near miss (MNM) varied significantly, ranging from 1.68 to 140 per 1,000 live births. Hemorrhage and hypertensive disorders emerged as the leading causes of MNM, identified in 25 and 24 studies, respectively. Severe anemia was reported as a contributing factor in 10 studies, while sepsis and infections were mentioned in

8 studies. Uterine rupture and unsafe abortion were less commonly noted but still significant in 4 and 3 studies, respectively. Socio-demographic risk factors were frequently reported: rural residence was associated with increased MNM in 14 studies, and low maternal education in 12 studies. Maternal age extremes, particularly age below 20 or above 35—were linked to MNM in 10 studies. Obstetric history, such as prior cesarean section, was identified as a risk factor in 9 studies, while a history of stillbirth was reported in 5. Anemia was found to be a major contributor in 10 studies. Notably, inadequate or absent antenatal care (ANC) was a consistent predictor, reported in 20 studies. Health system-related delays, especially delay in reaching or receiving care, were highlighted in 15 studies.

On the other hand, protective factors such as regular ANC attendance were mentioned in 18 studies. Use of the partograph during labor was considered beneficial in 4 studies, while access to emergency obstetric care, timely referral, and multidisciplinary care were emphasized in at least 10 studies. Some studies from low-resource settings also highlighted spontaneous labor, maternal education, and proximity to care facilities as protective against severe maternal complications. The cumulative evidence strongly indicates that both clinical and systemic determinants play a critical role in the occurrence and prevention of maternal near-miss events globally.

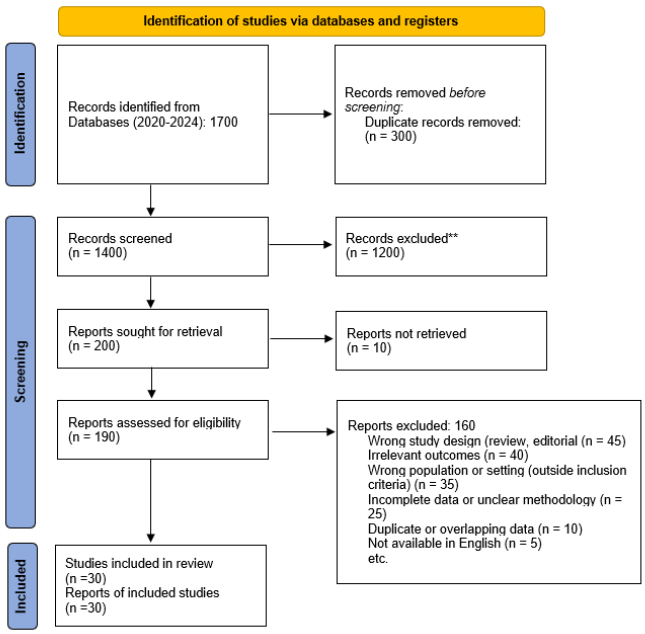

Fig-1: Flow diagram showing the procedures of selecting studies for systemic review of the Maternal Near-Miss Risk Factors Across 30 Studies (2020–2024)

Table-1: Summary of Maternal Near-Miss Risk Factors Across 30 Studies (2020–2024)

No.	Study Location	Prevalence of MNM	Leading Causes	Significant Risk Factors	Protective Factors
1	Hunan, China [12]	3.37 per 1000 live births	Hematological dysfunction	Advanced age, nulliparity, <5 ANC visits, C-section history	Antenatal care
2	LMICs (Bauserman et al.) [13]	N/A	Hemorrhage, hypertensive disorders	High parity, age >35, no education	Spontaneous labor
3	Ghana [14]	34.2 per 1000 live births	Hypertensive disorders, Hemorrhage	Fever, delay, referred care	Spontaneous labor
4	Africa (Meta-analysis) [15]	73.64 per 1000 live births	PPH, Hypertensive disorders	Rural residence, low income, ANC absence	ANC attendance
5	Sub-Saharan Africa [8]	N/A	Severe maternal complications	Low SES, rural residence, referral delays	Education, ANC
6	Ethiopia (Hawassa) [16]	16.1%	Hypertensive disorders	Rural, referral, stillbirth, delay	Facility readiness
7	Ethiopia (Meta-analysis) [17]	54.33 per 1000 live births	Hemorrhage, Hypertensive disorders, Infections	Poor ANC, previous C-section	ANC visits
8	Ethiopia (Bale Zone) [10]	28.7%	Hemorrhage, Infection	Early marriage, low husband's education	Community awareness
9	Ethiopia (National Review) [6]	12.57%	N/A	Rural, unmarried, uneducated	ANC attendance
10	Ethiopia (2023 Meta-analysis) [18]	140 per 1000 live births	Hemorrhage, Hypertensive disorders, Anemia	No ANC, anemia, chronic disease, C-section	ANC, early intervention
11	West Shoa, Ethiopia [19]	N/A	N/A	No ANC, >60 min distance, illiteracy	ANC, proximity to care
12	North Shewa, Ethiopia [20]	14.3%	Preeclampsia, PPH	Non-use of partograph, abortion history	Early monitoring
13	Nekemte, Ethiopia [21]	4.97%	Hypertensive disorders, PPH	Multigravidity, delay, labor induction	Timely delivery care
14	Gondar, Ethiopia [22]	15.8%	Bleeding, PIH	Low income, long hospital stay	-
15	Pakistan [23]	N/A	Hemorrhage, Hypertensive disorders	Rural, unbooked, multiparity	Facility access
16	26 MICs (Systematic Review) [24]	Median 15.9 per 1000 live births	Hemorrhage (LMIC), Hypertensive disorders (UMIC)	Regional criteria disparities	-

17	Somalia [25]	N/A	Anemia, Preeclampsia	Rural, young age, no ANC	ANC, education
18	Malaysia [9]	1.68%	Hemorrhage	C-section history	Young age
19	Malawi [26]	N/A	Hypertensive disorders, Uterine rupture	Age 31–35, emergency C-section	-
20	Ethiopia [27]	N/A	Severe Preeclampsia, PPH	Delivery at referral, education level of husbands, ANC visit, c-section	Young age
21	New Delhi, India [28]	3.25 per 1000 live births	Hemorrhage, Hypertensive disorders	High maternal mortality index (71.95%), requiring ICU/HDU care	Need for simplified MNM identification tools for frontline workers in low-resource settings
22	Turkey [29]	2.04 per 1000 live births	Hypertensive disorders (gestational hypertension, preeclampsia, HELLP), Hemorrhage, Cardiovascular disease, Diabetes	Hypertensive disorders (42% gestational hypertension, 40% preeclampsia), Cardiovascular disease (18%), Diabetes (14%)	Timely management, early identification, multidisciplinary care
23	Bangladesh [30]	6.8 per 1000 live births	Hypertensive disorders (52.3%), Obstetric hemorrhage (31.8%), Cardiopulmonary dysfunction (15.9%)	Hypertensive disorders, Obstetric hemorrhage	C-section delivery, MNM surveillance, maternal mortality reviews, evidence-based care
24	Bhopal, India [31]	10.16 per 1000 live births	Hemorrhage (47.61%), Hypertensive disorders (28.57%)	Majority aged 18-25 years, rural backgrounds, adverse perinatal outcomes (preterm birth, stillbirth)	Need for improved maternal health services in rural areas to reduce maternal mortality
25	Meerut, India [32]	12 per 1000 live births	Hemorrhage, Hypertensive disorders, Sepsis, Severe anemia	High severe maternal outcome rate, need to strengthen peripheral referral centers, obstetric HDUs	Timely blood availability, training of multidisciplinary teams

26	India [33]	18.76 per 1000 live births	Hypertensive disorders, Obstetric hemorrhage, Anemia	Late trimester presentation, multiparity, low education, poor awareness	Maternal education, early risk identification, quality critical care
27	India [34]	N/A	Hypertensive disorders (42.2%), Obstetric hemorrhage (30.79%), Severe anemia (11.42%), Sepsis (9.52%)	Sepsis had the highest mortality index (14.28%)	Early detection and management of hypertensive disorders, hemorrhage, anemia, and sepsis
28	West Bengal, India [35]	N/A	Obstetric hemorrhage (47.5%), Eclampsia/Preeclampsia (29.5%)	Anemic teenagers, multigravidas, rural, low-education backgrounds, poor antenatal care	Early screening, timely referral to reduce preventable maternal complications
29	Arsi Zone, Ethiopia [36]	34.4% prevalence rate	Hypertensive disorders (35%), Obstetric hemorrhage (35%), Ruptured uterus (11%), Unsafe abortion (8%), Obstructed labor (7%), Sepsis (4.5%)	Lack of ANC visits, delayed care-seeking, delayed reaching facilities	Improved ANC coverage, enhanced emergency obstetric services, timely care-seeking
30	Lahore, Pakistan [37]	28.4 per 1000 live births	Hemorrhage (49.2%), Hypertensive disorders (33.4%), Cardiac disease (8.3%), Infection (4%)	Unbooked patients, higher mortality, delays in care	Timely care, addressing first and second delays, massive blood transfusion, hysterectomy, ICU admission

DISCUSSION

This systematic review points out which aspects are most closely linked to a maternal near miss (MNM). Using the WHO near-miss approach, a latest study from china found that MNM made up just 3.37% of cases. The factors were a mother aged 30 or more, not married, multiple pregnancies, never had a child, high parity (≥3), fewer than five visits to the doctor during pregnancy, and a prior cesarean delivery [12]. Similarly, Bauserman et al. (2020) observed that increased rates of mothers dying were mostly related to risks such as being over 35, not being educated, having no children or too many, and challenges during labor, severe bleeding before delivery, and high blood pressure during pregnancy [13]. In contrast, research from 3 tertiary

hospitals in southern Ghana showed that the prevalence of MNMs was 34.2 every 1,000 births. Of all cases, MNM was most often caused by hypertensive diseases (41%), followed by hemorrhage (12.2%), sepsis (11.1%), and uterine rupture (4.2%) [14]. Another study from Africa revealed that MNM causes were heavy post-childbirth bleeding and difficulties with high blood pressure. People living in rural areas, lacking money or education, who received poor prenatal care, lived far from medical centers, obtained treatment late, had a previous cesarean birth, and had pre-existing illnesses were discovered to be at high risk [15].

In sub-Saharan Africa, a systematic review highlighted certain obstetric, demographic, and economic aspects of fatal motherhood problems; MNM and this problem was significantly linked with economic status, type of education, mother's age, rural location, delays in seeking help, and healthcare inequality [8]. In the same manner, another study from Ethiopia found that MNM cases account for 16.1% of births at that hospital. Half of the cases were hypertensive. Living in a rural area (AOR: 4.2), having referred from another institution (AOR 5.5), history of a stillborn fetus (AOR 10.2), and delayed admission to the hospital (AOR 4.8) were linked to MNM [16].

Another analysis included 43 studies from Ethiopia with a total of 77,240 MNM cases, calculating a pooled prevalence of 54.33 per 1,000 live births. Obstetric blood loss accounted for 14.56 cases out of 1000, hypertension caused 12.67, and 3.55 of every 1000 resulted from infections during pregnancy [17]. Similarly, from October 2018 to February 2019: a study in the Bale zone of Southeast Ethiopia with 300 women found that 28.7% had experienced MNM. Factors in these cases included being young, getting married young, having minimal education among partners, and living in a rural area [10]. Additionally, another meta-analysis in Ethiopia calculated using 98,268 women from eleven studies that the pooled prevalence of MNM was "12.57%". The 67% (OR=0.33) odds of maternal near misses was greatly mitigated by attending antenatal care. Conversely, factors associated with higher odds of a MNM included rural area of residence (OR=2.7), lack of formal schooling (OR=2.48), and being unmarried (OR=1.69) [6].

Also, a recent review from Ethiopia revealed pooled prevalence of MNM of 140 per 1,000 live births (95% CI: 80, 190) as of March 2023. Such factors like lacking formal education (AOR=2.10), lack of prenatal care (AOR=2.18), previous Caesarean section (AOR=4.07), Anemia (AOR=4.86), and the presence of chronic medical conditions (AOR=2.41) shaped defined MNM in Ethiopia [18]. Danusa's comprehensive unmatched case-control study in Ethiopia's found notable correlations between MNM and variables including advanced mother age, insufficient education, lack of prenatal care, a prolonged delay in seeking care (first delay exceeding 6 hours), and residence more than 60 minutes from a healthcare facility. For those who received no prenatal care (AOR = 2.25) and for those who had significant delays in seeking or receiving care (AOR = 4.02 for distances over 60 minutes), the likelihood also rose [19].

Another case-control study of Ethiopia's North Shewa Zone revealed that the main causes of MNM were pre-eclampsia (49.5%) and postpartum hemorrhage (28.3%). Key predictors included mother education (AOR = 4.80; 95% CI: 1.78–12.90), partner's education (AOR = 5.26; 95% CI: 1.46–18.90), referred from another facility (AOR = 4.73; 95% CI: 1.78–12.55), antenatal care visits (AOR = 2.75; 95% CI: 1.13–6.72), c-section (AOR = 3.70; 95% CI: 1.42–9.60), and medical disorders during pregnancy (AOR = 12.06; 95% CI: 2.82–51.55). A younger mother's age correlated with a protective effect (AOR = 0.26; 95% CI: 0.09–0.75) [27].

Another cross-sectional study in Central Ethiopia found MNM prevalence to be "14.3%" (95% CI: 11.9–16.6). Severe preeclampsia (31%), and postpartum hemorrhage (26%), were the two major complications. Birth at referral (AOR = 4.85) or general hospitals (AOR = 3.76), absence of partograph use during labor (AOR = 1.89), prior abortion history (AOR = 2.52), and other pregnancy related issues (AOR = 6.91) were the notables risk factors [20]. Likewise another study found a MNM rate of 4.97%. The main causes were hypertensive disease (40.9%), and obstetric blood loss (39.3%). Important factors were multigravidity (AOR = 3.84), absence of prenatal care (AOR = 6.02), delays in entering the institution (AOR = 12.00), and labor induction (AOR = 9.40) [21].

Using WHO MNM criteria, another cross-sectional study found a "15.8%" MNM percentage (95% CI: 11.9–20.1%). Income per month of ≤1000 ETB (AOR = 3.99; 95% CI: 1.65–9.65), a hospitalization of ≥7 days (AOR = 5.43; 95% CI: 2.49–11.6, vaginal bleeding (AOR = 2.75; 95% CI: 1.17–6.7, PIH (AOR = 5.13; 95% CI: 2.08–12.6) [22]. Similarly, the main causes of MNM events were bleeding (44.2%) and hypertension disorders (35.1%), according to cross-sectional research done at Liaquat University Hospital in Hyderabad/Jamshoro, Pakistan. Most of the cases involved non-scheduled, villagers, multipurous females between the ages of 26 and 30, who most needed acute care [23].

Using the WHO criteria, a thorough analysis of data from 69 studies reported that in lower-middle-income countries the MNM ratio for every 1,000 live births was "15.9" (IQR: 8.9–34.7); in upper-middle-income countries it was "7.8" (IQR: 5.0–9.6). In lower-middle-income countries, obstetric hemorrhage dominated the cause; in upper-middle-income countries, hypertension problems were more common [24]. Recent studies conducted in Mogadishu, Somalia, identified pre-eclampsia, severe Hb deficiency, and antepartum blood loss as important factors. Living in rural area (OR = 2.685), short intervals in birth (OR = 5.922) and postponements in seeking medical attention (OR = 1.773), lower age of mother (OR = 2.728), absence of formal education (OR = 2.829), and non-participation in prenatal care (OR = 2.686) were the main significant risk factors for mother and newborn mortality [25].

Severe mother morbidity (SMM) was also found in Malaysia to be 2.45% (95% CI: 2.03, 2.89) and MNM to be 1.68% (95% CI: 1.42, 1.95). Significant risk factors for SMM were a prior c-section (OR = 1.63, 95% CI: 1.43, 1.87), less maternal age (OR = 0.71, 95% CI: 0.60, 0.83), concurrent medical problems (OR = 1.51, 95% CI: 1.28, 1.78), and preterm birth (OR = 0.14, 95% CI: 0.08, 0.23). In MNM, earlier c-section was found to be independent risk factor (OR = 2.68, 95% CI: 1.41, 5.10) [9].

A case-control study carried out in Malawi showed that female of 31–35 years old showed increased incidence of MNM (OR = 3.14; 95% CI: 1.09–9.09) but emergency cesarean delivery (OR = "4.08"; 95% CI: 2.34–7.09) and laparoscopic surgery in case of uterine rupture (OR = "83.49"; 95% CI: 10.49–664.55) were considerably predictive of MNM [26]. Investigating the clinical profile and incidence of MNM cases at a tertiary care hospital in New Delhi reveals a MNM ratio of "3.25" for every one thousand live births and a notable death rate of 71.95%. The main causes were hemorrhage and hypertension disorders of pregnancy [28]. Using WHO criteria, Tonyali et al. conducted a retroactive study in Turkey. With hypertension disorders—comprising gestational hypertension ("42%"), pre-eclampsia ("40%"), and HELLP syndrome ("14%"), followed by hemorrhagic complications and medical conditions including heart related conditions (18%), and diabetes mellitus(14%), most MNM events occurred antenatally (46%), or intrapartally (34%) [29].

Another observational study was conducted in Bangladesh, sought to With 44 MNM and 13 mother deaths (MD), among 8976 admissions, the MNM ratio was 6.8 for every one thousand live births and the MNM to MD ratio was 3.4:1. Hypertensive diseases (52.3%), obstetric hemorrhage (31.8%), and cardiopulmonary dysfunction (15.9%), were the main causes of MNM. With a few needing laparotomy or peripartum hysterectomy, cesarean section (73%) was used to treat most MNM patients [30]. Another study in Bhopal stated that an MNM ratio of 10.16 for every one thousand live births and a mother death to MNM ratio of 1:2.17 the statistics show a significant burden of severe mother morbidity. Affected women most typically came from rural backgrounds (55.5%) and fell between the ages of 18 and 25 (58.73%). Hemorrhage (47.61%), and hypertension disorders (28.57%) were observed to be main factors behind MNM [31].

Over one year, a retrospective study conducted in Meerut, Uttar Pradesh, sought to evaluate MNM events and compare them with mother mortality. Of 4,360 deliveries and 4,333 live births, 79 women experienced life-threatening complications—52 classified as MNM. Hemorrhage and hypertension were considered as main culprit; followed by sepsis and severe anemia [32]. In addition, in India a retrospective study reported that there were 164 events of MNM and 24 mother deaths, so producing an MNM incidence ratio of 18.76 per 1,000 live births, an MNM to mortality ratio of 6.8:1, and a death index of 12.7% [33].

Another retrospective observational study documented that of 36,366 births, 315 cases of MNM were found; the main cause was hypertension (42.2%), followed by obstetric hemorrhage (30.79%), severe anemia

(11.42%), and sepsis (9.52%). With a death rate of 14.28%, septic had the strongest correlation with lethal consequences [34]. Whereas in West Bengal using another study stated that together with a 2.1% prevalence of ICU admissions in gynecological cases patients, the MMR was "2.25". While eclampsia and pre-eclampsia (29.5%) and hemorrhage (20.5%) were the main causes of death, obstetric hemorrhage (47.5%) was the main cause of MNM [35]. Determined to be 34.4% [95% CI: 29.2–39.8], the rate of MNM in Ethiopia's public hospitals in the Arsi Zone indicates a noteworthy load of severe maternal issues. Hypertensive diseases (35%), obstetric hemorrhage ("35%"), ruptured uterus ("11%"), unsafe abortion ("8%"), obstructed labor ("7%"), and sepsis ("4.5%") followed in order of main direct causes [36]. Examining local prospective cross-sectional data at Services Hospital, Lahore (2016–2018) revealed 29 mother deaths among 10,739 live births and 305 MNM events. With a near-miss ratio of 1:10.5 and an MNM frequency of 28.4 for every one thousand live births, the mother mortality was rather low. The main causes were hemorrhage (49.2%) and hypertension disorders (33.4%), then heart disease (8.3%) and infection (4%). Most patients—62.5%—were unscheduled and showed a rather high death rate ($p<0.001$) [37].

The findings of this assessment complement earlier researches performed in other low- and middle-income countries, where bleeding and hypertension diseases dominated causes of mother morbidity. This study offers new perspectives on the important impact of socio-demographic factors, predominantly in rural zones with inadequate approach to care facilities. LMIC healthcare systems have to be equipped to handle obstetric crises, and women should be driven to get quick medical attention.

CONCLUSION

Maternal near miss is a major public health concern that disproportionately impacts women in low- and middle-income countries. Key risk factors include hypertensive disorders, obstetric hemorrhage, and maternal infections, with socio-demographic factors like rural residence and low education levels exacerbating the risk. Strengthening maternal healthcare, improving antenatal care access, and addressing socio-economic disparities are vital steps to reduce maternal morbidity and improve outcomes globally.

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