Original Article

A Seven Year Analysis of Maternal Mortality at Bolan Medical Complex Hospital, Quetta

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Abstract

Objectives: To find out the maternal mortality rate and analyze various causes of maternal mortality at Bolan Medical Complex Hospital, Quetta.
Methodology: A retrospective study was conducted, analyzing the medical records of maternal deaths for a seven year period from January 2014 to December, 2020 in Obstetrics and Gynaecology Unit II of Bolan Medical Complex Hospital Quetta. Results were calculated in terms of percentage and frequency by using simple descriptive statistics and analyzed by using Microsoft Excel 13.
Results: Out of 58,374 live births, there were a total of 122 maternal deaths, resulting in a maternal mortality ratio of 209 per 100,000 live births. 48.4% women were between age of 26 to 30 years while 42% were above 35 years. Grand multipara and multipara were 50.8% and 37.7% respectively. 42% women were vaginally delivered while cesarean section or laparotomy performed in 38.5%. Undelivered cases were 17.2%. Hospital stay was less than 12 hours of 53.3 % women and 13 % were dead on arrival. Obstetrical haemorrhage, preeclampsia/eclampsia, and sepsis were the most frequent direct causes of maternal death, accounting for 46%, 13%, and 8.1% of all cases, respectively. With regard to indirect causes pulmonary embolism, anesthesia complications, medical disorders contributed 7.4% each.
Conclusion: Hemorrhage, eclampsia and sepsis are the major causes of maternal deaths in our setup. It can be preventable by good antenatal care, improving the basic health facilities, family planning services, and proper referral system. The high percentage of indirect causes of maternal deaths are also an alarming situation should be considered seriously.
Keywords: Maternal mortality, obstetric hemorrhage, eclampsia, direct and indirect causes.
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Introduction

According to the World Health Organization, maternal mortality refers to the death of a woman from any cause connected to or aggravated by pregnancy or its management, but not from accidental or incidental causes, during pregnancy, childbirth, or within 42 days of termination of pregnancy, despite of the site and time of the pregnancy. [1]

Globally, the maternal mortality rate fell from 385 in 1990 to 216 per 100,000 live births in 2015[2]. The sustainable development goal target 3.1 aims to reduce the global maternal mortality rate to less than 70 /100,000 live births by 2030, with no individual country exceeding an MMR of 240/100,000 live births.[2]

Pakistan is the 6th most populated country in the world and is ranked 53rd in the list of countries contributing towards high MMR.[3] According to the most recent report on the maternal mortality survey of Pakistan, a national wide survey of Pakistan, the maternal mortality rate is 186 deaths per 100,000 live births and this ratio is 26% higher in rural areas as compared to urban areas.[3]

According to the survey, Punjab has the lowest MMR (157 per 100,000 live births) and Baluchistan has the highest (298 per 100,000). [3] WHO estimates that half a million women die annually from pregnancy related deaths and 99% of these deaths occur in developing countries. The majority of these deaths are preventable.[1] According to the WHO, haemorrhage, hypertensive disorders of pregnancy, sepsis, and obstructed labour

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account for more than 70% of all maternal deaths.[4] The common causes of mortality are poverty, inaccessible healthcare, low status of women and illiteracy.[5] Our institute is a tertiary care hospital located in Quetta which is the main referral hospital of the province as well neighboring countries like Afghanistan. The purpose of this study was to determine the maternal mortality ratio at a tertiary care hospital and to identify various causes and factors leading to maternal mortality. So, suggestions can be given to strengthen the existing health system to reduce maternal mortality in our set up.

Methodology

From January 2014 to December 2020, this retrospective study was carried out at the Gynaecology and Obstetrics Department Unit II, Bolan Medical Complex Hospital Quetta. Data were collected from records of labor room admission and delivery registers, operation theatre registers, and case files. All the women who presented in the emergency room and died during pregnancy and childbirth or within 42 days of termination of pregnancy, regardless of site and time of pregnancy, were included in the study, and those who died accidentally were excluded from the study.

This data was analyzed with respect to age, parity, hospital stay, mode of delivery and direct and indirect causes of maternal death. Approval of the study was taken from the ethical review committee of BMC Hospital. Results were calculated in terms of percentage and frequency by using simple descriptive statistics and analyzed by using Microsoft Excel 13.

Results

Throughout the seven-year research period, there were a total of 122 maternal deaths and 58,374 live births. So, the maternal mortality ratio during the study period was 209 per 100,000 live births. 48.4% of women (n=59) were between the ages of 26 to 35 years, while 42% (n=51) were above 35 years, and 9.8%(n=12) were below 25 years of age. According to parity of the women 50.8% (n=62) were grand multipara, 37.7% (n=46) were multipara and 11.5% women (n=14) were nulliparous as shown in table I. 42%(n=51) women (n = 51) were delivered vaginally, in which 3 were instrumental deliveries. Caesarean section or laparotomy were performed in 38.5% (n=47) of the cases, while 17.2% (n=21) were undeliverable. Evacuation done in 3 women (2.5%) (Table II) Hospital stay was 6 hours or less for 31% women, 6 to 12 hours for 22% and more than 12 hours in 34% of women, while 16 women were dead on arrival (13%) as shown in table III. The most common direct causes of maternal mortality were obstetrical hemorrhage 46% (n=56), preeclampsia/eclampsia in 13 %(n=16) and sepsis 8.1% (n=10). With regard to indirect causes anesthesia complications, medical disorders and pulmonary embolism contributed 7.4% each. One patient died due to Covid 19 (figure 1)

Table I: Demographic data of patients (n=122)

Age (years)	No of cases	%
≤25	12	9.8%
26-30	30	24.6%
31-35	29	23.8%
36-40	36	29.5%
>40	15	12.3%
Parity		
Primigravida	14	11.5%
Gravida 2-3	26	21.3%
Gravida 4-5	20	16.4%
≥G5	62	50.8%

Table II: Mode of delivery (n=122)

Mode of delivery	No of cases	%
SVD	48	39.3%
LSCS	24	19.7%
Laparotomy	23	18.8%
Septic D&C	3	2.5%
Vacuum delivery /forceps	3	2.5%
Undelivered	21	17.2%

Table III: Hospital stay of patients (n=122)

Time (in hrs)	No of cases	Percentage
0 -6	38	31%
6-12	27	22%
>12	41	34%
Dead on arrival	16	13%

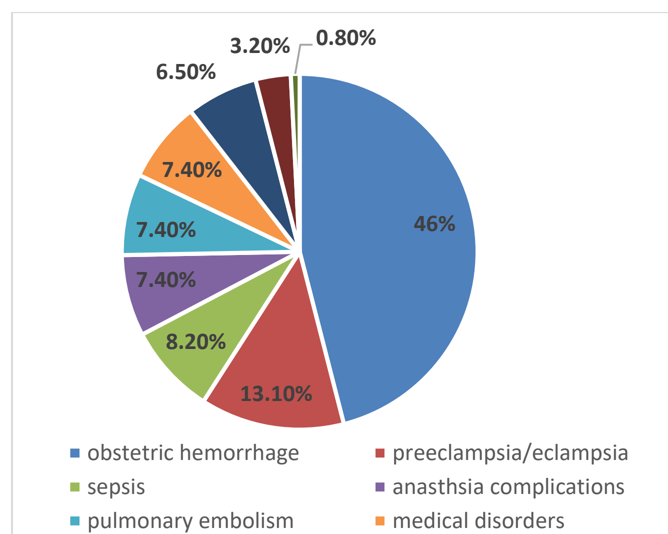

Figure 1. Causes of maternal deaths (n=122).

Discussion

The maternal mortality ratio indicates the quality and availability of health care services in a community. The maternal mortality ratio of 209 /100000 live births is observed in the study period. Although MMR found in this study is significantly lower compared to other studies done in tertiary care hospitals of the country 223/100000 live births[6] 431/100,000 live births[7] and 503/100000 live births,[8] however it is still higher than MDG target of 140/1000,000 live births set for 2015.[3] The higher maternal mortality is because of poor health facilities in the province and the scattered population having difficulty to reaching the health facility timely from far away areas.

In our study, 67.3% of maternal deaths were due to direct obstetric causes. Obstetric hemorrhage comprising 46% of the cases in our study is still the number one cause of death in developing countries.[4,9] Rafiq et al found 47.76% of maternal deaths due to hemorrhage in her study. [7] In their studies, Priya et al[10] (35.05%), Nutli et al[11] (21%), and Akhter et al[12] (30.77%) all reported obstetric haemorrhage as the leading cause of maternal mortality. The other most common cause of death in our study were hypertensive disorders of pregnancy 13.1% due to sever preeclampsia/eclampsia and sepsis (8.1%) due to septic miscarriage and puerperal sepsis. The unhygienic home deliveries and miscarriages conducted by untrained traditional birth attendants leads to sepsis and death. Haemorrhage, eclampsia/preeclampsia, and sepsis were identified as the three major causes of maternal death in a research carried out in Nigeria; these findings are consistent with those of our investigation.[13] and same results were found in other studies.[12,14 15] In other causes of maternal deaths in our study, pulmonary embolism being 7.4% is alarming and it is reported in studies of Rafiq et al[7](7.46%) and Akhtar et al[12](21.54%). Pulmonary embolism is the leading cause of maternal deaths in developed countries and 9.4% of all pregnancy related deaths in united states.[17]

In our study, majority of the deaths occurred in grand multiparas (50.8%) and most common age group was 26 to35 years of age (48%) which is similar to the studies conducted in other areas of Pakistan.[15,16] It is all due to early marriages, which are more common in our society and fertility rate is also very high. Illiteracy, poverty, and gender discrimination had worsened the situation more, leading the poor woman to die during childbirth due to malnutrition and anemia. Due to negligence, the woman presents to hospital only at a late stage when complications develop. This is also evidenced by the data showing the duration of hospital stay in our study. More than 50% were admitted for less than 12 hours presenting in very critical condition, and 13% were dead on arrival. The role of traditional birth attendants has a strong influence during antenatal and postpartum period that leads to seek advanced heath facilities in very late stage when complications have already occurred.

Most women delivered vaginally (39.3%) at home, in a maternity clinic, or in a facility. Other women who reached the hospital were operated on for obstructed labor (19.7%) or ruptured uterus (18.8%). Dead on arrival had mostly rupture uterus or severe APH/PPH leading to death. It shows that there is a lack of antenatal care at primary health care units, the prolonged obstructed labor leading to ruptured uterus are all due to the unavailability of caesarean section services at most of the district hospitals in Balochistan.[18] Un booked cases, delayed referral from BHUs and TBAs to secondary health care services and from there due to unavailability of cesarean section or skilled person, further referrals to tertiary care Centre (the three delays), contribute to high maternal deaths.[19]

Most of the causes of maternal deaths are preventable, if proper antenatal care is available. The risk factors sorted out during this period and proper and timely referral are then possible. Obstetric hemorrhage being number one cause of direct maternal death, is managed by proper ANC because the problem starts during antennal period (APH). The importance of active management of third stage of labor and immediate post-partum period should be highlighted to all care providers. The importance of emergency obstetric care should be taken as the standard, whether there should complications or not. The need for timely referral should be stressed to health care workers in all basic health care units and TBAs, to prevent further maternal deaths. The higher maternal deaths in grand multiparas shows the low prevalence of family planning practices in Baluchistan, which would be overcome by proper ANC services. The family planning services should be improved at the basic health unit levels, so we can reduce maternal deaths in grand multiparas by improving their health.

Conclusion

Auditing the causes for maternal mortality at regular intervals is very helpful to identify the preventive causes and status of the health care system. Hemorrhage,

eclampsia and sepsis are the major causes of deaths in our study. Most of the maternal deaths are preventable through proper antenatal care, emergency obstetric services, timely interventions, an awareness-based approach to family planning services, and timely referral to an appropriate health facility.

References

1. WHO, UNICEF, UNFPA, et al. Trends in maternal mortality: 1990 to 2015. Geneva, Switzerland: Executive Summary; 2015.
2. United Nations. The Millennium Development Goals Report 2015. New York: United Nations;2015
3. Pakistan Maternal Mortality Survey (PMMS). Islamabad. National institute of population studies August 2020
4. Say L, Chou D, Gemmill A, et al. Global causes of maternal death: a WHO systematic analysis. Lancet Glob Heal. 2014; 2:323–33.
5. World Health Organization. The global strategy for Women's, Children's and adolescents' health (2016 -2030). United Nations. 2015. http://www.who.int/life-course/partners/global-strategy/ewec-globalstrategyreport-200915.pdf?ua=
6. Khanum F, Nasreen F, Nisa M. Maternal mortality in a tertiary care hospital a continuing tragedy. J. Med. Sci. (Peshawar, Print) October 2013;21(4): 212-216
7. Rafiq S, Syed W, Ghaffar SF. Trends and causes of maternal mortality in a tertiary care hospital over five years: 2013-2017. Pak J Med Sci. 2019; 35(4):1128-1131.
8. Naseeb S, Kumari P, Jam I, Yasmin H. An Audit of Maternal Mortality at a Tertiary Care Hospital. J. Bahria Univ. Med. Dent. Coll. [Internet]. 2021 ;11(4):153-7.
9. Khan T, Laul P, Laul A, Ramazan M. Prognostic factors of maternal near miss events and maternal deaths in a tertiary health care facility in India. Int J Gynaecol Obstet. 2017; 138:171-176.
10. Priya N, Verma A, Verma S. Maternal mortality: Ten years retrospective study. J Med Educ Res. 2010; 12:134-136
11. Ntuli ST, Mogale M, Hyera F LM & Naidoo S. An investigation of maternal mortality at a tertiary hospital of the Limpopo province of South Africa, Southern African Journal of Infectious Diseases, 2017;32(2):73- 76, DOI: 10.1080
12. Akhtar R, Shams G, Afzal I, Ajmal B. Maternal mortality, a major loss- trends and causes. KJIMS. 2021;14(3):180-184.
13. Sageer R, Kongnyuy E, Adebimpe WO, Omosehin O, Ogunsola EA, Sanni B. Causes and contributory factors of maternal mortality: evidence from maternal and perinatal death surveillance and response in Ogun state. Southwest Nigeria BMC. Pregnancy Childbirth. 2019;19(1):1-8.
14. Sitaula S, Basnet T, Agrawal A, Manandhar T, Das D, Shrestha P. Prevalence and risk factors for maternal mortality at a tertiary care center in eastern Nepal -retrospective cross-sectional study. Pregnancy childbirth.2021; 21:471.
15. Khan A, Izhar V, Viqar MA. Maternal Morbidity and Mortality in Pakistan- An overview of major contributors. Pak Armed Forces Med J. 2017;67(4):635-40.
16. Omer S, Zakar R, Zakar MZ, Fischer F. The influence of social and cultural practices on maternal mortality: a qualitative study from South Punjab, Pakistan. Reprod Health. 2021 Dec;18(1):1-2.
17. Abe K, Kuklina EV, Hooper WC, Callaghan WM. Venous thromboembolism as a cause of severe maternal morbidity and mortality in the United States. *Semin Perinatol*. 2019;43(4):200-204. doi: 10.1053/j.semperi.2019.03.004
18. Arif A, Sherani A, Uzma Q, Alam B, Thom E, Abro A, Ehsan N,et al. Maternal and Perinatal Death Surveillance and Response in Balochistan, Pakistan - Causes & Contributory Factors of Maternal Deaths, Journal of Gynecology and Obstetrics. 2022;10(1):1-5
19. Mittal P, Kapoor G, Kumari N, Bajaj B. Review of Maternal Mortality at a Tertiary Care Hospital: What Have we Achieved? J Obstet Gynaecol India. 2019 Apr;69(2):149-154.