

ORIGINAL ARTICLE

RETROSPECTIVE ANALYSIS OF MATERNAL MORTALITY AT TERTIARY CARE HOSPITAL, DURING 2012- 2014

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ABSTRACT

Background: The Maternal Mortality Ratio (MMR) of a country is indicative of its health and developmental status. The aim of the study is to determine the frequency of maternal mortality and identify the causes with different age groups, parity and gestational in 4 campuses of Ziauddin University and Hospitals, during the period 2012- 2014.

Methods: A descriptive study conducted at the Gynecology & Obstetrics units of Ziauddin university hospitals with retrospective review of validated records of hospital registers in the last 3 years during January 2012 to December 2014. Convenience sampling used to access the records. A self-structured proforma designed to collect data on variables like age, parity, gestational age, cause of death, condition at the time of admission, duration of stay in hospital before death, cause of delay were part of the questionnaire.

Results: In the three years period from January 2012 to December 2014 there were 32 maternal deaths. Total number of births was 14219 out of which 14184 were live births. MMR (Maternal Mortality Ratio) was 226 per 100000 live births. Eclampsia and haemorrhage were the leading cause of maternal mortality. Seven (21.8%) patients died due to postpartum haemorrhage and 7 (21.8%) from eclampsia and its complications, while 4 (12.5%) patients had puerperal sepsis.

Conclusion: Maternal mortality was high with leading causes as, eclampsia, haemorrhage, and sepsis in the age of 20-30 years and parity 1-4. Mostly, deaths were due to delay in getting full term females to the health facility in time.

KEY WORDS: Maternal Mortality, Eclampsia, Hemorrhage

INTRODUCTION

A woman dies from complications in childbirth every minute – about 529,000 females each year, the vast majority of them being in developing countries. The major causes of maternal deaths are haemorrhage, infection, obstructed labour, hypertensive disorders in pregnancy, and complications of unsafe abortion.¹

Improving maternal health is 1 of the 8 Millennium Development Goals (MDGs) adopted by the international community in 2000. Under MDG-5, countries committed to reducing maternal mortality by three quarters between 1990 and 2015. Since 1990, maternal deaths worldwide have dropped by 45%.²

The Maternal Mortality Ratio (MMR) of a country is indicative of its health and developmental status.

Data from around the world shows that there is great disparity between the maternal mortality of the developing and developed world.³

The World Health Organization (WHO) estimated that in 2005 over 500,000 women were died from pregnancy and birth-related causes.⁴ World Health Organization and United Nations Children's Fund (UNICEF) revised the estimates of maternal mortality statistics in 2010 & reported that approximately 358,000 women die worldwide from maternal causes: 87% of them in Africa and Asia.^{5,6}

A woman in a developing country is 97 times more likely to die as a result of pregnancy than a woman in a developed country.⁷

The life time risk of maternal death is 1x16 in sub-Saharan Africa and 1x 43 in South Asia.⁸

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The majority of these deaths occurred during and immediately following birth: 25% were caused by severe bleeding, 15% by infection, 12% by eclampsia (a seizure disorder), and 8% by obstructed labor. The remaining deaths were due to unsafe abortion (13%), other direct causes (8%), and indirect causes such as HIV and malaria which may be aggravated by pregnancy.⁹

According to UNICEF data of Pakistan from 2008-2012, 60% of pregnant women had only one antenatal visit while 28% had 4 antenatal visits. Only 43% were delivered by skilled birth attendants. Reported Maternal Mortality Ratio in 2010 was 250 while after adjustment it was 260. Life time risk of maternal death was 1 x 110 in 2010.¹⁰

METHODS

A descriptive study conducted at Gynecology & Obstetrics units of Ziauddin University Hospitals with retrospective review of validated records of hospital registers in 3 years from January 2012 to December 2014. Convenience sampling used to access the records. A self-structured proforma designed to collect validated data on variables like age, parity, gestational age, cause of death, condition at the time of admission, duration of stay in hospital before death, cause of delay.

RESULTS

During the 3 year period from January 2012 to December 2014, there were 32 maternal deaths. Total number of births were 14219 out of which 14184 were live births. Still births were 33. Maternal mortality rate for the study period was calculated by using the formula-

$$\text{MMR} = \frac{\text{Total no fo maternal deaths}}{\text{Total no fo live births}} \times 100000$$

Highest maternal mortality was observed in patients with eclampsia and haemorrhage followed by those with puerperal sepsis, pulmonary embolism, septic induced miscarriages, cardiac disease, and hypertensive disorders of pregnancy respectively. MMR (Maternal Mortality Ratio) was 226 per 100000 live births.

Maximum maternal deaths of 62.5% were reported in 21- 30 years, followed by 28.1% in 31- 40 years, 3.1% in >40 years and 6.25% in 15- 20 years.

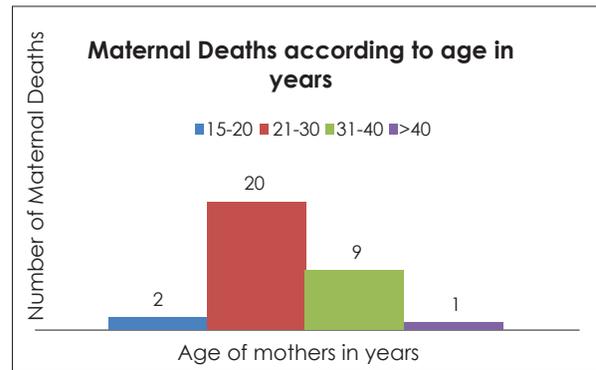


Figure 1: Maternal Deaths according to Age in Years

Maximum number of deaths 17 (53.1%) were recorded in para 1-4, followed by 12 (37.5%) in primi's and 3 (9%) in 5 or > 5 para.

Seventeen (53.1%) maternal deaths were recorded in gestational ages >37 weeks followed by 11 (34.37%) in 28-37 weeks of pregnancy and <4 (12%) were found in <28 weeks.

Two patients were brought dead. One mother stayed in hospital before death for < 30 minutes, 2 stayed for 4-6 hours, 8 stayed in hospital for 12-24 hours, 8 stayed for 24-48 hours, 1 for 48-72 hours and 8 stayed in hospital >72hours.

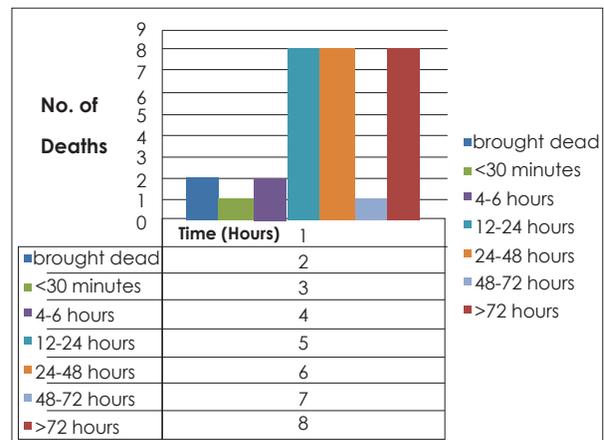


Figure2: Duration of Stay (in hours) in Hospital before Maternal Death.

Among total 32 maternal deaths 7 (21.8%) patients died due to postpartum haemorrhage and 7 (21.8%) from eclampsia and its complications, 4 (12.5%) patients had puerperal sepsis, 3 (9.37%) patients had pulmonary embolism, 2 (6.25%)

patients had septic induced miscarriage and equal numbers died from hypertensive disorders of pregnancy and 2 from cardiac disease. One patient (3.12%) died from bleeding after miscarriage, one from hepatitis E, amniotic fluid embolism, one from anemic failure was found dead on arrival. one patient died from cerebral malaria and one from lymphoid leukemia.

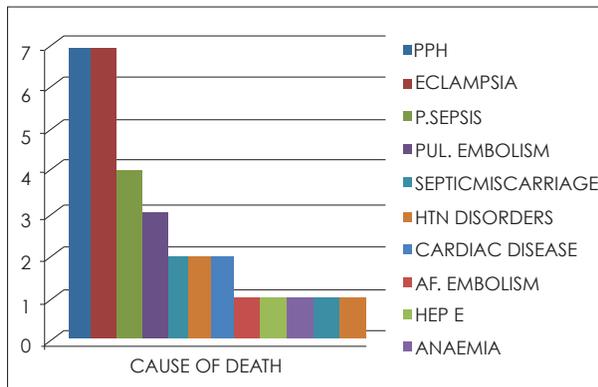


Figure 3: Causes of Maternal Mortality in 3 year study of Ziauddin University and Hospitals

Twenty one women (65.62%) died due to delay in reaching the health facility, followed by 4 (12.5%) due to delay in identifying a complication and delay in making decision to seek treatment. Three (9.37%) died due to delay in receiving quality treatment (delay in consent & ventilator support).

Table 1: Cause of delay in relation to Maternal Mortality

Cause of delay	No maternal deaths	% of maternal death
Delay in identifying a complication	4	12.5%
Delay in receiving quality Rx	3	9.37%
Delay in getting the women to the health facility	21	65.62%
Delay in making decision to seek Rx	4	12.5%

28 (87.5%) were moribund at the time of admission to hospital due to different delays, 2 (6.25%) were stable and 2 were dead on arrival.

Table 2: Condition at the time of Admission

Condition at the time of admission	No maternal deaths	% of maternal death
Brought dead	2	6.25%
Moribund	28	87.5%
Stable	2	6.25%

DISCUSSION

Maternal mortality is a worldwide health problem. From country to country the magnitude of the problem is different, depending upon its resources. Maternal mortality is best represented by Maternal Mortality Ratio and it reflects a nation's health status.¹¹

The highest maternal mortality ratios are observed in Sub Saharan Africa corresponding to 1,000 maternal deaths/100,000 live births, South Asia 500/100,000 live births ,while in European countries it is 10/100,000 live births.¹² To achieve 75% reduction in maternal mortality between years 1990–2015 a Millennium development Goal-5 was established¹³. Globally there is a reduction in maternal mortality. World statistics show maternal mortality ratio of 422/100,000 live births in 1980, to 320/100,000 live births in 1990, and 251/100,000 live births in 2008.¹⁴

In South Asia some of the countries have managed to significantly decrease their maternal mortality, e.g., Srilanka, China and Bhutan. In Srilanka maternal mortality ratio has decreased to 30/100,000 live birth. Since 1999 more than 95% of births occurred in the hospital setups.¹⁵

To improve maternal health, it is necessary to develop the awareness about sensitivity of maternal health in local communities and helps the government in making their health policies. This will helps in the monitoring of progress towards Millennium Development Goal-5.¹⁶

Pakistan is included among seven countries from where 50% of the world's maternal deaths are reported.¹¹ In 1997 an estimate of maternal mortality in different Pakistani sites showed overall maternal mortality ratio of 433/100,000 live births, from as low as 281 in Karachi (Sindh) to as high as 673 in Khuzdar (Baluchistan).¹⁷ A study from rural Sindh gave maternal mortality ratio of 297/100,000 lives births.¹⁸

The maternal mortality ratio measured in 2006-2007 in Pakistan Demographic and Health Survey (PDHS) was 276 per 100,000 births. Postpartum haemorrhage was the leading direct cause of maternal deaths, followed by puerperal sepsis and eclampsia. Obstetric bleeding (postpartum and antepartum haemorrhage) was responsible for one third of all maternal deaths.¹⁹

Ziauddin University and Hospitals are private tertiary level teaching hospitals with 8000 admissions in Obstetrics & Gynaecology department per year and more than 5000 deliveries are done here per year. It is well equipped and staffed to manage acute obstetrical emergencies, runs 24-hour emergency and accepts all patients, booked, un-booked & referred from other hospitals.

During 3 year period from January 2012 to December 2014, there were 32 maternal deaths. Total number of births were 14219 out of which 14184 were live births. Still births were 33. (Maternal Mortality Ratio) MMR was 226 per 100000 live births.

Mortality from haemorrhage and eclampsia were

high as patients were brought to the hospital late and delayed arrival of the patients was mainly due to social factors like cultural reasons, myths, believes of the families, financial issues and lack of proper antenatal care. Patient reached here in critical condition with multiple organ failure increasing their mortality and morbidity as mostly management initially is tried at home and in small setups leading to the loss of valuable time.

Seven (21.8%) patients were died due to postpartum haemorrhage and 7 (21.8%) from eclampsia and its complications, 4 (12.5%) patients had puerperal sepsis, 3 (9.37%) patients had pulmonary embolism, 2 (6.25%) patients had septic induced miscarriage and 2 died from hypertensive disorders of pregnancy and 2 from cardiac disease. One patient (3.12%) died from bleeding after miscarriage, one from hepatitis E, amniotic fluid embolism, one patient died from cerebral malaria, one from lymphoid leukemia and one from anemic failure who was brought dead to the hospital.

In our study 7 patients (21.8%) died due to eclampsia and it was the leading cause along with hemorrhage. Maternal Mortality Ratio was calculated to be 226/100,000 live births.

In many tertiary care hospitals MMR was very high in past decades but is decreasing gradually with the passage of years, although eclampsia and postpartum haemorrhage are still the leading causes in many tertiary care hospitals. Maternal Mortality Ratios at different tertiary care hospitals of Pakistan were 311/100,000 live births²⁰, 289/100,000 live births²¹, 560/100,000 live births²², 300 per 100,000 live births²³, 1,270/100,000 live births²⁴, 1,057/100,000 live births, 1,057/100,000 live births¹¹, 772/100,000 live births.²⁵

Eclampsia being responsible for 24.62%²⁰, 15%²¹, 10%²², 30%²⁴, 28.2%¹¹ and 26.99% of maternal deaths.²⁵ In 2015 eclampsia accounted for 15.88% and 27% deaths.^{26, 27}

Postpartum haemorrhage is one of the leading causes of maternal mortality in our study. Seven patients (21.8%) died due to primary post-partum haemorrhage. 19.23% of deaths were due to haemorrhage (APH+PPH).¹¹ Haemorrhage was on top of the list in many setups for maternal mortality.^{18,19,20,21,27%¹⁸, 16.6%²², 52.9%²¹, 30.43%²⁰, 27.07%²⁵ and 38.89%²⁶}

Septicemia is the third cause of maternal mortality in our study, mostly due to septic induced miscarriages performed in unsafe environment by semi trained personal. Four patients (12.5%) died of puerperal sepsis and 2 patients (6.25%) died of septic induced miscarriages. All of these 6 patients were brought in moribund condition. Mortality due to sepsis from different sites were 20.5%¹¹, 5.6%¹⁸,

23.91%²¹, 6.3%²², 66.6%²³, 10.10%²⁶ and 7%.²⁷ Majority were due to septic abortions.

CONCLUSION

Maternal mortality was high with leading causes as hemorrhage, eclampsia, and sepsis in age range of 20- 30 years and parity 1-4. Mostly deaths were due to delay in getting the women to the health care facility. Pregnancy should be made safe by well-organized and purposely designed antenatal care and timely referrals at the time of high risk patients to an appropriate medical facility and avoiding different delays.

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