

AUDIT OF THE MATERNAL MORTALITY IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Maternal mortality is an important measure of maternal health. **Objectives:** To determine the maternal mortality ratio and determinants of maternal mortality in a tertiary care hospital. **Patients & Methods:** A descriptive study, was conducted in Obstetrics & Gynaecology Department at Sheikh Zayed Hospital Rahim Yar Khan. This was a 3 years study conducted from 1st January, 2010 to 31st December, 2012. All direct and indirect maternal deaths during pregnancy, labour and perpeurium were included. The reason for admission, condition at arrival, and possible factors responsible for death were identified. The other information including age, parity, gestational age and relevant features of index pregnancy were recorded on a proforma and analyzed by SPSS version 16. **Results:** There were a total of 30563 deliveries and 29139 live births. Total 168 maternal deaths occurred during 3 consecutive years, with a MMR of 576 per 100000 live births. The highest maternal mortality age group was 20-30 years in which 61.3% deaths were observed. Out of 168 maternal deaths, 26.78% were primigravida. Obstetrical hemorrhage (48.2%) was the most frequent cause followed by hypertensive disorders (20.8%) & sepsis (15%). **Conclusion:** Birth facilities in our hospitals should be upto the mark to manage the pregnancy related complications promptly. Our study revealed high maternal mortality ratio in hospital setting with obstetrical haemorrhage, hypertensive disorder and septicemia as leading direct causes of maternal mortality whereas blood reaction as leading indirect cause of maternal mortality.

Key Words. Maternal Mortality Ratio, Maternal deaths, Pregnancy.

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INTRODUCTION

Maternal health refer to the health of women during pregnancy childbirth and postpartum period. The major direct causes of maternal morbidity and mortality include haemorrhage, infection, high blood pressure, unsafe abortion and obstructed labour. Maternal mortality is the culmination of a series of detrimental events in a woman's life, pregnancy being the last one.¹ Every year, approximately 600000 women died of pregnancy-related causes - 98% of these deaths occur in developing countries.² The risk of a woman dying as a result of pregnancy or childbirth during her lifetime is about one in six in the poorest parts of the world compared with about one in 30,000 in Northern Europe. Such a discrepancy poses a huge challenge to meeting the fifth Millennium Development Goal; to reduce maternal mortality by 75% between 1990 and 2015.³

Maternal mortality is an important measure of women health and indicative of the performance

of health care systems. According to recent survey the maternal mortality ratio in Pakistan is 260 per 100,000 live births in Pakistan. In comparison, the rate in the United States is 8 deaths per 100,000 live births.⁴ The causes are obstructed labour, hemorrhage, pregnancy-related hypertension (eclampsia), sepsis and unsafe abortion. Reduction of maternal mortality in developing countries today is hindered by limited awareness of the magnitude and manageability of the problem. The lack of political will, government support and adequate allocation of resources are compounding factors. The low status and educational level of women, cultural values and beliefs, financial and family constraints, all contribute to under-utilization of professional delivery services even when they do exist.⁵ One factor that contributes to high maternal mortality in developing countries is the delayed use of Emergency Obstetric-Care (EmOC) facilities.⁶ Inadequate medical treatment contributes to 36% to 47% of maternal deaths in hospitals. Gender bias in the allocation of meager food supplies results in the poor health and nutritional status of women, rendering a woman's pelvis too small, which causes obstructed labour and even death.⁴ Postpartum haemorrhage accounts for about 25% of the total and claiming an estimated 150,000 maternal mortalities annually.⁷ The majority of these deaths occur within four hours of delivery. Further-more, a significant predisposing factor, anemia, has a high prevalence in

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developing countries.⁸ Unsafe abortion is an important public health problem, accounting for 13% of maternal mortality in developing countries.⁹ If prompt and adequate treatment is provided, the outcome will usually be satisfactory; therefore, the outcome is most adversely affected by delayed treatment. The factors observed are usually delayed decision to seek care, delayed arrival at a health facility and delayed provision of adequate care.¹⁰ All the above gaps need to be filled to help policy-makers make effective strategies with the resources available.

This study was carried out to determine the maternal mortality and frequency of its causes in Sheikh Zayed Hospital, Rahim Yar Khan, so that a further plan of action could be suggested to reduce these events.

PATIENTS AND METHODS

This descriptive study was conducted from 1st January, 2010 to 31st December, 2012 in Gynaecology and Obstetrical department of Sheikh Zayed Hospital, Rahim Yar Khan. It is a public sector tertiary care hospital and serves as the major referral center for other public and private hospitals. The patients who expired after arrival were analyzed from their records. The reason for admission, condition at arrival, possible factors related to and cause of death identified. Other information included age, parity, booking status and relevant features of index pregnancy was also noted. The proformas and records were reviewed in mortality meetings of department to analyze and find out the factors responsible for maternal deaths. All the recorded data was entered and analyzed using SPSS version 16.

RESULTS

There were 50713 admissions over the period of three consecutive years in the obstetrics and gynaecology department. There were a total of 30563 deliveries and out of them 29139 were live births. Total 168 maternal deaths occurred in three years that revealed MMR equal to 576 per 100,000 live births. The youngest age recorded in maternal death was 17 years and was due to eclampsia. The age wise distribution of maternal death is shown in Table I. The peak age group of maternal death was 20-30 years in which 103 (61.30%) deaths occurred. Out of 168 maternal deaths, 45 (26.78%) were primigravidas, and grand

multiparas were 32 (19.04%). Majority (75%) of deaths occurred in unbooked patients.

Direct causes lead to 147(87.5%) of deaths. Obstetrical hemorrhage was the most frequent cause 81(48.2%) deaths. Among this postpartum hemorrhage contributed 62 (36.9%) of maternal deaths, followed by placental abruption 13 (7.7%) and uterine rupture 6 (3.5%). Complications of hypertensive disorders of pregnancy accounted for 35 (20.8%) of deaths. Pulmonary embolism leads to 5 (2.97%) mortalities. Pregnancy related sepsis caused deaths in 26 (15.47%) of women. Indirect causes of maternal mortality accounted for 21 (12.5%) deaths. Most common cause recognized was blood transfusion reaction which caused death in 09 (5.35%) patients. Cardiac diseases caused 07 (4.16%) mortalities. Hepatic encephalopathy lead to deaths in 4 (2.38%) mothers. During postpartum period, cerebral malaria affected 01(0.59%) women leading to her deaths. (Table II)

Table I: Age distribution of maternal death cases

Age in years	Number	%age
<20	21	12.5
21-30	103	61.3
31-40	37	22.02
>40	7	4.16

Table II: Direct & Indirect causes of maternal mortality

	No	% ages
a. Direct causes of death	147	87.5
1. Obstetrical Haemorrhage	81	48.2
a. Abruption	13	7.7
b. Ruptured Uterus	6	3.5
c. Postpartum Haemorrhage	62	36.9
2. Hypertensive disorders	35	20.83
3. Pulmonary embolism	5	2.98
4. Septicemia	26	15.48
b. Indirect causes of death	21	12.5
Blood transfusion reaction	9	5.36
Peripartum cardiomyopathy	7	4.17
Hepatic encephalopathy	4	2.38
Cerebral malaria	1	0.60

DISCUSSION

Despite signing several international commitments regarding the health and human rights of women and girls, Pakistan has an alarmingly high Maternal Mortality Rate (MMR), as one Pakistani woman loses life every 30 minutes due to reproductive health complications.^{11,12} New maternal mortality estimates

confirm that the number of women dying in pregnancy and childbirth is declining. Along with other indicators, joint U.N report validates the fact that we are making progress in saving mothers' lives, even if progress is slower than what is called for by the Millennium Development Goals.¹³ MMR is considered to be high if it is over 300 deaths per 100,000 live births, and extremely high if above 1000 deaths per 100,000 live births.¹⁴ Maternal mortality has fallen impressively, but when we know that almost all maternal deaths are preventable, 300 is hardly an acceptable maternal mortality ratio.

The maternal mortality ratio in Pakistan was last reported at 260 in 2010, according to a World Bank report published in 2012.¹⁵ In our study maternal mortality ratio was 576/100,000 live births. It is comparable to another study conducted in Bahawalpur between 2006-2008, which revealed MMR of 683/100,000 live births.¹¹ Another study conducted in Faisalabad in 2011 showed MMR of 412/100,000 live births.¹² Although 576/100,000 live births is not an acceptable figure and still far away from Millennium Development Goal but is far less and almost half than reported in a study in Karachi between 2002-2006 which showed MMR of 1248/100,000 live births.¹³ Similar studies conducted in Lahore General Hospital during two different time periods showed different trends i.e. MMR of 1300/100,000 live births in 2001 to MMR of 470/100,000 live births in 2010.¹⁴ This decrease in maternal mortalities over years can be explained by improvements in obstetric services.

According to Pakistan demographic health survey 2012, almost three-quarters of mothers (73%) reported consulting a skilled health provider a doctor, nurse, or Lady Health Visitor at least once for antenatal care. But there is difference in antenatal coverage between different regions of Pakistan and is higher in urban areas (88%) than rural areas (67%). Across regions, the proportion of mothers reporting that they received antenatal care from a skilled provider is markedly lower in Baluchistan (31%) than in Punjab and Sindh (78% each) and almost universal in ICT Islamabad (94%).¹⁵ This is the reason why maternal mortality ratios among different regions of Pakistan are different ranging from 286/100,000 in Karachi's urban settlement to 756 in rural Balochistan.¹⁶

The causes of maternal mortality are multiple, interrelated, complex and almost preventable. The most common causes are haemorrhage, hypertensive disorders and sepsis. In our study direct causes of maternal deaths accounted for 87.5% and indirect causes accounted for 12.5% which is almost similar to the study conducted in Bahawalpur.¹¹ Among the direct causes, the most common was haemorrhage, which lead to the death of 81 women making 48.2%. Similar result was shown by other studies conducted in Bahawalpur between 2006-08 (44.4%) and in Karachi between 2002-06 (48.6%).¹³ Among obstetrical haemorrhage, postpartum haemorrhage turned out to be the leading cause accounting for 36.9% and comparable to the results shown by Jabeen S et al.¹¹ All patients with obstetrical haemorrhage were presented in critical condition, referred by private sectors or mismanaged cases by traditional birth attendants.

The second leading cause of maternal deaths was hypertensive disorders of pregnancy, among them eclampsia was the most common (20.8%). Similar results were seen in Bahawalpur and Karachi.^{11,13} Another study conducted in Faisalabad in 2011 showed hypertensive disorders to be accounted for 22.5% of deaths.¹² Pregnancy-related sepsis accounted for 15% of deaths comparable to studies conducted in Bahawalpur and Karachi.^{11,13} Deaths related to septicemia is not uniformly distributed with rates as high as 21% in Sindh to as low as 3% in Punjab.¹² Among the indirect causes the major killer was blood transfusion reaction which accounted for 5.3%, followed by hepatic encephalopathy which lead to deaths in 2% of mothers. Among indirect causes, cardiac disease accounted for 4% of deaths. During the study period, one patient died due to cerebral malaria. The limitation of this study was that it was hospital based study, for determining MMR.

CONCLUSION

Our study revealed high maternal mortality ratio in hospital setting and obstetrical haemorrhage, hypertensive disorder, septicemia as leading direct causes of maternal mortality whereas blood reaction as leading indirect cause of maternal mortality. While improved treatment of pregnancy complication is still highly relevant to reducing maternal mortality, it is now evident that a large proportion of pregnant women do not have access to

evidence-based care and therefore, an approach that relies solely on improved treatment in hospitals will not fully address the problem. We must find a way to bring women to health facilities and then to improve the quality of services in health facilities so that women will be promptly treated when they experience severe pregnancy complications.

REFERENCES

1. Stokoe U. Determinants of maternal mortality in developing world. *Aust NZJ Obstet Gynaecol* 1991 Feb;31(1):8-16.
2. Donny F. Maternal survival in developing countries: what has been done, what can be achieved in next decade. *Int J Gynaecol Obstet* 2000; 70 (1):89-97.
3. Rosmans C, Grahan WJ. Lancet survival series steering group. *Lancet* 2006; 30;368(9542):1189-200.
4. Pilal G. Reducing deaths from pregnancy and child birth. *Asia link's* 1993, 9(5):11-3.
5. Wilder Smith. A current status "essential obstetric care activities internationally; a literature review. *Trop Doct* 2003;33(3):135-8.
6. Ghazi Tabatabaie M, Moudi Z, Veddahir A. Home birth and barriers to referring women with obstetric complications to hospitals: a mixed-methods study in Zahedan, southern Iran. *Report Health* 2012; 20(9): 515-19.
7. Gowri Ram Anathan, Sabaratnam Aruklkumaran. Postpartum haemorrhage. *J Obstet Gynaecol Can* 2006;28(11):967-973
8. Okonofua F. Abortion and maternal mortality in the developing world. *J Obstet Gynaecol Can* 2006; 28(11):974-9.
9. Thaddeus S, Maine D. Too far to talk: Maternal mortality in context. *Soc Sci Med* 1994;38(8):1091-110.
10. World Bank Report 2012. Retrieved from: www.worldbank.org/en/country/Pakistan.
11. Jabeen S, Ahmed A, Zaman BS. Maternal mortality. *Professional Med J* 2010;(4):679-685.
12. Rubina Ali, Ayesha Khawar, Samina Kousar. Maternal mortality: An ICE berg one year review at DHQ hospital, Faisalabad. *A.P.M.C July-December* 2012; 6:156-9.
13. Mustafa R, Hashmi H. Maternal mortality in a community based hospital. *Med Forum* 2011;Vol.19, No.5:767-9.
14. Sadia Cheema, Saadia Tariq, Tariq Masood Tipu, Farah Yousaf, Madeeha Rashid, Tariq Saeed. Maternal mortality at Lahore General Hospital. *PJmhsoline.com/ Jan-March* 2012.
15. World Bank Report. Maternal mortality ratio 2012. Retrieved from: www.worldbank.org/en/country/Pakistan.
16. Fikree FF, Midhet F, Sadrudin S. Maternal mortality in different Pakistani sites: ratios, clinical causes and determinants. *Acta Obstet Gynaecol Scand.* 1997; 76(7):637-45.