ORIGINAL ARTICLE

Analysis of maternal mortality in a tertiary care hospital of a metropolitan city

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Abstract

Introduction: In developing countries like India, maternal mortality ratio is still very high. Current study is an attempt to analyze maternal mortality and its determinants in a tertiary care hospital where highest quality of medical care is provided. **Methods:** It was a retrospective study. Five years data from January 2004 to December 2008 was reviewed from medical record department of tertiary care hospital in Mumbai. Fisher's exact test was applied; Odds ratio and 95% confidence interval were calculated. SPSS Version 16.0 was used to analyse data. **Result:** Maternal mortality ratio was 68.4 per one lakh live births. Major cause of maternal mortality observed was haemorrhage. Multigravida, Age above 30 years and lack of antenatal check-up were significantly associated with higher risk of maternal mortality. **Conclusion:** Maternal mortality is still high even in a tertiary care centre as compared to MMR (Maternal Mortality Ratio) in developed countries. Timely monitoring/ management during antenatal and intra-natal period would substantially reduce maternal mortality.

Key Words

Maternal Mortality Ratio; Maternal Health; Tertiary Health Care Services

Introduction

Maternal mortality refers to death due to complications from pregnancy or childbirth. From 1990 to 2013, the global maternal mortality ratio declined by 45 per cent – from 380 deaths to 210 deaths per 100,000 live births, according to UN inter-agency estimates. This translates into an average annual rate of reduction of 2.6 per cent. While impressive, this is less than half the 5.5 per cent rate needed to achieve the three-quarters reduction in maternal mortality targeted for 2015 in Millennium Development Goal 5.1

Almost all maternal deaths can be prevented, as evidenced by the huge disparities found between the richest and poorest countries. The lifetime risk of maternal death in industrialized countries is 1 in 4,000, versus 1 in 51 in countries classified as 'least developed'. (1)

Early age of pregnancy, high birth rates, and less spacing between two deliveries are some social factors which cause increase in maternal mortality ratio. On the other hand, medical conditions, like ante-partum hemorrhage, post-partum hemorrhage, anaemia, eclampsia also form a significant proportion of maternal mortality—but most of these are preventable. (2)

Current study was conducted in a tertiary health care centre of Mumbai where highest health care services are supposed to be provided, to know the situation of maternal health here.

Aims & Objectives

1. To find out maternal mortality ratio
2. To assess its reported causes.

Material and Methods

It was a retrospective hospital based study. Five years data from January 2004 to December 2008 was reviewed from medical record department of tertiary care hospital in Mumbai. Data was collected from two sources; death register and case record files. Year wise cases of maternal deaths were identified and further detail of each case was noted. This detail included age, gravida, antenatal visits and cause of death. Data pertaining to live births was also noted simultaneously.

Fisher's exact test was applied to test the relationship of categorized independent and dependent variables; Odds ratio (OR) and 95% Confidence Interval (CI) were calculated. SPSS Version 16.0 was used to analyse data.

Results

Total 10,238 live births and 7 maternal deaths were recorded in 5 years. Table 1 shows year wise cases of maternal deaths from year 2004 to 2008.

For the total study period of 5 years, maternal mortality ratio was calculated as 68.4 per one lakh live births. Hemorrhage was the most common cause of death in 5 women out of 7. Thromboembolism and eclampsia was cause of death in rest each woman.

Correlation of maternal death with maternal age is shown in Table 2

Association between gravida and maternal death observed 6 out of 7 deaths in multigravida women giving Odds ratio 2.414.

Four maternal death cases out of 7 had not visited any health centre during antenatal period. Table 3

Discussion

For last many decades we are taking measures to reduce maternal mortality but still it is a burning issue. In a tertiary health care centre where the current study was carried out, only 7 maternal deaths occurred in 5 years. Though 7 maternal deaths appear as a very small number, it led to maternal mortality ratio of 68.4 per one lakh live births. Though MMR is less than national goal to be achieved in India, it is far more than MMR in developed countries. As per WHO May 2014 report on Maternal Mortality, the maternal mortality ratio in developing countries in 2013 is 230 per 100 000 live births versus 16 per 100 000 live births in developed countries (3). Thus, it can be perceived that even if few maternal deaths occur, it raises MMR highly.

Still this MMR is far less than the recent Indian studies where it ranges from 395 to 3029 per one lakh live births. (4, 5, 6) Since the time when this study was conducted till now, we can predict that the maternal health situation must have turned better and better in the institution where the study was conducted. Even during the last year of study period, no maternal death occurred. It is heartening to note that MMR is showing a good reduction in the studied institution.

Out of total maternal deaths, 71% i.e. 5 maternal deaths occurred due to haemorrhage which is one of the most common preventable cause. Many Indian studies have found haemorrhage to be the major cause of maternal deaths. (4, 6, 7) As per WHO Reproductive Health Library (RHL) 2010 appraisal, Postpartum haemorrhage (PPH) is the leading cause of maternal mortality worldwide. (8)

The risk of maternal death increases with age, for women of all races and ethnicities. (9) Multigravida, Age above 30 years with lack of antenatal check-up were significant factors associated with higher risk of maternal mortality in the current study. Similar findings were also observed in some of the Indian studies. (4, 6, 10, 11) Very high percentage of un-booked cases of maternal deaths, highlight the importance of adequate antenatal care. (5)

Conclusion

Though MMR in the current study is less than NRHM goal to be achieved in the country, it is far more than MMR in developed countries. There is lot of scope to further reduce MMR as it is still caused by preventable causes like haemorrhage

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Tables

TABLE 1 YEAR WISE MATERNAL DEATHS AND LIVE BIRTHS

Year	Maternal Deaths	Live Births
2004	3	2071
2005	2	2011
2006	1	2001
2007	1	2072
2008	0	2083

TABLE 2 MATERNAL DEATHS IN RELATION TO AGE

Age in years	No. of Deliveries	No. of Maternal deaths	Odds Ratio	95% Confidence Interval
15-20	931	0	-	-
21-25	3310	1	0.35	0.04-2.9
26-30	3578	1	0.31	0.04-2.58
31-35	2009	3	5.47	1.22-24.47
>35	405	2	9.74	1.88-50.37

Note: Values calculated only for those age groups in which maternal deaths occurred.

TABLE 3 CORRELATION BETWEEN MATERNAL MORTALITY AND STATUS OF ANTENATAL VISITS

Status of Antenatal Visits	Maternal Death		Total
	Yes	No	
Booked cases	3	9723	9726 (95%)
Un-booked cases (No Antenatal visits)	4	508	512 (5%)
Total	7	10231	10238

Fisher's Exact, $p < 0.001$, OR = 25.52, 95% CI = 5.69 – 114.33