



A COMPARATIVE STUDY ON MATERNAL MORTALITY AT GOVERNMENT MEDICAL COLLEGE, NAGPUR.

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ABSTRACT

Background: Maternal mortality is a tragic event. Hence this study was conducted to evaluate the maternal mortality rate and to assess the causes of maternal mortality in our hospital.

Aims & Objective: To assess and compare the maternal mortality ratio and causes of maternal mortality of five years i.e.(1984-1988) and (2012-2016) in the Government Medical College, Nagpur

Methods: As it was a retrospective record based study, data on maternal mortality from (1984-1988) and (2012-2016) had been collected from medical record section of the hospital. Data studied and analysed.

Results: The mean maternal mortality from 1984-1988 was 223.9 per 100000 live births whereas from 2012-2016 was 555.8 per 100000 live births. Maternal mortality from 1984-1988 was $\geq 39\%$ whereas from 2012-2016 it was $\geq 80\%$ between 20-30 years of age group. Two third of the maternal mortality were due to direct causes in both the comparative years. Sepsis being the leading cause among the direct causes in both the comparative years.

Conclusions: The maternal mortality ratio was more than double in the year 2012-2016 as compare to 1984-1988. Between 20-30 years of age maternal mortality was maximum in both the comparative group. Direct causes were the leading to cause maternal mortality.

KEYWORDS : Maternal mortality, sepsis

INTRODUCTION

According to WHO " Maternal mortality is defined as death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes"

In 1940s Bhore Committee concludes that India's MMR was around 2,000 maternal deaths per 100,000 live births (GoI 1946). In 1950s, the Mudaliar Committee suggested that India's MMR was over 1,000 deaths per 100,000 live births (GoI 1961). The MMR was estimated to be over 800, over 500 and over 400 during 1970s, 1980s and 1990s respectively (Vora et al. 2009; Bhat et al. 1995; Bhat 2002). Globally, an Estimated 289,000 maternal mortality occurred in 2013, with the decline of 47% from 1990.⁷ India contributes 17 % to the global maternal mortality. In India it has been observed that there is an appreciable decline in the MMR from 677 in 1980 to 254 in 2004-2006 to 212 in 2007-2009 and 167 in 2010-2015 however currently maternal mortality ratio of India as of 2015 is 174.^{3,4,5} Maternal mortality is a huge losses of human life. A woman is most vulnerable at the postpartum period. About 50-70 % of maternal mortality occur in postpartum period of which 45 % deaths occur in the first 24 hours after delivery and more than two-thirds during the first week. 11-17 % of maternal mortality occurs during child birth. About 80% of the maternal mortality were due to direct causes.

Aiming to improve maternal health, MDG 5 established a target of reducing the 1990 global maternal mortality ratio (MMR) by 75% by 2015 (MDG 5A). Monitoring progress exposed the difficulties of measuring MMR because of lack high-quality data. Year 2015 marks the start of the Sustainable Development Goals (SDGs), which include the target of reducing global maternal mortality to less than 70 deaths per 100 000 live births by 2030, with no individual country exceeding an MMR of 140 maternal deaths per 100 000 live births. Achieving this global goal will require countries to reduce their MMR by at least 7.5% each year between 2016 and 2030.

From this study an attempt has been made to assess and compare the maternal mortality ratio and also the causes of maternal mortality of five years i.e.(1984-1988) and (2012-2016) in the Government Medical College, Nagpur.

Aims & Objective: To assess and compare the maternal mortality

ratio and causes of maternal mortality of five years i.e.(1984-1988) and (2012-2016) in the Government Medical College, Nagpur

METHODS

The present study was a retrospective record based study, conducted in the department of Community Medicine of Government medical college Nagpur. Data regarding maternal mortality from 1984-1988 and 2012-2016 was collected from Maternal Mortality Register after obtaining permission from the Medical Record Section of the hospital. The details of maternal mortality over 5 years, from January 1984-December 1988 and January 2012 to December 2016 were collected and analysed. There were total 133 & 305 maternal mortality recorded from 1984-1988 and 2012-2016 respectively. There were total 59,397 & 54,871 live births recorded from 1984-1988 and 2012-2016 respectively. Descriptive data was tabulated as absolute figures and percentages.

The details of number of live births from January 1984- December 1988 and January 2012 to December 2016 were collected from Medical Record section.

Maternal mortality ratio for the study period was calculated by using the formula-

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

The ethical committee of the institute had given approval for the study.

RESULTS

- In the present study maternal mortality ratio from 1984-1988 was compared with 2012-2016. The mean maternal mortality ratio from 1984-1988 was 223.9 per 1,00,000 live births whereas from 2012-2016 mean maternal mortality ratio was recorded as 555.8 per 1,00,000 live births. The maternal mortality rate from 1984-1988 was 294, 231, 220, 204 and 173 per 1,00,000 live births respectively whereas from 2012-2016 maternal mortality ratio was 596, 404, 568, 585 and 632 per 1,00,000 live births respectively (Figure-1).
- In the age group between 20-30 years maternal mortality from 1984-1988 was 46%, 58%, 39%, 42% and 41% respectively whereas from 2012-2016 it was 87.4%, 86.6%, 81.3%, 80.9% and

83.1% respectively.(Figure-2).

- In our study from 1984-1988 we found that 60%, 63%, 62%, 78% and 65% were the direct causes leading to maternal mortality whereas from 2012-2016 58.7%, 75.6%, 70.3%, 63.2% and 64.6% direct causes leading to maternal mortality.(Figure-3).
- Among the direct causes from 1984-1988, 28% sepsis, 15% eclampsia, 17% haemorrhage, 4.7% accidental and 4% preeclampsia had lead to maternal mortality whereas from 2012-2016 , 30.8% sepsis, 15.4% PIH / eclampsia/ HELLP syndrome, 7.2% haemorrhage, 6.6% IUD & abortion, 4.9% pulmonary embolism/ air embolism and 0.9% perforation of uterus had lead to maternal mortality. (Figure-4).
- In the present study from 1984-1988, 12.5% anemia, 9% viral hepatitis, 7% cardio vascular causes and 0.8% each of CNS and metabolic disorder were the indirect causes contributed to maternal mortality whereas from 2012-2016, 15.7% Infectious diseases, 7.2% cortical veinous thrombosis, 5.6% heart diseases, 4.3% anemia & SCD and 0.7% each of liver diseases and renal failure were the indirect causes contributed to maternal mortality. (Figure-5).

DISCUSSION

In the present study, “A Comparative Study on Maternal Mortality at Government Medical College, Nagpur” the mean maternal mortality ratio from 1984-1988 was 223.9 per 1,00,000 live births whereas from 2012-2016 it was 555.8 per 1,00,000 live births. In the study by Ratan Das the mean maternal mortality ratio was 518.48 per 1,00,000 live births.⁵ Vidyadhar B et al in their study found that the mean maternal mortality ratio was 302.9 per 1,00,000 live births.⁷ In the study by Pushpanjali Malipatil et al mean maternal mortality ratio was 586 per 1,00,000 live births.⁸ whereas the mean MMR was 277 per 1,00,000 live births in the study by Dr. Madhuri Badrinath.⁹

The result of present study of having higher maternal mortality ratio from 2012-2016 as compare to 1984-1988 can be justify with the fact that because of various national health programme conducted by Govt i.e. RCH, JSY, JSSK etc awareness among the people has increased not only about health but also toward health related services and also complicated cases being referred from the peripheral hospitals leading to high maternal mortality ratio despite being the decreasing trend worldwide.

We found that in the age group of less than 20 years from 2012-2016 the maternal mortality was less than 11% however from 1984-1988 except 1985 it was above 20%. In the age group of more than 30 years from 2012-2016 the maternal mortality was less than 15% however from 1984-1988 except 1988 it was above 33%.Majority of maternal mortality had occurred in 20-30 years of age group. Similarly results were found in the study by Pushpanjali Malipatil et al, and also in the special bulletin on maternal mortality.^{8,10}

In our study we found that from 1984-1988 & 2012-2016, 64-68% direct causes and 36-32% were indirect causes that had lead to maternal mortality. In the study by Ratan Das, 81.64% direct causes and 18.35 % indirect causes contributed to maternal mortality.⁶ On the contrary in the study by one of the author both direct and indirect causes contributed 50% to maternal mortality.

In the present study from 1984-1988, among the direct causes 38% pre eclampsia and eclampsia followed by 28% sepsis were the leading cause contributed to maternal mortality whereas from 2012-2016 ,30% Sepsis was the leading cause of maternal mortality followed by eclampsia, pre eclampsia and HELLP syndrome. Similar findings were found in the study by Dr. Madhuri Badrinath.⁹ On the contrary in the study by Nikhil Purandare et al found that (66.7%)haemorrhage was the leading direct cause of maternal mortality followed by (13.3%) PIH.¹¹

In the present study from 1984-1988, among the indirect causes 12.5% anemia followed by 9 % viral hepatitis were the leading cause contributed to maternal mortality whereas from 2012-2016 ,15.7% Infectious diseases was the leading cause of maternal mortality. Among the infectious diseases there were 21, 11, 5, 4 and 3 cases of maternal mortality due to hepatitis, malaria, dengue, bronchopneumonia and swine flu respectively. There were 1 case each of thyphoid, chickenpox, TB and Hepatitis B. In the study by Vidyadhar B et al found that hepatitis (21.05%), heart disease (13.15%), cerebral malaria (7.89%), and anaemia (2.63%) were the

indirect causes for maternal mortality in their study.⁹

Conclusion: The mean maternal mortality ratio from 1984-1988 was 223.9 per 1,00,000 live births whereas from 2012-2016 mean maternal mortality ratio was recorded as 555.8 per 1,00,000 live births. Sepsis was the leading cause of maternal mortality. It was 30.8% Sepsis from 2012-2016 whereas 28% from 1984-1988. pre eclampsia and eclampsia were the second leading cause of maternal mortality. They were 15.4% 2012-2016 whereas 21% from 1984-1988.

Limitation: Record based study. Being a hospital based study the result cannot be generalised to the community.

DECLARATIONS

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

Figure-1 Comparison of maternal mortality (1984-1988 with 2012-2016)

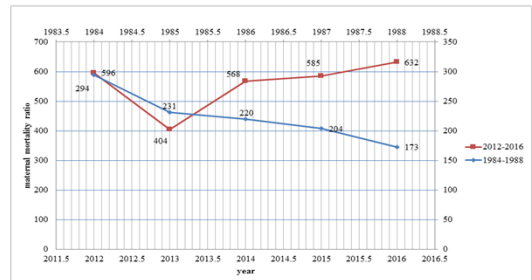


Figure-2 Age wise distribution of maternal mortality in percentage

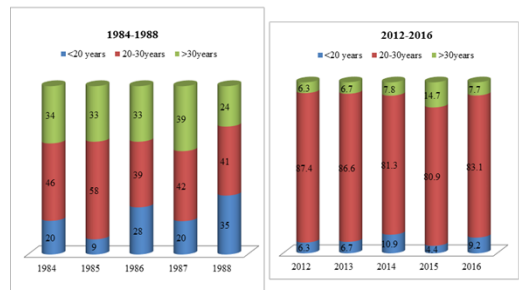


Figure-3 Causes of maternal mortality

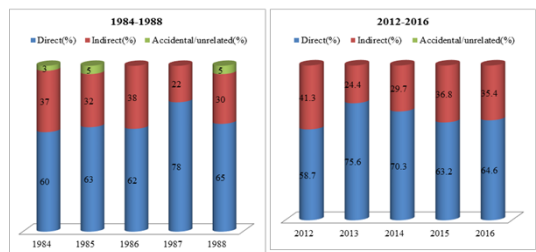


Figure-4 Direct Causes of maternal mortality

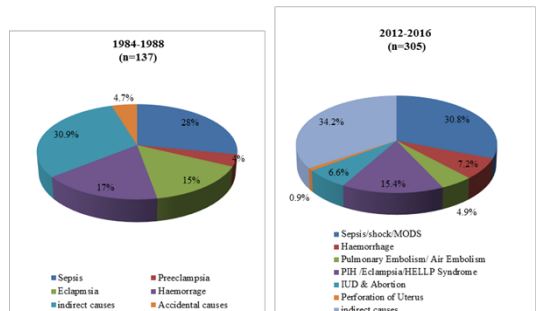
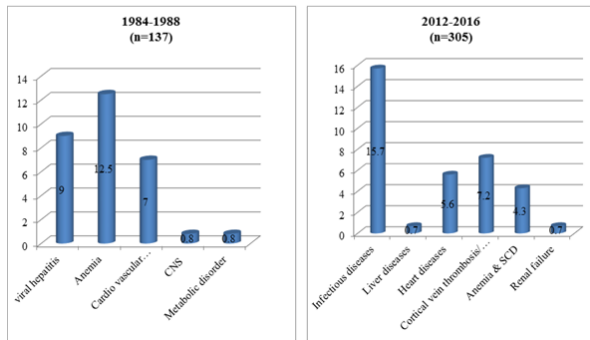


Figure-5 Indirect Causes Of Maternal Mortality In Percentage



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