Original Article

Retrospective Analysis of Maternal Mortality at a Tertiary Care Hospital of South Gujarat over Last 8 years

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Abstract

Maternal mortality is a worldwide problem affecting millions of women, often unnecessarily. Maternal mortality rates are higher in developing countries and affect the rural and poor population most [1]. India has the highest maternal mortality rate for any single country in the world, with about one fourth of all pregnancy and delivery related deaths woridwide [2]. Haemorrhage during pregnancy, sepsis, unsafe abortion, obstructed labor and hypertension are estimated to cause 81% of the worlds maternal deaths [3]. *Objective*: To analyze the MMR at our institute over last 8 years and to evaluate the etiological factors contributing to maternal mortality. *Method*: This retrospective analytical study was conducted in department of obstetrics & gynecology, SMIMER, Surat from Jan 2010 to Aug 2017. All patients, registered & unregistered, who delivered at our institute during this tenure and total maternal deaths that occurred during the same time period were included in the study. *Obsvertation*: Total 52,803 deliveries occurred during last 8 years at our institute out of which 51,824 were total no of live births and total number of maternal deaths during this time period was 136. Thus MMR calculated is 262.42.Out of 136 mothers, 93 (68.38%) died due to direct obstetric causes and 43 (31.62%) died of indirect causes. PPH was found to be the main cause leading to death of 32 (23.52%) out of 93 and eclampsia was second killer contributing to 11.02% of mortality (15 out of 93). *Conclusion*: Maternal mortality is an indicator of the quality of obstetric care in a community reflecting the utilization of health care services available in a community. To improve maternal health and to reduce maternal morbidity and mortality, proper ANC, emergency obstetrics and routine audits for maternal deaths are needed which will help to develop subsequent policies and protocols to tackle life threatening obstetrics emergencies.

Keywords: Maternal Mortality; MMR; Maternal Death Audits.

Introduction

Today in 21st century also, when medicine has evolved and advanced to high levels, high maternal mortality is still a burning issue, especially in developing countries. The WHO has reported that two-thirds of maternal deaths occur in just 11 countries, with India topping that list [4]. Maternal mortality is an index of reproductive health of the society. High incidence of maternal deaths reflects poor quality of maternal services, late referral and low socioeconomic status of the community. The current MMR in India is 178/10000 live births [5]. In 1998 the main causes of maternal death in India were anaemia, heamorrhage in pregnancy and puerperium, abortion, eclampsia and puerperal sepsis [6]. Maternal mortality has either direct or indirect causes. Direct causes are still the leading cause of maternal mortality resulting in 82.09% of total deaths [7]. Thus, an emphasis should be placed on addressing and preventing the direct causes

of maternal mortality in India, as they are most prevalent.

Aims and Objectives

To analyze the MMR at our institute over last 8 years, to evaluate the etiological factors contributing to maternal mortality and to improve maternal health and reduce maternal mortality by taking the feasible corrective measures.

Material & Methods

This is a retrospective analytical study conducted in department of obstetrics & gynecology at SMIMER, Surat (which is a tertiary care hospital, a medical college and a recognized EmOC Training Centre for both trainers and trainees) from Jan 2010 to August 2017. Maternal mortality is defined as "the 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 the pregnancy or its management but not from accidental or incidental causes." MMR is defined as the number of maternal deaths during a given time period per 1, 00,000 live births during same time period.

All maternal deaths which occurred in the department of obstetrics & gynec and those who were transferred to other departments and died there due to some pregnancy related or aggravated conditions during the above said time period were included in this study. Approval was taken from ethical committee.

Observations

Total of 52,803 deliveries occurred during the study period out of which 51,824 were live births and the total number of maternal deaths was 136, so the calculated MMR is 262.42. 83% of maternal deaths occurred in unregistered mothers as compared to only 17% in registered group. As far as the age of patients was concerned, maximum patients were in age group of 29-29 years i.e. 78 %(106/136), 7.8% (10/136) were< 19 yrs and 14.7% (20/136) were > 30 yrs of age. 44.12% (60/136) patients had less than 3 ANC visits, 33.82% (46/136) had no antenatal visits and 22.06% (30/136) had either 3 or more than 3 ANC visits.

72.06% (98/136) of maternal mortality occurred in multigravida while 27.94% (38/136) were primigravida. 44.90% (61/136) patients of maternal mortality were illiterate and only 22% (3/136) of patients were educated up to higher secondary or more.

As shown in Table 1, 68.38% (93/136) of patients died because of direct causes and 31.62% (43/136) died of indirect causes. According to Table 2 of direct causes, heamorrhage during ante partum and postpartum period accounted for maximum number of deaths which 49 out of 136 (36.09%). Eclampsia was turned out to be the second killer leading to 11.02% (15/136) of maternal deaths followed by septicemia leading to 8.82% of deaths. Table 3 shows that among indirect causes, jaundice was greatest

Table 1: Causes of maternal mortality

Causes	No of Patients(136)	Percentage
Direct	93	63.18%
Indirect	43	31.62%

Table 2: Direct causes of maternal mortality

Causes	No of Patients (93)	Percentage (out of 136)
1-Haemorrhage	49	36.09%
PPH	32	23.52%
APH	8	5.88%
Ruptured Uterus	4	2.94%
Inversion Uterus	1	0.73%
Retained Placenta	2	1.47%
Postabortal Bleeding	2	1.47%
2-Eclampsia	15	11.02%
3-Septicemia	12	8.82%
4-Amniotic Fluid Embolism	5	3.67%
5-DIC	9	6.61%
6-Pulmonary Embolism	1	0.73%
7-Acute fatty liver of pregnancy	1	0.73%
8-Cornual Ectopic (managed by methotrexate)	1	0.73%

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Table 3: Indirect causes of maternal mortality

Indirect Causes	No of Patients(43)	Percentage(out of 136)
1- Jaundice	14	10.29%
2-Severe Anemia	9	6.61%
3-Malaria	3	2.20%
4-Medical Condition	6	4.41%
-Eisenmengers Syndrome	1	0.73%
- Mitral Stenosis	2	1.47%
-TB Meningitis	1	0.73%
-CCF	1	0.73%
-Pulmonary Koch's	1	0.73%
5-Dengue Fever	2	1.47%
6-Intracranial Heamorrhage	3	2.20%
7-Pneumonia	2	1.47%
8-Acute Meningo Encephalitis	1	0.73%
9-Hypoxic Ischemic Encephalopathy	1	0.73%
10-Burns	1	0.73%
11-Enteric Fever	1	0.73%

culprit leading to 10.29% (14/136) of maternal deaths followed by anemia which killed 6.61% (9/136) of precious mothers.

Discussion

The MMR in the study period was 262.42/100,000 live births and the current MMR in India is 178 [5]. Various studies done in India in last 15 yrs showed wide variation in MMR ranging from 47 to 625 [8,9l,10].

The comparatively high MMR in our study could be due to the fact, that our hospital is a tertiary care hospital & receives a lot of complicated referrals from rural areas of southern Gujarat and Maharashtra at a very late stage. Low death rates in registered patients highlight the importance of antenatal care in reducing maternal mortality. The risk of maternal deaths was less in patients who had more than 3 ANC visits .This proves that proper antenatal care can help to identify the high risk patients like anemia, PIH, DM etc. and timely intervention can reduce both maternal morbidity and mortality.

Most of the maternal deaths were in multigravida. This is because severe anemia, PPH, Placenta previa and rupture uterus are more common in multipara as compared to primipara. 44.19% (61/136) of died mothers were illiterate as uneducated mothers are not well aware about antenatal care, safe delivery, adequate contraception, proper nutritional practices etc. all of which is very important for a good maternal and fetal outcome. As shown in Table 1, 68.38% (93/136) of mothers died of direct causes with heamorrhage topping the list. Studies have shown that two-thirds of women who die of PPH do not have

risk factors, hence all women should be considered at risk of PPH [11].

In this study, jaundice was found to be the main indirect cause of maternal mortality. According to Bhattacharya etal, anemia is the leading indirect cause resulting in almost 1/5 of all maternal deaths in India.

Conclusion

This study found that MMR over last 8 years period was 262.42/100,000 live births at our institute. Direct causes lead to 68.38% of maternal deaths with heamorrhage topping the list and indirect causes leading to 31.62% of deaths with jaundice heading the list. Multigravidity, illiteracy and poor antenatal care were some of the common risk factors found for high maternal mortality in this study.

Considering the risk factors and causes of maternal mortality found in our study, various steps can be taken to reduce the maternal morbidity and mortality at various levels like-making education mandatory to all female population, proper nutritional care of girls from onset of puberty to reduce incidence of anemia, proper counseling for contraception to reduce incidence of unwanted pregnancies and unsafe abortions, imparting adequate antenatal care to all mothers by promoting EmOC training and services specially in rural areas, timely referral of high risk patients to tertiary care centers for better and timely care and last but not the least, routine maternal death audits must be conducted to evaluate the trends of maternal deaths that will help to develop subsequent policies and protocols to tackle life threatening obstetric emergencies.

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Abbreviation

MMR- Maternal Mortality Ratio,

PPH-Postpartum Heamorrhage,

ANC- Antenatal Care.

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