ORIGINAL ARTICLE

Maternal Mortality: Ten Years Retrospective Study

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Abstract
To study the maternal mortality and common complication leading to maternal death over a period of 10yrs from Jan 1999 to Dec. 2009.A retrospective study of hospital records and death summaries of all maternal deaths over 10 yr periods was carried out. MMR of 270.33/1,00,000 live births was observed over a period of 10 yrs. post partum hemorrhage was the leading direct cause and anemia the leading indirect cause. Most women died within 24 hrs of admission. The age group of 20-30 yrs was crucial. Most deaths were in unbooked cases transferred from outside. Hemorrhage and PIH are major causes of death. Most maternal deaths are one preventable by quality health education of women & adequate care to the mothers at all levels district health system

Key Words
Maternal, Mortality Rate (MMR), First Referral Unit (FRU)

Introduction

Maternal mortality is defined as the death of any woman while pregnant or within forty two completed days of termination of pregnancy irrespective of duration or site of pregnancy from any cause related to or aggravated by pregnancy but not from accidental or incidental causes. Maternal mortality rate is defined internationally, as the maternal death rate per 1, 00,000 live births (1).

Every minute, everyday a women dies in pregnancy or childbirth. The loss of a mother shatters a family and threatens the well-being of surviving children. Evidence shows that infants whose mother die are more likely to die before reaching their second birthday than infants whose mother survive. And for every women who dies 20 or more experience serious complications. What is more unfortunate is that the vast majority of deaths need never have happened and it is shocking to learn that 98% of these deaths occur in developing countries.

Pregnancy and childbirth is a universally celebrate event yet for many thousands of women it is a private help that may will end in death. The reasons that women die in pregnancy and childbirth are many layered. Behind the medical causes are logistic causes, failure in health care system, lack of transport etc. and behind these are social, cultural and political factors which together determine the status of women, their health, fertility and health seeking behaviour (1).

Maternal mortality is an index of effectiveness of obstetric services prevailing in a country. Prevention of maternal deaths is one of the foremost goals in the safe motherhood programme in a developing country like ours. We analysed the causes of maternal deaths at Dr. RPGMC Tanda hospital our 10 years period to understand the common complications leading to maternal deaths and to discuss the remedy.

Material & Methods

Retrospective study of maternal deaths over 10 years (Jan 1999-Dec 2009) was carried out in the department of obstetrics and gynaecology at Dr. RPGMC Tanda, Himachal Pradesh, India with special emphasis on age, parity, cause of death, admission death time interval and antenatal care.

Results

In the years 1999-2009 the total live births were 35,882 of which 97 mothers died giving cummulative maternal mortality rate (MMR) of 270.33 per 1,00,000 live birth (*Table 1*). As shown in *table 2,* 89.69% women came from rural areas 62.88% belonged to poor socio economic status. Maternal mortality was more in unbooked patients (57.73%) and the dominant adverse factor was illiteracy in unbooked cases.

The parity distribution showed a predominance of multigravidas (49.48%). 74.22% women were in 21-30 Years age group while 8.24% were below 20 years age

and 17.52% above 30 yrs (*Table-3*). 25.7% women died in antenatal period while 11.34% died to complications of abortions of 62.8% post partum deaths 86.8% delivered in hospital of whom 64.10% had normal vaginal delivery. 20.75% women delivered by cesarean section and 15.09% by forceps application. Time interval from admission to death is depicated in *table 4*. PPH was the leading cause of MM (35.05%) followed by PIH (27.83%). Anaemia was the indirect cause in 25.7% patients *table V*.

Table-1. Year wise Maternal Deaths and Live Births

Year	Maternal Deaths	Live births	MMR/1,00,000 Live Births
1999	06	1455	412.4
2000	07	1850	378.37
2001	15	2193	683.99
2002	08	3099	258.14
2003	13	3232	402.2
2004	10	3160	316.5
2005	06	3809	157.7
2006	09	4624	194.63
2007	10	3696	270.56
2008	07	3883	180.27
2009	06	4886	122.79
Total	97	35882	270.33

Table 2. Maternal Deaths According To Locality, Socioeconomic Status, Literacy & Antenatal Care

	No. (%)
Address	
Rural	87 (89.69%)
Urban	10 (10.30%)
Socio Economic Status	
Poor	61(62.8%)
Average	31(31.95%)
Good	6(6.18%)
Literacy	
High School	28(28.86%)
Middle	29(29.89%)
Primary	15(15.46%)
Nil	26(26.08%)
Antenatal Care	
Unbooked	56(57.73%)
Booked	17(17.52%)
Refereed	24(24.74%)

Table 3. Age Parity Distribution of Maternal Deaths

Age	Primigravida	Multigravida	Grandmultipara	Total	%
<20	6	2	-	8	8.24%
21-30	3	36	3	72	74.22%
>30	2	10	5	17	17.52%
Total	41(42.26%)	48(49.48%)	8(8.24%)	97	

Table 4. Admission Death Interval

Admission –death interval	No %
<24 hrs.	53 (54.63%)
25-48 hrs.	19 (19.58%)
49-72 hrs.	10(10.30%)
>72 hrs.	15 (15.46%)

Table 5. Cause of Maternal Death

Cause	No %
Direct Causes	
Post partum haemorrhage	34 (35.05%)
PIN	27 (27.8%)
Puerperal sepsis	11(11.34%)
Septic abortion	7 (7.21%)
Antepartum haemorrhage	4(4.12%)
Obstructed labour	2(2.06%)
Embolism	3(3.09%)
Cardio myopathy	1(1.03%)
Rupture Aortic Aneurysm	1(1.03%)
Hyperemesis gravidourm	1(1.03%)
Cerebral Vn thrombosis	1(1.03%)
Hepatic Encephalopathy with	1(1.03%)
DIC	1(1.03%)
Pulm T.B. with immunocompromised status	1(1.03%)
Pneumonitis with RHF	1(1.03%)
Pyrexia with encephalopathy with ARF	1(1.03%)
Indirect Causes	
Anemia	25(25.7%)

Discussion

In the present study MMR varied from 122(2009) to 683 (2001)/1,00,000 live births. Other studies from tertiary care institution reported mortality rate of 113 to 879 per 1,00,000 live births (1,2,3).

The majority of women in India don't deliver in hospital and therefore, the incidence and proportion of complications seen is probably very different from what occurs in the community. At the same time hospital data estimated may be more than community mortality rate as high risk women are referred to hospital for delivery and often the women are only transported to hospital when they develop life threatening complications, which is too late and swells the number of hospital deaths.

89.6% of women belonged to rural background with majority (62.8%) from poor strata. Higher mortality was seen in uneducated women from rural areas by other

authors as well (1,4). Poverty and female illiteracy are important social risk factors and along with women's status closely interlinked with maternal health.Most maternal deaths were observed in 21-30 yrs age group in the present study (74.2%) and also in other studies (2,4) since highest number of pregnant women belonged to this group.

54.63% of deaths occurred within 24hrs of admission to the hospital Jayaram reported 62.6% and purandace reported 80% maternal deaths within 24hrs. Lack of qualified medical attention and delayed referral resulted in late intervention. All women were in poor general condition at the time of admission. It becomes apparent that many of the deaths that occurred could've been avoided if they were transferred earlier further highlighting the need for adequate and quick transport facilities.Haemorrhage (39.0%) was the leading cause of maternal mortality 35% of women died due to PPh. Maternal mortality due to haemorrhage was observed in 24-68% of women by different author(1,2,3,4,5).

Most deaths in our study occurred inspite of availability of blood bank facility and specialist doctors within the hospital round the close. One to six units of blood was transfused to the patients with PPH, seven of whom had hysterectomy. Although obstetric haemorrhage was vigorously tackled, the prevalence of nutritional anaemia and poor general condition failed to prevent the maternal tragedy. Need for availability of blood banks at all FRUs is emphasized. 27.8% of deaths in the present study was due to complication of PIH. Similar observations were made by other studies (1, 2, 3, 4). Use of $MgSo_4$ has improved the scenario.

Most of the women who died of hemorrhage were also anaemic. anaemia as an indirect cause accounted for 25.7% of deaths. Previous ICMR collaborative study on high risk pregnancies showed that anaemia in pregnancy was reason for admission in 29.7/1000 admission IMCR 1990). Preexisting anemia worsens as pregnancy advances leading to congestive cardiac failure and death. It also impedes the mothers ability to resist infection or cope with hemorrhage and increases the likelihood of her dying during childbirth by a factor of four (1).

11.3% died of puerperal sepsis and another 7.2% died of septic abortion. Sepsis as a cause of maternal death was seen on 12.7% cases by kulhari (3) and in 7.2% cases by Bedi et al (1) most of there women delivered at home & had poor access to A/B. Respite legalization of abortion facilities for abortion are for from satisfactory with or 10% referral deaths due to abortion. Many of

these lives could be saved if all abortion could be performed by qualified medical personnel. Sepsis is probably the most easily preventable cause of maternal death. Battacharya et al in their study observed a significant downward trend in maternal mortality rate but the fall has been very low (6).

Singh R et al has found illiteracy, inadequate antenatal care services and delay in the initiation of treatment as the root cause of high maternal mortality (7).

Every pregnancy should culminate in healthy mother and healthy baby and for that we need to ensure that all women have access to high quality essential and emergency obstetric service along with provision for safe abortion and contraceptive service at FRU level to reduce mortality due to unplanned pregnancies.

Conclusion

Post partum hemorrhage is the most important cause of maternal mortality followed by PIH, septic abortion and puerperal sepsis. Maternal mortality rate can be reduced by improving the quality of care to the mothers at all levels of district health system, adequate transport facilities, health education of masses, continued educational efforts to upgrade the knowledge of trained birth attendants (TBA) and a culturally sensitive integration of TBA'a into Govt. Programme

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