

## DEATHS AMONGST WOMEN OF REPRODUCTIVE AGE GROUP IN THE GYNAECOLOGY AND OBSTETRICS DEPARTMENT OF A TERTIARY CARE HOSPITAL OF EASTERN INDIA.

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### ABSTRACT

**Objectives:** The present study was carried out to find out the type (maternal i.e. pregnancy related / non-maternal) of deaths occurring amongst women in the reproductive age group in the Gynecology and Obstetrics department of a tertiary care hospital in a year and to identify the cause of such deaths. **Methods:** A record based descriptive cross-sectional study of all reproductive aged deaths which took place in the year 2009 in Gynecology and Obstetrics department of R. G. Kar Medical College and Hospital, West Bengal, India was conducted in February 2010; a total of 40 such deaths were recorded. Data were analyzed by standard statistical technique. **Results:** Majority of the deaths (17) occurred in the age group of 20 – 24 years, followed by 8 each in the age group 15 – 19 and 25 – 34 years. Maternal deaths were 33 and the rest 7 deaths were non-maternal. Out of the 33 maternal deaths, majority (22) died in the post partum period; around 5 deaths occurred during pregnancy before onset of labour, and 3 deaths each occurred during labour and due to abortion. Out of 33 maternal deaths, majority i.e. 12 died from complications of caesarean section; 7 and 5 subjects died from eclampsia and postpartum haemorrhage respectively. Out of the 7 non-maternal deaths, 5 and 2 died from ovarian carcinoma and cervical carcinoma respectively. **Conclusions:** Most of the deaths were maternal. Complications of caesarean section, eclampsia and postpartum hemorrhage were some of the important causes of maternal deaths. There is a need to carry out 'facility Based Maternal Death Review' to investigate the cause of such deaths to prevent these in future.

**Key words:** Maternal deaths, non-maternal deaths, Eclampsia, Caesarean section, Abortion, Postpartum haemorrhage.

## INTRODUCTION

Women in the reproductive age group comprise a vulnerable section in our society as they are confronted with the dual burden of pregnancy related complications and communicable and non-communicable diseases prevalent in the general population. Women's unequal access to resources including health care is well known in which stark gender disparities are a reality. Hence, women are less likely to seek health care before illness is well advanced.

Maternal mortality which has been included as one of the United Nation's Millennium Development Goals (MDGs) is showing a slow progress and is a grave concern of the international community. Worldwide approximately 358 000 maternal deaths occurred in 2008 in 172 countries and territories <sup>1</sup>.

A large number of deaths of women in the reproductive age group are related to pregnancy and its complications. Each year in India, roughly 28 million women experience pregnancy and 26 million have a live birth. Of these an estimated 67,000 maternal deaths occur each year <sup>2</sup>. In addition, millions of women suffer pregnancy and birth related ill health. A complete picture of deaths of women in this age group can be obtained by different approaches like community based maternal death reviews (verbal autopsies), facility based maternal death review, reproductive age mortality survey (RAMOS) and confidential enquiries. In RAMOS all deaths are investigated (using family verbal autopsy reports, death certificates with medical cause, health facility reports or medical record reviews) to ascertain if they are maternal deaths (pregnancy related).

Most of the direct causes of maternal mortality can be addressed if skilled health personnel are on hand and key drugs, equipments and referral facilities are available. Maternal death review as a strategy has been spelled out in the Reproductive and Child Health Program, phase II (RCH II) in the National Program Implementation Plan Document. It is an important strategy to improve the quality of obstetrics care and reduce maternal mortality and morbidity. The importance of maternal death review lies on the fact that it provides detail information on various factors at facility at community, regional, district and national level that are needed to be addressed, to reduce maternal deaths. Both facility based and community based death reviews are required to know the underlying causes of such deaths. A facility-based maternal deaths review (MDR), defined as a "qualitative, in-depth investigation of the causes of and circumstances surrounding maternal deaths occurring at health facilities" can help to reduce obstetric complications and improve maternity outcomes <sup>3</sup>.

The present base-line study was carried out to find out the type (maternal i.e. pregnancy related / non-maternal) of deaths occurring amongst women in the reproductive age group in the Gynecology and Obstetrics department of a tertiary care hospital in a year and to identify the cause of such deaths in order to assess its current status in this institute.

## MATERIAL AND METHODS

A record based descriptive cross-sectional study was carried out from 1<sup>st</sup> February to 28<sup>th</sup> February 2010 at R. G. Kar Medical College and Hospital in the department of Community Medicine. The study population comprised of all deaths which took place amongst women of the reproductive age (15 – 49 years) from 1<sup>st</sup> January 2009 to 31<sup>st</sup> December 2009 in Gynecology and Obstetrics department of R. G. Kar Medical College and Hospital. A total of 40 such deaths took place in the reference period. Death registers, death certificates and bed head tickets were scrutinized and data were recorded in a pre-designed and pre-tested schedule; the different variables which were studied being age, residence, referral status, type of death, cause of death, death in relation to timing of pregnancy, time interval between admission and admission note, mode of delivery and outcome of pregnancy. Data were analyzed by standard statistical technique like proportion.

## RESULTS

### Background information

In the reference year of 2009, total indoor admission in Gynecology and Obstetrics department was 27090; a total of 17738 deliveries took place of which 17222 were live births. Caesarian section was performed in 5965 cases. A total of 40 deaths were recorded in the reproductive age group from this department.

## Socio-demographic profile

Out of the 40 deaths, majority of the deaths (17) occurred in the age group of 20 – 24 years, followed by 8 each in the age group 15 – 19 and 25 – 34 years. Out of a total of 33 maternal deaths, 7 were aged 15 to 19 years, 15 were 20 – 24 years, 7 were 25 – 34 years and 4 were in the age group of 35 – 49 years (Table 1).

**Table 1:** Distribution of deaths of women of reproductive age group according to age and type of deaths (n = 40).

Age (years)	Maternal deaths	Non-maternal deaths	Total
15 – 19	7	1	8
20 – 24	15	2	17
25 – 34	7	1	8
35 – 49	4	3	7
Total	33	7	40

Regarding residence, 21 subjects came from urban area; and rest 19 resided in rural area. About 22 subjects reported to the hospital directly, while 18 subjects were referred from other peripheral health care institutions.

## Types of deaths

Maternal deaths were 33 (82.5%) and rest 7 (17.5%) deaths were non-maternal. Out of the 33 maternal deaths, majority (22, 66.7%) died in the post partum period; around 5 (15.1%) deaths occurred during pregnancy before onset of labour, and 3 (9.1%) deaths occurred each during labour and due to abortion (Table 2).

**Table 2:** Distribution of maternal deaths according to different attributes.

Attributes related to maternal deaths	Number (%)
<b>Timing in relation to pregnancy (n=33)</b>	
<i>Before 20<sup>th</sup> weeks of gestation</i>	
Abortion	3 (9.1)
<i>After 20<sup>th</sup> weeks of gestation</i>	
Before onset of labour	5 (15.1)
During labour	3 (9.1)
Post partum	22 (66.7)
<b>Mode of delivery in maternal deaths (n=23)</b>	
Normal delivery	9 (39.1)
Caesarean section	12 (52.2)
Assisted vaginal delivery	2 (8.7)
<b>Causes of maternal deaths (n=33)</b>	
Abortion	3 (9.1)
Eclampsia	7 (21.2)
Obstructed labour	2 (6.1)
Post partum hemorrhage	5 (15.1)
Complications of Caesarean Section	12 (36.4)
Others	4 (12.1)
<b>Complications of caesarean section * (n=12)</b>	
Acute renal failure	3 (25)
Pulmonary embolism	4 (33.3)
Disseminated Intravascular Coagulation	3 (25)
Post operative shock	2 (16.7)
Hepatic encephalopathy	1 (8.3)

\*One case had both pulmonary embolism and DIC.

Amongst the maternal deaths, the interval between admission in the ward and admission note given by the attending physician was within 10 minutes in 16 cases, whereas in 5 cases each admission note was given within 10 -30 minutes and after 30 minutes. Regarding mode of delivery, out of the 23 maternal deaths (excluding 3 abortions, 1 death due to choriocarcinoma, 4 post mortem caesarean section and 2 postpartum deaths where data were not available), caesarean section was conducted in 12 cases; 2 had assisted vaginal delivery whereas 9 delivered by normal vaginal delivery (Table 2). From the available 26 data, 14 subjects had live births and rest 12 had stillbirths.

According to causes of deaths, out of the 33 mothers, majority i.e. 12 (36.4%) died from complications of caesarean section; 7 and 5 subjects died from eclampsia and postpartum haemorrhage respectively. Out of the 12 maternal deaths that occurred due to complications arising from caesarean section; 4 died from pulmonary embolism, 3 each died due to acute renal failure and disseminated intravascular coagulation (Table 2).

Out of the 7 non-maternal deaths, 5 (71.4%) and 2 (28.6%) subjects died from ovarian carcinoma and cervical carcinoma respectively.

## DISCUSSION

In our study 7 maternal deaths occurred in the 15-19 years age group, which shows that, large numbers of teenage pregnancies are still taking place and there is a need for behavioural communication change so that pregnancy occurs at a higher age group. Non-maternal death in this age group was 1. Data from Nationwide Sample Registration System (SRS 2004-06) shows that maternal and non-maternal deaths were 10% and 14% respectively in the age group 15-19 years<sup>4</sup>, though our study population is too small to compare it with the SRS data. Maternal deaths in the age group 15 – 24 years were 82.5% and non-maternal deaths were 17.5%. The SRS 2004-06 data shows that 41% maternal death and 28% non-maternal death occurred in the age group 15-24 years. The non-maternal deaths do not give a complete picture of all deaths in the reproductive aged females, which took place in this institution in 2009 as only deaths from the Gynaecology & Obstetrics department have been analyzed. Kulkarni et al investigated a total of 103 deaths in reproductive age group of which 5.6% were maternal and 93.2% were due to non-maternal causes<sup>5</sup>. Zakariah et al investigated 179 cases of maternal deaths by reproductive age mortality survey (RAMOS) using multiple sources in Ghana and reported 81.6% as direct maternal deaths and 17.9% as indirect maternal death<sup>6</sup>. In our study all the maternal deaths were direct maternal deaths.

As more than half of the patients came from the urban area and reported to the hospital directly- there is a need to access the quality of health care services reaching even the urban population in the metropolitan cities. A community based maternal death inquiry along with facility based death review will give the complete picture concerning the delays (if any), seeking care by pregnant women even in the urban setting. Dumont et al has reported that maternal death review had a marked effect on resources, management and maternal outcomes in a district hospital in Senegal<sup>7</sup>.

In our study 33 deaths amongst reproductive aged females were maternal deaths and 12 maternal deaths were due to complications of caesarean section like pulmonary embolism, acute renal failure and disseminated intravascular coagulation whereas 7 and 5 subjects died from eclampsia and postpartum haemorrhage respectively. Such complications causing death may have occurred due to delay in reporting to the hospital though it was not possible for us to analyze this aspect. Hence, it is recommended to refer the pregnant women as soon as possible to avoid such deaths. The sooner treatment starts, the better the survival rates. In our study in about 19% cases the admission note was given beyond 30 minutes of admission- this can be avoided by triage in the emergency department so that serious patients can be attended to earlier. Delayed treatment especially beyond two hours for obstetrical complications requiring intensive care for shock, DIC, renal shutdown, respiratory failure, electrolyte disturbance, sepsis, pneumonia, and multi organ failure can lead to a high mortality even in the best of centers.

The major causes of maternal mortality according to 2001 – 03 Sample Registration System (SRS) survey are haemorrhage (38%), sepsis (11%), hypertension (5%), obstructed labour (5%), abortion (8%) and other conditions (34%)<sup>8</sup>. Zakariah et al reported in their reproductive age mortality survey in Accra, Ghana that the most frequent causes of direct maternal deaths were obstetric haemorrhage (57, 32%), pregnancy with abortive outcome (37, 20.8%) and puerperal sepsis (13, 7.3%). The most frequent indirect cause was sickle cell crisis in pregnancy<sup>6</sup>.

All the non- maternal deaths were due to cancer, which comprised 17.5% of all deaths, 71% due to ovarian cancer and 29% due to cervical cancer; Kulkarni et al has reported 10.6% deaths due to cancer in their study,

cancer of the oesophagus contributed to 27.2% deaths followed by cancer of cervix (18%)<sup>5</sup>. The burden of malignancy is an emerging public health problem in this age group.

## CONCLUSION AND RECOMMENDATION

Out of the total deaths, majority died in the age group of 20 – 24 years. Most of the deaths were maternal compared to non-maternal deaths. Most of the maternal deaths occurred in the post partum period. Complications of caesarean section, eclampsia and postpartum hemorrhage were some of the important causes of maternal deaths.

Action has to be taken so that maternal deaths can be prevented by proper antenatal, natal and post natal services for pregnant women. In this present record based study, it was not possible to assess whether pregnant women who died had received antenatal services or not or the quality of intranatal or post natal services received. There is a need for awareness generation amongst the urban as well as rural residents about the proper need for birth preparedness and complication readiness apart from proper antenatal care of pregnant women. Community based maternal death review by verbal autopsy will further supplement the information obtained from facility based maternal death review to identify the delays in seeking care by pregnant women. Cancer education is another area where awareness generation is required for screening and early diagnosis.

Facility based maternal death review and audit of near misses should be an integral part of the health management system. There is a need to carry out facility based maternal death review to know the magnitude of the problem and to investigate the causes of such deaths, so that necessary interventions can be preplanned to prevent such deaths.

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