

## **Maternal Mortality in Ribat University Hospital, Khartoum, Sudan: Seven years of experience**

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### **Abstract:**

**Background:** Maternal death is a tragedy that leaves an enormous negative impact on the family. The objectives of the study were to determine the rate and causes of maternal mortality in Ribat University Hospital

**Methods:** This was a descriptive, hospital-based study conducted in Ribat University Hospital, Khartoum, Sudan. Maternal mortality records were reviewed for causes of maternal death. Data were collected by a check list and analysed by SPSS software.

**Results:** The number of maternal deaths was 10 while the number of live births during the study period was 19604. The maternal mortality rate was 51:100000 live births. 40% of patients were below the age of 30 while 60% were 30 years of age and more. Rural and urban residence constituted 70% and 30% respectively.

60% of patients had a parity of more than four. Results showed that 62.5% delivered by emergency caesarean section. The study revealed that 20% of the patients died as a result of pregnancy induced hypertension (PIH) (HELLP syndrome and eclampsia), 20% of PIH (eclampsia), 10% of PIH (rupture liver), 10% of ante partum haemorrhage (placenta praevia), 10% of primary postpartum haemorrhage following twin vaginal delivery, 10% of puerperal sepsis and septic shock following emergency caesarean section, 10% of hypovolaemia due to hyperemesis gravidarum and 10% of septicaemia with acute renal failure following missed miscarriage,

**Conclusions:** Maternal mortality rate was 51:100000 live births. Pregnancy induced hypertension constituted one half of the causes of maternal deaths, followed by haemorrhage and septicaemia.

**Key words:** ante partum haemorrhage, postpartum haemorrhage, septicaemia.

**M**aternal death is a tragedy that leaves an enormous negative impact on the family. Maternal mortality is defined as death of a woman while pregnant or within 42 days from termination of pregnancy from any cause except accident and intentional accidents. Causes of maternal deaths were divided into direct and indirect. Direct deaths are due to obstetric complications of pregnancy, labor and perperium or from medical interventions, omission and incorrect treatment.

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Indirect deaths are due to a preexisting disease or a disease that developed during pregnancy, (not due to obstetric causes), but aggravated by the physiological effects of pregnancy<sup>1</sup>.

The causes of mortality due to direct or indirect causes include hemorrhages, early pregnancy and obstructed labor, child birth, hypertensive disorders of pregnancy, sepsis, abortion, pulmonary complications, cerebrovascular events, and amniotic and/or blood clot embolism, anemia, malaria, hepatitis and trauma<sup>1-7</sup>.

Contributing factors to maternal mortality are diverse; low standards of obstetrics referrals, failure to recognize the severity of the problem by the community, delay in starting the decision making process to seek health care, lack of transport and substandard

primary health care and unavailability of blood transfusion services<sup>1</sup>.

Young age at child birth, and poverty were independently associated with increased risk of maternal death. Presence of complications during antenatal period was an important predictor of maternal death. Childbirth at home was associated with an increased risk of maternal death<sup>4</sup>, while hospital delivery was a strong predictor of a low maternal mortality rate; low income and illiteracy were significantly associated with increased maternal mortality rates. On the other hand, increased utilization of prenatal and obstetric care was significantly correlated with the declining trend in maternal mortality rate (MMR)<sup>8</sup>.

In the developing world, maternal mortality rates are typically  $\geq 100$ -fold higher than rates in the industrialized countries<sup>9</sup>. Sudan is among the countries that had a high maternal mortality rate of 1100/100000 live births<sup>10</sup>. Sepsis and malaria rank high as causes of maternal death in the country<sup>6</sup>. Cost, distance and the time needed to access care are major barriers for effective uptake of antenatal and particularly intrapartum services<sup>11</sup>.

Barriers to the utilization of maternal health service could be financial, physical, cognitive, organizational, psychological and socio-cultural<sup>12</sup>. Even within a country, maternal mortality may vary from a region to another. Rural areas, unlike urban settings, usually have scarce resources and are deprived of health professionals. Inequities in the distribution of maternal health services impede progress towards reducing maternal mortality in the country as a whole.

Since it is the aim for every country to reduce maternal mortality by 75% in order to achieve millennium development goal 5 (MDG 5), efforts should be exerted by all stakeholders to make this goal a reality. To achieve this, it is necessary to develop more efficient prenatal programs, with focus in maternal risks<sup>2</sup>. The objectives of the study were to determine the rate and causes of maternal mortality in Ribat University Hospital, Khartoum, Sudan.

### Methods:

This was a retrospective descriptive, hospital-based study to determine incidence and causes of maternal deaths in Ribat University Hospital, Khartoum. All records of maternal deaths and of live births delivered in the hospital during 2004-2010 were considered in the study. The records were reviewed; and the causes of maternal deaths and sociodemographic characteristics of the victims were recorded. Data were collected by a check list and analysed by SPSS version 16.

### Results:

The number of maternal deaths was 10 while the number of live birth during the study period was 19604. The maternal mortality rate was 51:100000 live birth. Results showed that 40% of maternal deaths were below 30 years of age while 60% were 30 years and more. Rural and urban residence constituted 70% and 30% respectively. All patients were of low socioeconomic status. Results showed that 20% of them were booked while 80% were not booked for ante natal follow up. As regards parity, 40% of the women were para 4 and less while 60% were more than para 4. The study showed that 12.5% delivered vaginally, 25% were by elective caesarean section and 62.5% were by emergency caesarean section.

As regards the causes of maternal death, the study showed that 20% of the patients died as a result of pregnancy induced hypertension (Hellp syndrome and eclampsia), 20% of pregnancy induced hypertension (PIH) (eclampsia), 10% of PIH (rupture liver), 10% of ante partum haemorrhage (placenta praevia), 10% of primary postpartum haemorrhage following twin vaginal delivery, 10% of puerperal sepsis and septic shock following emergency caesarean section, 10% of hypovolaemia due to hyperemesis gravidarum and 10% of septicaemia with acute renal failure following missed miscarriage.

### Discussion:

Maternal mortality rate is an important indicator of health. The need for reducing

maternal mortality has become a paramount concern in developing countries<sup>13</sup>. The ages of most of the victims were 30 years and more. Maternal death is painful but in older women may be of more importance hence older women are more likely to have children and the responsibility of upbringing them will be a heavy burden for the family.

70% of the study patients were from rural areas, 80% were not booked for ante natal care, and all of them were of low socioeconomic status. This triad seems to be interrelated. Inhabitants living in the rural areas are of low income and may have lower health care standards than urban inhabitants. Raising the standard of living and fair distribution of health services are important issues that could eliminate the discrepancy between urban and rural areas.

Our findings showed that 60% of these patients were grandmultiparous. This was not puzzling since grandmultiparous women are usually vulnerable to medical and obstetrical conditions that threaten their lives. Anaemia, ante partum haemorrhage and postpartum haemorrhage are examples of such problems. The majority (87.5%) of women in this study were delivered by caesarean section. Although not applicable in this study, because we did not find materialized evidence linking surgery to maternal death, probably because of underreporting since this was a retrospective study, but, of note that surgery in general carries other risks like anesthesia with its entire complications. However, we think if this was a prospective study, more information in this and other aspects of the study would be yielded.

The maternal mortality rate in this study was found to be 51:100000 live births. This was low compared to the finding of Correia RA et al<sup>14</sup>, but very low (about one-sixth) in comparison to others<sup>15, 16</sup>. However, our finding was 20 times more than the finding elsewhere<sup>17</sup>, three and five times higher than other reports in literature<sup>3, 5, 18</sup>. On comparison with results from Sudan, our finding was nine folds lower than that of Elhassan EM et al<sup>7</sup>. Surprisingly, in another

study in Sudan, Dafallah SE et al reported a much higher rate (39- fold) than our finding<sup>6</sup>. Half the causes of maternal deaths in this study were due to PIH with its related complications (eclampsia, hellp syndrome, rupture liver). Our finding was higher than reports elsewhere<sup>15, 16</sup>.

Haemorrhage in our study constituted 30% of the causes of maternal death (APH, PPH, missed miscarriage). The same percentage was reported in Yemen<sup>15</sup>. The mortality was less in our patients compared to that reported from Japan and Mali<sup>3, 16</sup>. Considering postpartum haemorrhage alone, Sumedha Panchal et al reported more than 2- folds than our findings<sup>5</sup>. Sepsis and septicemia constituted 20% of the causes of maternal mortality. Similar result was reported by others<sup>16</sup>. However, this was higher than the finding in Yemen<sup>15</sup>. Of note, in Sudan, it was reported that sepsis constituted one –third of the causes of maternal mortality<sup>6</sup>.

#### **Limitation of the study:**

This was a hospital-based study. The maternal mortality rate reported here should be looked at cautiously and may just represent the tip of the ice berg with regard to the magnitude of the problem. We think that community based studies yield a better reflection of the situation in the community. Yet, hospital – based studies yield a good reflection of the causes of maternal mortality.

#### **Conclusions:**

Maternal mortality rate was 51:100000 live births. Pregnancy induced hypertension constituted one half of the causes of maternal deaths, followed by haemorrhage and septicaemia. Maternal mortality is related to older age groups, rural residence, poor antenatal follow up, high parity and emergency caesarean section delivery.

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