

# A STUDY OF MATERNAL MORTALITY IN CHELUVAMBA HOSPITAL, MYSORE

by

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Study of maternal mortality is essential in that it focusses the attention of the obstetrician on the factors responsible for these deaths and how to avoid them. It is a direct evaluation of the existing standards of maternal welfare in a particular area.

So far no study regarding the maternal mortality has been presented from this area, hence a retrospective study was undertaken in this teaching hospital which has a feeding area mainly from villages within about 30 to 40 miles radius and from a city population of 4 lakhs.

People in this area are mainly agriculturists belonging to a low socio-economic class, and in general poorly educated. The value of antenatal care, planned parenthood and knowledge of basic principles of nutrition are lacking adding to the hazards of child bearing.

Maternal Mortality for five years from 1967 to 1971 was studied. There were 22,887 total births and 310 maternal deaths (including abortions) in the same period giving an incidence of 13.54/1000 total births, an alarming incidence indeed! In England it was 0.28 in 1963 itself (Stallworthy and Bourne, 1966) showing what has to be achieved by us.

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Gun in 1970 gave an incidence of 13.7/1000 births closely comparable to ours. His was also a district hospital where a large number of complicated cases were admitted.

## Observations

(1) *Parity*: Maternal Mortality was found to be high in multiparae in our series, (Table-I) grand-multiparae and

TABLE 1  
*Incidence According to Parity*

Parity	Number	Percentage
Primipara	67	21.6
Multipara	158	51.0
Grand-multipara	80	25.8
Parity not mentioned	5	1.6

primiparae following in that order. Parity was not mentioned in five cases. Probably the primiparas are better cared for as it is their first pregnancy and even in low economic class priority is given to them. Anaemia was also less commonly found in them, whereas multiparas without any idea of planned parenthood are common prey for anaemia because of repeated pregnancies in rapid succession with added burden of looking after an ever increasing family. The death rate in grandmultiparas was mainly contributed by sepsis following an induced abortion, associated anaemia and rupture uterus.

(2) *Age*: Table II shows the age incidence from which it may be observed

TABLE II  
Age Incidence

Age Group (in years)	Number of Patients	Percentage
16-25	143	46
26-35	140	45
36-45	27	9

that there was almost equal susceptibility of patients between 16 to 25 years and 26 to 35 years. This only indicates parity is a more important deciding factor than age. Early marriage which is more common in the villages, may be a contributing factor as we see very young multiparas.

(3) *Abortions*: There were 44 deaths due to abortion, 14.9% of total maternal deaths. Of these 61% died because of sepsis. Konar *et al.*, (1973) in their survey have also found that 68.8% of abortion deaths were due to sepsis. Eight patients died of haemorrhagic shock following abortion.

(4) *Cause of Death*: This is classified as due to direct and indirect obstetric causes. When two or more conditions coexisted and contributed to death it was classified under most appropriate cause after reviewing the case. It will be found from Table III that 58% of deaths (179 cases) were due to direct obstetric causes and 42% of deaths (128 cases) were due to indirect obstetric causes. Heera and Das (1973) in their survey have noted 57.6% and 40% due to direct and indirect obstetric causes, respectively. Cause was not known in 3 cases as they were either dead at the time of admission or died soon after admission making it difficult to come to

a conclusion as the relatives did not allow postmortem examination.

#### *Direct Obstetric Causes*

(a) *Shock*: Forty cases were lost because of shock (22.34%). All these patients were badly handled and exsanguinated before admission. Those with prolonged labour, retained placenta and antepartum haemorrhage were further subjected to operative and anaesthetic trauma and they died in the immediate postoperative period. These women would have been best treated by a preliminary blood transfusion and correction of dehydration and ketosis by a 'Flying squad', the importance of which cannot be over stressed in a country like ours where majority live in the villages and where transportation facilities are still inadequate. A primipara was lost because she was brought in a moribund condition with acute inversion of the uterus. Availability of trained midwives and accessibility of Specialists, in case necessary, to these midwives is also essential. Another point that can be stressed is the fact that pregnant women fare badly under the impact of extensive surgical procedures. One of our cases a primipara, with pre-eclamptic toxæmia and breech presentation had a large tumour obstructing labour. Lower segment caesarean section was done. At the time of operation it was found to be a retroperitoneal tumour (renal cyst), a general surgeon was consulted who decided on nephrectomy. The patient died in the immediate post-operative period.

(b) *Sepsis*: The next common cause of death in this series is sepsis. There were 36 deaths (20.11%) due to sepsis of which 27 (75%) followed abortion, justifying the legalisation of abortion. Multiparæ and grandmultiparæ resort to

abortion as they are ashamed to become pregnant with grown up children at home or for economic reasons. Widows and unmarried girls also belong to this group who go to quacks for procuring abortion. One peculiar feature seen in our patients is that they will never come out with a positive history of induction, still more so, they never reveal the person responsible for it. Majority of the inductions have been performed without the knowledge of husband. Nine cases followed delivery, one was badly infected that it required laparotomy and drainage of pus from the peritoneal cavity four days after delivery. Sepsis following caesarean section was seen mostly in cases which were badly handled outside. Majority of the cases had general peritonitis, a few pelvic abscess and parametrial abscess necessitating extra-peritoneal drainage. We had two cases in which lung abscess also occurred.

(c) *Haemorrhage*: Thirty-four cases (19%) were lost because of haemorrhage, 26 following delivery and 8 due to abortion. There were 3 cases of coagulation failure, 1 following intrauterine death and 2 following accidental haemorrhage. Twelve cases were lost because of postpartum haemorrhage which includes 2 cases of coagulation failure, the rest being due to atonic postpartum haemorrhage. Of these, 2 were primiparae and both had pre-eclamptic toxæmia. Six were multiparae and 4 grandmultiparae. This loss of life due to postpartum haemorrhage indicates the importance of management of third stage of labour. There were 5 cases of placenta praevia, and 3 cases of accidental haemorrhage in this postpartum haemorrhage group. A few cases of atonic postpartum haemorrhage followed caesarean section for antepartum haemorrhage. Severe ante-

partum haemorrhage is known to produce severe postpartum haemorrhage even in vaginal deliveries. Similar factors may be responsible in abdominal deliveries besides the atony of musculature under general anaesthesia. In 3 of these cases uterus was packed with gauze as they were unfit for hysterectomy. Hysterectomy was done in 4 cases for postpartum haemorrhage. Non-availability of blood in sufficient quantity restricted further operative procedure. Relatives were reluctant to donate blood lest they lose their life or strength. Education of the general population is the only method that can help them and us in overcoming these fatalities. We should establish Blood Bank system on the basis that is followed in United Kingdom.

(d) *Toxaemia*: This claimed 25 cases (14%). Deaths were mainly due to cerebrovascular accidents and status-eclampticus and 4 cases were lost due to pulmonary oedema. Eight died with antepartum eclampsia; 13 with intrapartum eclampsia and 3 with postpartum eclampsia. Intrapartum eclampsia appears to have a bad prognosis in our series. This again reflects inadequate antenatal care. Patients are reluctant to get admitted just because they note some swelling of the lower limbs, even when they are told of the consequences. Moreover they are told by relatives and neighbours that it is common to have swelling of the lower limbs in pregnancy. It has been a common finding in our hospital that majority of toxæmia patients are muslims or non-vegetarian hindus. Majority of them are poor economically, but eclampsia is also found in rich muslim groups. Probably high content of spices and salt in non-vegetarian diet may play a part.

(e) *Renal Failure*: This complication was also fairly common, 14 deaths

(7.84%). One each was claimed by nephrotic syndrome and carcinoma cervix, 2 were due to toxæmia, 3 following accidental haemorrhage and the rest following septic abortion. We are hampered in our treatment by non-availability of peritoneal dialysis or artificial kidney. All of them were treated on conservative lines with mannitol, intravenous fluids and corticosteroids.

(f) *Rupture Uterus*: - There were 10 (5.56%) deaths due to rupture uterus, 3 died before surgery and 7 after surgery. Two were primiparae with obstructed labour, 4 multiparae and 4 grandmultiparae. One of them was given a syntocinon drip for obstructed labour in a nearby hospital and 1 followed internal podalic version. The hazards of these two procedures practised without proper assessment of the case cannot be over-emphasized.

(g) *Amniotic Fluid Embolism*: Of the 6 deaths (3.33%) clinically diagnosed as due to amniotic fluid embolism, 4 had hydramnios. Artificial rupture of the membranes was done in all the 4 cases. One of them required manual removal of the placenta as it was adherent. These cases had all the known predisposing factors necessary for amniotic fluid embolism. Careful management of these cases is mandatory. One case followed induction of labour for intrauterine death by intrauterine injection of hypertonic glucose. This patient developed acute fibrinolysis as a result of amniotic fluid embolism.

(h) *Others*: There were 5 deaths due to pulmonary embolism and 4 due to transfusion reaction. Deaths due to mismatched blood transfusion are essentially preventable and stress the importance of checking and re-checking the grouping and cross-matching before giving trans-

fusion. Two deaths due to anaesthetic complication (cardiac arrest) occurred at a period, when there were no qualified anaesthetists available. Only Assistant Surgeons trained in anaesthesia for a period of 3 months were giving anaesthesia. Of the 3 deaths due to paralytic ileus 2 followed caesarean section and 1 mesenteric vein thrombosis.

## 2. Indirect Obstetric Deaths

*Anaemia*: It is sad to note that anaemia alone had been responsible for 67 deaths (52.32%). But, Menon (1965) stated that 20% of all maternal deaths were due to severe anaemia. Anaemia was also associated as a contributory factor in many others who died because

TABLE III  
Causes of Maternal Deaths

Cause of Death	Number of Patients	Percentage
<b>1. Direct Obstetric Causes</b>	<b>179</b>	<b>58</b>
(a) Shock	40	22.34
(b) Sepsis	36	20.11
(c) Haemorrhage	34	19.00
(d) Toxaemia	25	14.00
(e) Renal failure	14	7.84
(f) Rupture uterus	10	5.56
(g) Amniotic fluid embolism	6	3.33
<i>Others:</i>		
Transfusion reaction	4	2.22
Pulmonary embolism	5	2.82
Anaesthetic complications		1.11
Paralytic ileus	3	1.67
<b>2. Indirect Obstetric Causes</b>	<b>128</b>	<b>42</b>
Anaemia	67	52.32
Central nervous system involvement	30	23.31
Hepatitis	8	6.23
Respiratory infection	6	4.55
Hypertension	5	3.90
Heart diseases	3	2.15
Others	9	7.54

(Just below the heading Cause of Death)

of haemorrhage and sepsis. Parasitic infestation is also very common in our patients. Sanitary conditions should be improved at all costs in rural areas. Effective treatment of anaemia and parasitic infestations is important. Co-operation of patients is essential to achieve any progress in this direction. These people with large families are very reluctant to get admitted either for parenteral iron therapy or for blood transfusion. The haemoglobin percentage ranged from 10-30% in 60% of cases and between 30-50% in the remaining 40%. These severely anaemic patients withstand even packed cell transfusion very badly. This is confirmed by Harrison (1969) who states that exchange transfusion is better but we have no facilities for the same. We could transfuse only 10 patients with whole blood by giving Lasix 40 mg. intravenously half an hour before starting the transfusion. Packed cell transfusion was given to only 4 patients. Six patients died while the transfusion was going and they had only 50 to 200 cc. of blood transfused before death. One of the possible causes could be that the patient has no resistance to withstand even mild reaction the blood transfusion may bring on.

Next major cause of death in this group was Central Nervous System involvement (23.31%) like meningitis, encephalitis, cerebral thrombosis and embolism or haemorrhage into basal ganglia. Meningitis was mostly tubercular in origin. Five died because of hypertension. Of the 3 deaths due to cardiac lesions, one was due to mitral stenosis and 2 due to multiple valvular lesions, but all of them died from congestive heart failure. Of the 6 respiratory deaths 3 had bronchopneumonia, 1 empyema, 1 lung abscess and 1 case was of tuberculosis.

Infective hepatitis occurring sporadically in pregnant women is a grave complication. It has been our experience in recent epidemic in our city that mortality rate due to infective hepatitis complicating pregnancy was nearly 80%. We have also found in the recent series of cases that prognosis was worst in those who contracted infection in late pregnancy, complicating labour or abortion.

In Table IV it is seen that 31.64% died within 12 hours of admission. One case

TABLE IV  
*Time Interval Between Admission and Death*

Time	Number of Patients	Percentage
Less than 12 hours	98	31.64
More than 12 hours, but Less than 24 hours	28	9.01
24 to 72 hours	65	20.93
More than 72 hours, but Less than 1 week	56	18.10
After 1 week	63	20.32

was found dead at the time of admission and a few died within half an hour of admission. There is no booking system amongst the villagers for confinement. Only a few of the educated city dwellers come for regular antenatal check up and book for delivery. There are not sufficient trained midwives in rural areas, where still some of the untrained people have an upper hand who advise medical aid only after all possible manipulations. They do not want to refer early as they may lose their prestige and in the late stages refer to the hospital as they want to avoid the blame. Transportation facilities are inadequate and by the time the patient is brought, she is exsanguinated, dehydrated and infected to the maximum possible extent. 20.93% of cases died between 24 to 72

hours. This group mainly includes patients who died of sepsis. 20.32% died after one week. These patients were anaemic and death was hastened by sepsis and cardiac failure.

General education of the public with regards to antenatal care and eradication of the prevalent superstitious beliefs is essential. Economic instability is another major problem. According to the classification of FIGO International Committee on Maternal Mortality, 90% of our deaths were preventable which makes one to think with awe the extent of the problem of ignorance that we are facing to-day.

Summary

A retrospective study of maternal mortality in Cheluvamba Hospital for a period of five years from 1967 to 1971 was made. Various causes were analysed. Some proposals are made to minimise the maternal deaths. The importance of public education and place of diet are emphasized.

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