

MATERNAL MORTALITY IN KAMLA RAJA HOSPITAL, GWALIOR

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Introduction

Study of maternal mortality is essential in that it focuses the attention of the obstetrician on the factors responsible for these deaths and how to avoid them. It also reflects the availability of maternal welfare in a particular area. Maternal mortality is expressed as the number of deaths occurring due to complications of pregnancy, child birth and puerperium in 1000 total births during the same year.

Incidence of deaths due to sepsis has been greatly lowered as a result of advent of antibiotics. Those due to haemorrhage have been reduced with the availability of blood transfusion.

Maternal mortality rate in our country is still very high as compared to other advanced countries of the world

(Gun 1970). In England and Wales, maternal mortality was 0.26/1000 and in Scotland 0.24/1000 total live births in 1963, whereas in Bengal it was 10 times higher (2.6/1000 total births) during the same period. Gun in 1970 recorded total maternal deaths to be 13.7/1000 total births from West Bengal. Guha from Calcutta (1972) and Heera from Delhi (1973) have reported an incidence of 2.58/1000 total births and 6.13/1000 births respectively.

Observations

A study of maternal mortality in Kamla Raja Hospital, Gwalior from January 1972 to December 1974 was undertaken. During this period, 7,201 cases delivered in Kamla Raja Hospital Gwalior

TABLE I

Year	Deliveries	Abortions	Maternal deaths	Deaths/1000 live births
1972	2446	569	32	13.9
1973	2371	789	27	11.30
1974	2384	881	21	8.80
Total	7201	2239	80	11.06

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and there were 2,239 abortions. There were 80 deaths during this period giving an incidence of 11.06 per 1000 live births.

Parity: Maternal mortality was found to be high in primiparas and grand multiparas. It was less in parity 2 to 4.

TABLE II
Incidence According to Parity

Parity	No. of patients	Percentage
Primipara	26	31.25
II-IV	15	18.75
V-VI	30	30.50
VIII-X	7	8.75
X & above	3	3.75
Total	80	100.00

Age: Table III shows the age incidence from which it may be observed that maximum number of deaths occurred in the age group 16-20 years and 26-30 years accounting for 60% of total deaths in both groups. There was 1 death of an unmarried girl aged 14 years who had an illegal pregnancy and septic abortion.

TABLE III
Age

Age group (in yrs.)	No. of patients	Percentage
14	1	1.25
16-25	36	45.00
26-35	38	47.00
36-45	3	3.75
46 & above	2	2.00

Booked and Unbooked Cases: From Table IV it can be seen that only 2 cases (2.5%) were booked while 78 (97.5%) were unbooked and had neither attended

any antenatal clinic nor had received any medical advice before being admitted to this hospital. Majority of cases were emergency admissions.

Causes of Death: This is classified as due to direct and indirect obstetric causes. When two or more conditions co-existed and contributed to death, it was classified under most appropriate cause after reviewing the case. It will be seen from Table V that 48 or 60% of deaths were due to direct obstetric causes and 32 or 40% were due to indirect obstetric causes. Heera (1970) and Das (1975) in their survey have noted 57.6% and 40% due to direct and indirect obstetric causes respectively.

Direct Obstetric Causes

Haemorrhage: Twelve cases (15%) were lost because of haemorrhage, 8 following delivery. There were 2 cases of accidental haemorrhage, 1 of placenta previa and 1 due to ectopic pregnancy. Out of 8 cases of post partum haemorrhage, 2 were grand multipara and delivered twins and in 1 there was severe atonic post partum haemorrhage and patient went into irreversible shock, inspite of blood transfusion. The other had a coagulation defect. Two patients died due to post partum haemorrhage following retained placenta, 1 developed, a clotting defect and the 1

TABLE IV
Incidence of Booked and Unbooked Cases

Year	Total cases	No. of cases		No. of cases	
		Booked	Percentage	Unbooked	Percentage
1972	32	0	0	32	100
1973	27	0	0	27	100
1974	21	2	9.5	19	90.5
Total	80	2	2.5	78	97.5

TABLE V
Showing Causes of Maternal Deaths

Causes of death	No. of cases	Percentage
Jaundice	16	20.00
Anaemia	12	15.00
Haemorrhage	12	15.00
(a) Ectopic pregnancy	1	
(b) Placenta previa	1	
(c) Accidental Haemorrhage	2	
(d) Postpartum Haemorrhage	8	
Septic abortion	7	8.75
Rupture uterus	6	7.50
Puerperal pyrexia	6	7.50
Operative interferences	5	6.25
Eclampsia	4	5.00
Inversion of uterus	3	3.75
Puerperal infections other than puerperal sepsis	2	2.50
Pulmonary embolism	2	2.50
Pregnancy with heart disease	1	1.25
Anaesthetic death	1	1.25
Pregnancy with chronic nephritis	1	1.25
Pregnancy with intestinal obstruction	1	1.25
Reaction to drugs	1	1.25
Total	80	100.00

went into irreversible shock after manual removal of placenta. Both were cases of home delivery. In another 2 cases, there was severe post partum haemorrhage following a breech delivery with calporrhaxis in 1 and a big cervical tear in the other case. One patient had associated viral fever and after severe post partum haemorrhage, went into irreversible shock and delirium. One case had home delivery with severe post partum haemorrhage and her haemoglobin level was only 4 gm%. There was 1 case of placenta previa who had atonic post partum haemorrhage and the patient expired after caesarean hysterectomy. There were 2 cases of accidental haemorrhage. One of these was admitted with unconsi-

ousness and anuria, uterus was very tense; she unfortunately expired during preparation for laparotomy. The other 1 developed a clotting defect and after delivery expired within half an hour inspite of blood transfusion. One patient expired due to ectopic pregnancy with massive intraperitoneal haemorrhage following tubal rupture of right side.

Septic Abortions: There were 7 deaths (8.75%) due to septic abortion. In all but 1 there was history of induction of abortion generally by introducing some foreign body into the uterus by an indigenous dai. The one who had a spontaneous abortion had associated jaundice and went into hepatic coma. One was an unmarried girl and the other 5 had parity of 4 to 10. In the former, a 6 months pregnancy was terminated by intraamntioic hypertonic saline injection but because of previous handling by dai, the cervix had become very soft and friable and after expulsion of the foetus, there was severe haemorrhage from the torn cervix which could not be stitched due to extreme friability. Patient went into irreversible shock.

Rupture uterus: There were 6 deaths (7.50%) due to rupture uterus, 1 died before surgery and 5 after surgery. four were multipara, 3 of them admitted with obstructed labour. One multipara had an accident and there was rupture uterus with profuse intraperitoneal haemorrhage. In 1 case, rupture followed internal podalic version for hand prolapse. The hazard of this procedure cannot be over-emphasised.

Puerperal sepsis: There were 6 deaths (7.50%) due to puerperal sepsis; 3 of these had home delivery and were admitted with very high fever and foul smelling lochia and accompanying anaemia. In 1 primipara, episiotomy wound

had gaped and infection took a virulent course not responding to any antibiotics. In another multipara, phlebothrombosis developed with pyaemic abscess of left elbow.

Operative Interferences: Although there were very few cases where death could be attributed directly to operative interferences, there were 5 deaths following operative procedures. In 2 cases, death followed evacuation of inevitable abortion when the patient had just improved from shock. In 2 cases, lower segment caesarean section led to peritonitis and paralytic ileus. One death followed manual removal of placenta.

Toxaemia: There were 4 deaths (5%) due to eclampsia. Three of these were primipara and 1 was a multipara, all admitted with intrapartum eclampsia. The patients had been admitted with more than 10-20 fits, with high blood pressure and albuminuria. All of these were unbooked cases and did not attend the antenatal clinic during pregnancy.

Miscellaneous: There were 3 deaths due to inversion of uterus. All the 3 had home delivery and were admitted with severe shock. There were 2 deaths due to pulmonary embolism following caesarean section. Two deaths followed viral fever and 1 had encephalitis after delivery. One death due to anaesthetic complication (cardiac arrest) occurred during manual removal of placenta.

Indirect Obstetric Causes

Jaundice: Jaundice was responsible for 16 deaths (20%) of the total deaths. Eight patients were admitted with hepatic coma and expired before delivery. Eight cases expired after delivery from hepatic coma. Jaundice in pregnancy should be treated very energetically. The patients do not come for treatment until there is deep yellow colouration of sclera. The

serum bilirubin level ranged from 2.5 mgm% to 20 mgm%.

Anaemia: Anaemia was responsible for 12 deaths (15%) with very low haemoglobin levels ranging from 20-40% and oedema. Two patients expired before delivery and in 8 cases death followed delivery and patients could not stand the normal post partum haemorrhage. In another 2 cases, there was attendant puerperal sepsis. Patients of anaemia withstand even packed cell transfusion very badly. Exchange transfusion facilities are not available in our institution.

Miscellaneous: There was 1 death (1.25%) due to pregnancy with heart disease. She had Fallot's tetralogy and pre-eclamptic toxaemia. In the second stage, forceps was applied and she went into irreversible shock following moderate post partum haemorrhage. In another case, a multiparous patient, had pregnancy with chronic nephritis and expired due to uraemic coma. One patient was admitted with acute intestinal obstruction with 7 months pregnancy. While being prepared for laparotomy she expired. Post mortem revealed a bunch of ascaris lumbricoidis packed tightly at ileo-caecal junction with distension of bowel proximal to it. In another case, a patient died due to severe reaction to an injection of Strepto-penicillin, even though there was no reaction to test dose. There was irreversible shock with haemorrhage from all mucous membranes.

In 91.25% cases (73 cases), avoidable factors were present and in only 7 cases (8.75%) were unavoidable. In the majority of cases, the patient and relatives were found at fault for bringing the patient too late in moribund conditions.

Discussion

The main cause of maternal mortality

as seen in our study was jaundice (20%) followed by anaemia (15%) and haemorrhage (15%). Thus all these combined claimed 50% of total deaths. The other important causes were septic abortions (8.75%), rupture uterus (7.50%), operative interferences (6.25%), eclampsia (5%) and others,

D'Cruz *et al* (1970) have reported (53.8%) deaths due to jaundice which is indeed very high. Donald (1974) reported that in most cases liver biopsies revealed complete disruption of trabeculae, swollen liver cells, necrosis of centre of lobule and peripheral cell infiltration. Anaemia was responsible for 15% of deaths. Guha (1972) in her series has shown anaemia as a major cause and incidence was 26%. Heera (1972) has shown the incidence of anaemia to be 12.5%, while Gun (1970) has given an incidence of 10%.

In England there are no maternal deaths due to anaemia. This reflects on the poor standard of nutrition in our country. Haemorrhage formed the third major group responsible for 15% of maternal deaths. Rosari (1968) has reported an incidence of 24% and Donald (1974) 9.4%.

Multiparity was responsible for severe atonic post partum haemorrhage in many cases. In some cases, blood could not be arranged before the patient went into irreversible shock. This was due to lack of facilities and unwillingness of donors and relatives to donate blood. In Western countries, flying squads have been of great value in averting deaths due to haemorrhage.

Septic abortion was responsible for 8.75% of deaths. In spite of the Medical Termination of Pregnancy Act, many patients, especially unmarried and multiparous patients, get abortion done by

quacks in order to conceal the act. Stallworthy (1948) also found that 60% were married and not willing to have further pregnancies. Thus a good advice on planning and spacing a family and limitation are of utmost importance. Rupture of uterus was responsible for 7.5% deaths, while Das Gupta (1956) and Shastrakar (1962) have reported a very high incidence of 32.5% and 50.9% respectively. It has been very much lowered in Western countries. Internal version should not be done with obstructed prolonged labour even if child is dead. There was no death due to misuse of oxytocin in this series.

Incidence of puerperal sepsis has been greatly reduced with the advent of antiseptics, asepsis and antibiotics. Semelweis (1861) reported an incidence of 10%, comparable to our series. This shows that in spite of all the antibiotics, we are far behind the Western countries. This is because in our series, 50% cases were delivered at home by untrained dais. Menon has reported a fall from 30-40% in 1934 to 5% in 1959.

Operative interferences were responsible for 6.25% of deaths. This was due to the fact that operative interferences were undertaken in patients who had already come in moribund conditions. In 2 cases, internal version led to rupture uterus. Munro Kerr advises that version should not be done in cases of impacted shoulder even if the foetus is dead.

The incidence of mortality due to eclampsia was 5%. The incidence has been reported to be 30% by Roy Choudhary (1963) but Menon has reported an incidence of 2% mortality (1961) with his regime.

Inversion uterus is very rare in foreign countries, but in our place untrained dais try to expel the placenta by fundal pressure which leads to inversion uterus.

Incidence of pulmonary embolism was 2.5%. Guha has reported an incidence of 4.3%. In a study from England and Wales (1958-1960), it was responsible for 18% of all maternal deaths.

There was one death due to anaesthesia in an already moribund patient. Thus there should be an expert anaesthetist for obstetric cases.

Summary

The main cause of maternal mortality as seen in our studies was jaundice (20%), anaemia (15%) and haemorrhage (15%). Thus these three claimed 50% of deaths. The other important causes were septic abortion, rupture uterus, puerperal sepsis, operative interferences, eclampsia and inversion uterus.

In this study an attempt has been made to find avoidable factors responsible for maternal mortality. In 91.25%, avoidable factors are present. These could be avoided with proper education of patient, domiciliary services, proper antenatal care, proper intrapartum and postpartum care.

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