

# MATERNAL MORTALITY—CAUSES AND PREVENTABLE FACTORS

by

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Maternal Mortality no doubt has been lowered even in developing countries during the past two decades. This has been possible because of the advent of antibiotics, blood transfusion and better antenatal and intranatal care. Maternal mortality in the Western countries has come down considerably in the past two decades as reported by Krupp (1957), and Hofmeister and Stouffer (1951). In India, the change has not been so remarkable as reported by Bhaskar Rao (1970), Mukherjee (1970), and Shah and Pandya (1970).

A common feature that has been found in India and other countries is the large number of deaths in pregnancy attributed to medical causes. Lane (1963) has classified maternal deaths into obstetric deaths i.e. a maternal death directly or indirectly caused by pregnancy or parturition, and

a non-obstetric death as a maternal death caused by a coincidental condition and not related to the pregnancy.

D'Cruz and Fonseca (1970) have also emphasized the role of medical complications in maternal deaths.

In the present report, it is proposed to high-light the causes of maternal mortality and discuss the preventable factors in the maternal deaths occurring at the Postgraduate Institute of Medical Education & Research, Chandigarh, in the past five years.

## Material and Methods

This study pertains to the deaths occurring in the Postgraduate Institute of Medical Education & Research, for a period of five years, i.e. from 1967 to 1971. The records of deaths among women between the ages of 15-45 years were studied

TABLE I  
Deaths Among Women (1967-1971)

	1967	1968	1969	1970	1971	Total
Total Deaths	45	35	49	39	72	240
Maternal Deaths	16	13	21	25	21	96

Deaths due to Obstetric causes — 61

Deaths due to Non-obstetric causes — 63

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and out of these the record of deaths related to pregnancy were taken out. A total of 240 women in the childbearing age died in the period from 1967 to 1971 out of these 96 were maternal deaths (Table I), a maternal death being defined

as a death of a woman during pregnancy, labour or the puerperium (6 weeks after delivery). Abortions and ectopic pregnancy are also included under this term.

#### Observations and Discussion

Causes of death in the 96 maternal deaths are given in Table II under obstetric and non-obstetric causes. The major condition leading to death and where there was more than one contributory cause e.g. death due to caesarean section for major degree placenta praevia, both causes were taken as causes of death.

#### Discussion

*Infection:* The popular belief that the three main obstetric causes are haemorrhage,

toxaemia and infection in that order has not been observed in the present study. Deaths due to infection outnumber all other obstetric causes, half of the total deaths due to obstetric causes being due to sepsis. Septic abortion is the major contributor to these deaths. All of these sixteen deaths were in cases of induced septic abortion. The pattern of these deaths follows the general trend in the country, i.e. these were deaths in multiparous patients in the age group of 25-35 years and the abortions were induced by insertion of stick or some irritants. They developed fever, peritonitis, pelvic abscess septicaemia and were brought to the hospital within one week to one month of the induction of abortion. They died in spite of rigorous treatment with broad

TABLE II(a)  
Obstetric Causes of Maternal Deaths

	1967	1968	1969	1970	1971	Total
<b>INFECTIONS:</b>						
Septic abortions	3	2	5	3	3	16
Tetanus	0	0	3	2	3	8
Intrapartum sepsis	1	0	0	0	0	1
Post-partum sepsis	0	0	2	3	0	5
			Total			30
<b>OPERATIVE:</b>						
Lower segment C.S.	1	1	3	1	0	6
Rupture uterus	0	0	1	2	1	4
Subtotal hysterectomy	0	0	0	1	0	1
Caesarean hysterectomy	0	0	0	1	0	1
Anaesthesia	0	1	2	1	0	4
			Total			16
<b>HAEMORRHAGE:</b>						
Placenta praevia	0	1	1	2	0	4
Accidental haemorrhage	0	0	1	0	0	1
Postpartum haemorrhage	0	0	1	0	1	2
Coagulation failure	0	0	1	0	0	1
			Total			8
<b>TOXAEMIA:</b>						
Eclampsia	1	2	2	0	0	6
Ectopic pregnancy	0	0	0	1	0	1

TABLE II(b)  
Non Obstetric Causes

	1967	1968	1969	1970	1971	Total
<i>MEDICAL</i>						
Heart disease	1	0	2	1	0	4
Renal failure following abortion	0	3	3	1	1	8
Liver disease	4	0	1	2	0	7
Bronchopneumonia	0	0	0	0	2	2
Anaemia	0	1	2	3	1	7
Thrombophlebitis	0	0	0	0	1	1
Pulmonary embolism	1	0	0	1	2	4
Thrombocytopaenic purpura	0	0	0	2	0	2
Cerebral venous thrombosis	1	2	0	2	1	6
Meningitis	0	0	0	1	2	3
Epilepsy	0	0	1	0	1	2
Viral encephalitis	1	0	0	0	0	1
Head injury	0	0	0	0	1	1
Hemiplegia	0	0	0	0	1	1
Myxedema	0	0	0	1	0	1
Small pox	0	0	0	1	0	1
Burns	0	0	0	1	0	1
<i>SURGICAL</i>						
Appendicitis	0	0	0	0	2	2
Traumatic injury to gut	0	0	0	0	1	1
Faecal fistula	0	0	1	0	0	1
<i>MALIGNANCY</i>						
Choriocarcinoma	0	0	1	2	0	3
Carcinoma ovary	0	0	0	1	0	1
Intracranial tumour	2	0	0	0	0	2

spectrum antibiotics, colpotomy and blood transfusion.

Tetanus occurred in eight cases. In 4 it was postpartum and in 4 postabortal. Out of these eight cases one had a craniotomy performed for obstructed labour with a hydrocephalic baby. She was discharged in good condition but reported 14 days later with tetanus. Immunization of all pregnant patients with tetanus toxoid is emphasized. Facilities for better domiciliary care would also go a long way in prevention of tetanus.

#### Operative Deliveries

The next common cause in obstetrical factors for maternal deaths was opera-

tive delivery in the form of caesarean section, caesarean hysterectomy and anaesthetic deaths, out of which deaths from caesarean section stand out prominently. Indications for caesarean section and cause of death in each case is shown in Table III.

It is obvious from Table III that half of the deaths were in cases of major degree placenta praevia. All three of these cases had bled profusely and were moribund on admission. The deaths occurred in spite of good blood bank facilities. Quick replacement of blood is the prime factor in saving these patients. Correct assessment of blood loss at the time of caesarean section is also important in

TABLE III  
*Indications for Caesarean Section*

Indication for Caesarean Section	Cause of Death
1. Major degree placenta praevia, Hb. at admission 7 gms. %	? Haemorrhage.
2. Contracted pelvis	Mendelson's syndrome with coagulation failure.
3. 35 weeks preg. with Rhesus isoimmunization	Cardiac arrest during reversal of anaesthesia and inability to perform quick intubation.
4. Antepartum eclampsia with uncontrolled fits	Respiratory failure (post operative)
5. Major degree placenta praevia, Hb. at admission 7.5 gms. %	Shock 2 hrs. after C.S. cause Excessive Haemorrhage.
6. Classical caesarean section for placenta praevia, Hb. at admission 4 gms. %	Shock soon after C.S. due to excessive blood loss.

guiding the volume of blood to be transfused. These three deaths would have been preventable if they had reached the hospital early and received adequate blood replacement.

There were two deaths directly attributable to anaesthesia—one was due to Mendelson's syndrome and the other was due to cardiac arrest during reversal of anaesthesia.

#### *Haemorrhage*

Haemorrhage remains an important cause of death in the childbearing age. Good obstetric care with good transfusion facilities would help in reducing these deaths to a bare minimum.

#### *Eclampsia*

This was responsible for six of the deaths. All six were unbooked antenatal cases without any antenatal care. They came in coma after having 10-30 fits at home. Four of them died of acute pulmonary oedema.

#### *Medical Complications*

Among the medical causes of maternal deaths, liver disease was the cause of seven deaths. Out of these, four deaths occurred in the year 1967 and these four cases had infective hepatitis with pregnancy which ended in hepatic coma. The course of jaundice with pregnancy had been so rapid and relentless that the usual measures did not help. Complete exchange transfusion in these cases can help if liver necrosis is not too severe.

Another common cause of maternal deaths was anaemia. These patients came as unbooked cases in late third trimester or in labour with haemoglobin levels between 1 gm to 5 gms per cent and cardiac failure. Transfusion with blood or packed cells has its own hazards in the form of reaction or predisposing the patients to go into premature labour. Deaths due to anaemia are preventable if adequate steps are taken of the total health of the community in general and pregnant patients in particular.

Cerebral complications in the form of cerebral vein thrombosis, meningitis, viral encephalitis were responsible for nine deaths.

Other miscellaneous causes of maternal deaths have been shown in Table II.

#### *Surgical Causes*

As regards surgical causes, there were two deaths due to appendicitis leading to generalized peritonitis. One of the cases came rather late with appendicitis, septicaemia, jaundice and bronchopneumonia in a woman 30 weeks' pregnant. In the other there was problem of diagnosis as the patient came with 32 weeks' pregnancy, pain and mass in the right lumbar region. She went into labour and the mass was no longer felt. Laparotomy was undertaken because the diagnosis had become clear but she succumbed in the postoperative period. Acute appendicitis in pregnancy offers problems with diagnosis as well as management. In the present day set up of safe anaesthesia and safer operations, laparotomy should be undertaken where the suspicion is strong.

In summary, it can be said that in this series of 96 deaths, obstetric and non obstetric factors were equally important.

(i) 95 per cent of the deaths were in unbooked cases.

(ii) Septic abortion stood out as the leading cause of death.

(iii) Preventable factors have been discussed and have to be considered not only in the context of the hospital care but in the general population as well.

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