

MATERNAL MORTALITY

(A Review of the current status in a Teaching Institution)

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That child bearing is associated with a high mortality is known to the obstetricians for a long time. But surveys to determine the exact rate of mortality and to know the dominating causes of death started at the beginning of this century. Because of the high incidences of maternal mortality obstetricians throughout the world concentrated their work towards salvage of maternal life till recently. The success of the obstetricians to save the maternal life and to reduce the risk of child bearing is quite obvious in the developing countries of the world. But the maternal mortality rate in our country is still very high.

Materials and Methods

This survey of maternal mortality was conducted at the Institute of Post Graduate Medical Education and Research, and S.S.K.M. Hospital, Calcutta for a period starting from 1st January, 1974 to 31st December, 1980. In this survey we have followed the definition of maternal mortality as has been suggested by the International Federation of Obstetrics and Gynaecology (FIGO 1976) which states that maternal death is the death of any

woman while pregnant or within 42 completed days of termination of pregnancy irrespective of the duration and site of pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes and the causes of mortality are divided into two groups:

- (a) Direct Obstetric Deaths
- and
- (b) Indirect Obstetric Deaths.

Results Analysis

During the period of study from 1st January 1974 to 31st December 1980, there were 12246 deliveries in the hospital and 129 or 95 maternal deaths, including or excluding abortion respectively. The maternal mortality rate including abortion were 10.53 per 1000 births and excluding abortion the maternal mortality rate were 7.83 per 1000 births.

Table I showing the number and percentage of direct and indirect causes of maternal mortality.

TABLE I
Direct and Indirect Causes of Maternal Mortality

Causes	Maternal Mortality	
	No.	Percentage
Direct Obstetric	90	69.77
Indirect Obstetric	39	30.23

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Ninety mothers died of direct obstetric causes which comprises 69.77% of the total mortality and 39 (30.23%) deaths were attributed to indirect obstetric causes.

Table II showing the different direct causes of maternal mortality.

TABLE II
Direct Obstetric Causes

Causes	Maternal Mortality	
	No.	%
Abortion (Septic—25, Ectopic—4, Tetanus—1, D.T.C.—2, Embolism—1)	33	25.58
Haemorrhage (APH—4, PPH—18)	22	17.06
Puerperal sepsis	17	13.78
Toxaemia (Eclampsia—8, Pre-ecl—2)	10	7.75
Obst. Shock	4	3.10
Pulmonary embolism	4	3.10
Total	90	69.77

It is observed from the Table that in our series abortion was the highest killer 33 (25.58%) cases. Haemorrhage was responsible for 22 (17.06%) deaths, of which 4 cases were of antepartum haemorrhage and 18 cases were of postpartum haemorrhage. Other causes of maternal mortality were puerperal sepsis 17 (13.18%), toxaemia of pregnancy 10 (7.75%), of which 8 cases were of eclampsia and 2 cases were of pre-eclampsia, obstetric shock 4 (3.10%) and pulmonary embolism 4 (3.10%).

Table III showing the different indirect causes of maternal mortality.

It is seen from the table that infective hepatitis was responsible for 27 (20.93%) of the maternal deaths. Other indirect

TABLE III
Indirect Obstetric Causes

Causes	Maternal Mortality	
	No.	%
Infective hepatitis	27	20.93
Heart disease	6	4.65
Anaemic	3	2.33
Pul. tuberculosis	2	1.55
Encephalitis	1	0.77
Total	39	30.22

causes of maternal mortality were heart disease 6 (4.65%), Anaemia 3 (2.33%), T.B. Lungs 2 (1.55%) and encephalitis 1 (0.77%) cases.

It is seen from our studies that mortality amongst unbooked cases were 84.50% and amongst booked cases the mortality was only 15.50%. In our survey we considered those cases as booked cases who visited antenatal clinic at least 3 times, but unfortunately most of the booked cases who died were either very irregular in their antenatal check up or did not follow the advice properly. They only considered that to make an antenatal card is a guarantee for admission to the Hospital during labour and did not care to follow the advice given.

Table IV showing the age and parity distribution. It is seen from Table IV that the maximum number of deliveries took place in the age group between 21 to 30 years and mortality ratio in this age group was also very high (1:110.9). This is probably due to fact that early marriage has become a rarity now a days and as a result of family planning most of the mothers are completing their families within an early age.

As regards parity it is seen that the maximum number of deliveries took place in primigravida and it is also seen that 1 out of every 76 primigravida and 1

TABLE IV
Showing the Age and Parity Distribution

	A G E				P A R I T Y		
	Below 20 yrs.	20-30 years	31-40 years	41 & above	Primi	Para 2, 3 & 4	Para 5 & above
Total Deliveries	2031	8976	1328	8	5246	6130	870
Mortality	7 (20.93%)	80 (62.01%)	22 (17.05%)	—	69 (53.48%)	39 (30.23%)	21 (16.28%)
Death rates	1:75.2	1:110.9	1:60.3	0	1:76	1:157.2	1:41.4

TABLE V
Showing Preventable Deaths

	Direct Obstetric		Indirect Obst. Causes Except Infective Hepatitis	
	Preventable	Probably not preventable	Preventable	Probably not preventable
Number	76	14	10	2
Percentage	84.44%	15.56%	83.33%	16.67%

out of every 41 mothers having parity 5 and above died. So it can be concluded that the primigravida and the mothers having parity 5 and above are at greater risk during pregnancy and labour.

Table V showing the preventable deaths in our series.

It has been observed that 84.44% cases of direct obstetric deaths are preventable. It is also seen that excepting infective hepatitis 83.33% cases of direct obstetric deaths are preventable.

Regarding cases of infective hepatitis the assessment of the extent of preventability is very difficult. It is an infectious disease, so if we are to prevent this disease we will have to prevent the modes of spread. To do this proper sanitation to be maintained and disposable needle and syringes are to be used for the infective hepatitis cases. Not only that during

epidemics all pregnant mothers are to be immunized with immunoglobulin.

Discussion

Maternal mortality rate for England and Wales, United States and Sweden for the year 1972 were 0.15, 0.18 and 0.07 per 1000 births respectively.

Konar *et al* (1973), Heera and Das (1973), Devi and Chandok (1974) reported institutional maternal mortality rate in India as 5 to 14 per 1000 births.

Higher incidences in our Hospital may be due to the fact that our Hospital receives a good number of high-risk and moribund cases which are referred from a number of hospitals and private clinics in and around Calcutta. Most of them are brought very late when there remains hardly any scope of doing anything.

The major causes of maternal mortality

in our series were abortion (25.58%), infectious hepatitis (20.93%), haemorrhage (17.06%), and puerperal sepsis (13.18%).

In our country it is seen from Institutional studies the major causes of maternal mortality are reported to be Sepsis (Puerperal and Post abortal) (15%), Toxaemia (13%), Haemorrhage (12%) and Obstructed labour (10%).

It is observed that embolism is a major cause of maternal death in England and Wales and deaths due to disturbed ectopic pregnancy has increased considerably.

But in our country, death following obstructed labour is still a major cause of maternal death which is due to ignorance of the people and poor quality of medical service in our country.

In our series however, obstructed labour is no longer a dominating cause of death. Here maternal death due to sepsis (puerperal and post abortal) was found to be responsible for 42 (32.56%) cases of maternal deaths of which septic abortion was responsible for 25 (19.37%) deaths and puerperal sepsis was responsible for 17 (13.18%) deaths. Maternal mortality due to sepsis at different teaching Institutions in India has been reported by Rao (1978). For Bombay (1975), 16; Madras (1975), 27; Delhi (1970), 24; and Madurai (1972), 27.

In our series infective hepatitis was found to be responsible for 27 or 20.93% of maternal deaths. From 1974 to 1978 there were 6 cases of maternal deaths attributed to infective hepatitis but in 1979 and 1980 there were 21 deaths from infective hepatitis in our hospital.

Deaths due to infective hepatitis complicating pregnancy varied between 32 to 54% in the reported series. Ourbreak of infective hepatitis after a heavy rain fall in an area has been reported by many workers. In our series, the maximum

deaths in 1979 and 1980 may be due to heavy rain fall in the middle of 1978, which might have disrupted the sanitation system over the area. So maintenance of proper sanitation and immunization of pregnant mothers during an epidemic will help in reducing the mortality from infective hepatitis.

Maternal mortality due to haemorrhage have been reported to range between 8.5-33.5% by different workers (Roy Chowdhury, 1976, Shah and Pandya, 1969 in our country. Rao (1978) reported haemorrhagic maternal deaths in the teaching institutions of India as 16% for Bombay 1975, 26% for Madras 1975, 24% for Delhi 1970 and 27% for Madurai 1972. Our figure is 17.06% (1974-1980) of which antepartum haemorrhage 4 (3.10%) and post partum haemorrhage 18 (13.95%).

Pregnancy toxaemia was responsible for 10 (7.75%) maternal deaths in our series, of which 8 were cases of eclampsia and 2 were cases of pre-eclamptic toxemia. Eclampsia as the main cause amongst the toxaemia cases of mortality has been reported by all other workers.

From age and parity distribution of the cases of our series it has been observed that 20.93% cases belonged to age group upto 20 years, 62.01% between 21 to 30 years and 17.05 between 31 to 40 years. Sikder and Mondal (1979) reported 53.3% death in the age group between 21 to 30 years. Similar high incidences has been reported by Sitarathna (1975).

Highest mortality has been found in primigravida cases (53.48%) of our series. But the primigravida cases and cases having parity 5 and above are found to be at greater risk during pregnancy and labour. Santpur and Savaikar (1975) also reported higher incidences of mortality in primi cases.

Avoidable factor was found to be present in 84.44% cases of direct obstetric deaths and excluding infective hepatitis 83.33% deaths due to indirect obstetric cause were found to be preventable.

Presence of preventable factors have been reported by different workers in their series as follows. Dhar *et al* (1979) 82%, Lakshmi (1976) 65%, Bhargaba (1979) 60.7%.

In the latest survey in England and Wales (1972) avoidable factor were found to present in 34% cases. It is quite clear from our country's report that avoidable factors are very high. In our survey it is found that starting from consultants, resident staff, house Officers, anaesthetists and members of other consultant staff were responsible for a number of cases.

Summary

(1) Maternal mortality in our hospital during the period from 1-1-74 to 31-12-80 were 10.53 and 7.83/1000 births including and excluding abortion respectively, out of a total delivery of 12246.

(2) The major cause of maternal mortality are sepsis, infective hepatitis, haemorrhage and pregnancy toxemia.

(3) Avoidable factors were found to be present in 84.44% cases of direct obstetric deaths and 83.3% cases of indirect obstetric death (excluding inf. hepatitis).

Conclusion

1. As a safe method of population control pregnancy prevention should be popularised, instead of pregnancy termination and even if termination is needed it should preferably be done in early weeks of gestation and in Government approved Centres.

2. People should be made aware of the benefit of proper antenatal care.

3. Each hospital should have a mater-

nal mortality committee for proper evaluation of each case.

4. Autopsy must be done in each case for proper evaluation of the cause of death.

5. Each teaching hospitals should have an Intensive obstetric care unit.

6. Medical Records must be properly maintained by all concerned.

7. Blood must be made readily available for transfusion.

8. Socio-economic status must be improved.

9. Flying squad service is to be introduced, in our country.

10. Transport system should be improved.

11. Morale of the medical and para-medical staff concerned with maternity unit must be improved.

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