

CAUSES OF MATERNAL MORTALITY IN A TERTIARY CARE CENTRE IN CHANDIGARH

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SUMMARY

The age old triad of sepsis, haemorrhage and toxæmia still continues to be responsible for approximately three-fourths of maternal deaths in India. Infective hepatitis is the most common associated problem. Nearly 80% of maternal deaths are preventable.

Introduction

Studying maternal mortality is important in evaluating the quality of obstetric services, training of clinicians and to formulate guidelines for improvement in maternal and child health (MCH) care facilities. Maternal mortality in India was estimated to be 20/1000 live births in 1946, 4.17/1000 live births in 1972 and 3-4/1000 live births in 1985. This is 10-20 times higher than the reported incidence from developed countries. Hospital data do not accurately reflect the causes of maternal deaths in the community but give a fair estimate of the prevalent problems and the quality of the obstetric care in the periphery.

Material and Methods

In December, 1975 FOGSI (Federation of Obstetric and Gynaecological Societies of India) established a committee to collect reliable data on maternal deaths in

India. This committee finalised draft protocol, the list of relevant codes according to the International Classification of diseases, the guidelines for this purpose and enlisted several teaching centres throughout the country. Finally 41 centres participated in the study including Chandigarh.

Maternal deaths, in all wards of the Nehru Hospital attached to the Postgraduate Institute of Medical Education and Research, Chandigarh during 4 year period from January, 1978 to December 1981 were included. Being a tertiary care centre the hospital entertains obstetric emergencies referred from the Union Territory of Chandigarh and neighbouring districts of the states of Punjab, Haryana, Himachal Pradesh and Western Uttar Pradesh. This institution is one of the unique institutions in this region where some of the most difficult cases are referred or come on their own in a very advanced stage of their complications.

Information of maternal deaths was collected from the death certificates sent to the department of Biostatistics. A prestructured coded proforma was com-

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pleted by the obstetric senior resident. All relevant information was sent periodically to the convenor who after scrutiny of these forms obtained, if necessary, additional information.

Results

There were 158 maternal deaths and 11,118 live births during the study period i.e. 1,562 maternal deaths/100,000 live births. Of these 156 were admitted as emergency. Eighteen (11.39%) women were admitted in moribund condition and died within 2 hours of admission. Fifty seven women (36.08%) died within 24 hours, 58 (36.71%) during the 1st week and 25 (15.82%) women died after 1st week of admission. There were 6 unmarried gravidae, all of whom died of

complications of illegal abortions. Majority of the women belonged to rural areas (78.48%), poor socio-economic status (84.8%) and were not employed (94.3%). The age was below 20 years in 16 (10.12%) and above 35 years in 32 (20.41%) cases. Comparative frequency of these two groups among all labour room admissions was 2.21% and 3.51%, respectively. There were 32.4% primigravidae and 15.2% grand-multiparae as compared to the incidence of these two groups 48.73% and 2.52%, respectively in all obstetric admissions. There were 58 post-abortion, 14 antepartum, 2 intrapartum and 84 post-partum deaths. The triad of direct obstetric causes i.e. sepsis, haemorrhage and toxæmia claimed 73.4% of all deaths (Table I). Infective

TABLE I
Causes of Maternal Deaths

Causes	Number		Percentage n=158
	Total	Number in Subgroups	
A. Direct Obstetric	116		73.42
(i) Sepsis (Post abortal 44; post-partum, intra-partum 36)		80	50.63
(ii) Haemorrhage (abortion 2; H. mole 2; APH 5; PPH 3; uterine rupture 5)		19	12.03
(iii) Pre-eclampsia/eclampsia		13	8.23
(iv) Others (hyperemesis gravidarum 2; amniotic fluid embolism 1; thrombolism 1)		4	2.53
B. Anaesthetic	6		3.80
(i) Aspiration of gastric contents		2	1.27
(ii) Meningitis after SA		1	0.63
(iii) Others		3	1.90
C. Associated	21		13.29
(i) Hepatitis		13	8.23
(ii) Others		8	5.06
D. Unrelated	15	15	9.49
Total:	158	158	

H. Mole = Hydatidiform mole; SA = Spinal anaesthesia; APH = Antepartum haemorrhage; PPH = Post-partum haemorrhage.

hepatitis could be singled out as the important killer of mothers among associated causes. Other associated causes included rheumatic heart disease (RHD) complicating pregnancy (2 cases) and other medical disorders e.g. kyphoscoliosis, renal disease, systemic lupus erythematosus (6 cases). Severe anaemia (Hb < 5 g%) was present in 13 cases (8.2%) and moderate anaemia (Hb 6-10 g%) in 55 (34.8%) as an associated complication but was not held as the underlying cause of death in any case.

Among the anaesthetic deaths, there were 2 cases of aspiration of gastric contents during general anaesthesia (GA) and meningitis followed spinal anaesthesia (SA) in one case. Poor recovery from GA leading to death during immediate post-operative period due to respiratory failure was responsible for death in 3 cases of septic peritonitis with very poor general condition.

Criminal abortion leading to sepsis and other related complications headed the list of deaths associated with abortions (Table II). Two cases of molar and 1 of

ectopic pregnancy died of haemorrhagic shock. In 9 women, who died after legal abortions (MTP), 7 pregnancies were evacuated by suction evacuation and one each by laminaria tent and hysterotomy. Of these 9 cases, only hysterotomy was done in this institute and the death was unrelated to the abortion (a case of leukaemia). The maternal death was associated with spontaneous abortion in 12 cases and the underlying cause of death was unrelated to pregnancy in 8 of these 12 cases.

On the 14 antepartum deaths, 11 were due to associated or unrelated causes and 3 due to direct causes, eclampsia in 2 and antepartum haemorrhage (APH) in 1 case.

Mode of delivery is shown in (Table III). Intrapartum/postpartum sepsis was responsible for 41 (48.8%) of 84 postpartum deaths. Other significant causes were eclampsia, haemorrhage (including rupture uterus) and hepatitis.

TABLE II
Mortality Attributable to Abortion

Type of abortion	No.	%
1. Illegally induced abortion	39	78.00
2. MTP (Tent. 1; S/E with T.L. 3)	4	8.00
3. Spontaneous (Sepsis 3; haemorrhage 1)	4	8.00
4. Molar pregnancy	2	4.00
5. Ectopic pregnancy	1	2.00
Total	50	100.00

* Total postabortal deaths—58

In 8 cases death was due to associated and unrelated causes.

MTP = Medical Termination of Pregnancy;
Tent = Laminaria tent; S/E = Suction and evacuation; T.L. = Tubal ligation.

TABLE III
Distribution of Deaths According to Mode of Termination of Pregnancy

Mode of Termination	No.	%
1. Abortive outcome	58	36.71
2. Antepartum	14	8.86
3. Intra-partum	2	1.27
4. Postpartum (Spontaneous 50; LSCS 16; Forceps 7; destructive 4; Breech 4; version etc. 3)	84	54.43
Total	158	100.00

LSCS = Lower Segment Caesarean Section.

Nearly three-fourths of deaths were judged as preventable (Table IV).

TABLE IV
Preventable Factors

Factor	No.	%
1. Patient negligence	118	74.68
2. Deficient public health facilities	83	52.53
3. Peripheral health care provider's negligence	55	34.81
4. Transport	28	17.72
5. Doubtful preventability	22	13.92
6. Not preventable	18	11.39

* More than one factor operative in 133 cases.

Discussion

In most developing countries, where accurate data on maternal deaths is not available, the reports from teaching hospitals can give some idea. In India, reports from the metropolitan cities like Bombay, Delhi and Madras, where better MCH facilities are available, document maternal mortality rate above 100/100,000 live births (Rao, 1986). In almost all these centres large number of unbooked and emergency admissions, are primarily responsible for this high incidence. These constitute approximately 40-50% of all admissions to the labour rooms at this centre also.

Sepsis, both post-abortal and post-partum is still the number one killer of mothers in India as seen at this centre as well as in the FOGSI study (Rao 1980). This is in contrast to most reports from Western countries (Chamberlain, 1983; Kaunitz *et al*, 1985). There is a significant difference in the incidence of deaths due to sepsis (50.6%) and haemorrhage (12.0%) at Chandigarh as compared to the FOGSI study, (28.7%) and (21.5%) respectively (Rao, 1980). The higher sepsis haemorrhage ratio among the direct causes is possibly due to decreased incidence of deaths due to haemorrhage because of better blood

bank facilities. Incidence of deaths due to eclampsia is almost similar in the two studies (8.2% and 9.8%) respectively. Thromboembolism, the leading cause of maternal death in Western countries (Kaunitz *et al*, 1985) was not seen frequently, although it was suspected to be the preterminal event in 14 cases of fulminant sepsis. Deaths attributable to anaemia and heart disease complicating pregnancy were significantly less at this centre. Better general nutritional status of women, availability of blood transfusion facilities and surgery for heart disease are some of the important factors for this improvement.

At present, there is no data available to indicate the impact of Medical Termination of Pregnancy (MTP) Act in reducing maternal mortality and prevalence of septic abortions. Available data from most hospital show that admissions due to septic abortions have not declined over the years (Malhotra, 1979; Prema, 1986). This fact is again supported by the observation that nearly four fifths of all deaths with abortive outcome are due to criminally induced abortion.

Important factors responsible for high maternal mortality i.e. transport problems, peripheral health care provider's negligence, deficient public health measures and suboptimal utilization of available services by patients, are preventable.

Although improvement in the manpower and facilities at tertiary care centres can prevent some of these deaths, the major thrust has to be at the peripheral level by increasing the MCH transport and public health facilities both qualitatively and quantitatively as well as mass education of the beneficiary population.

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