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STUDY OF CAUSES OF MATERNAL MORTALITY AT SUB-DISTRICT LEVEL

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ABSTRACT

The study analyses the causes of maternal deaths and suggests certain concrete measures to reduce the incidence of preventable maternal mortality. Apart from analysing the causes of maternal deaths, the study includes a case control study to compare the characteristics of death cases with the cases in which women gave birth and survived. The study was conducted in both directions, i.e., retrospectively and prospectively.

Maternal mortality is a sensitive index of the prevailing health conditions and socio-economic development of the community. About five lakhs women die every year as a result of pregnancy all over the world. The maternal deaths for India, according to different estimates are reported to be about four per thousand live births with considerable variations. It has further been estimated that maternal deaths account for a little more than one per cent of the total deaths in India.

Maternal death is not a chance event and the reasons why women die in pregnancy or child birth are many layered. The causes include failure in proper health care, inadequacy of logistics, lack of transportation, socio-cultural, economical and political factors which greatly influence the status of women, their health, fertility and health seeking behaviour. Keeping these issues in view, the study was conducted in Ajmer district (Rajasthan) by the Indian Institute of Health Management Research, Jaipur, under Training Interventions Project of AIHPPP.

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OBJECTIVES OF THE STUDY

- i. To analyse and compare the causes of maternal mortality in the institutional setting at sub-district and district level post-partum centres;
- ii. To analyse the causes of maternal deaths in community (in women who haven't sought institutional care); and
- iii. To suggest certain concrete measures to reduce the incidence of preventable maternal mortality.

METHODOLOGY

For retrospective study¹ all maternal deaths which took place during 1.4.1992-31.9.1994 at JLN Hospital, Ajmer, PPC Kekri and PPC Kishangarh, were studied thoroughly. The information was collected from the death registers and admission tickets of the deceased. The research team visited the houses of the deceased for detailed information. The same procedure was adopted for the study of controlled cases also.

A sub-centre (Sample) was selected for prospective study in which a house to house survey was conducted to identify and register the women who were in their third trimester of pregnancy and were again followed for their deliveries and full post-natal period of 42 days. The study period was 1.10.1993 to 31.3.1994.

RESULTS AND OBSERVATIONS

Retrospective Study

A retrospective study was conducted to analyse the causes of maternal deaths for which all maternal deaths occurred (from 1.4.1992 to 30.9.1993) at Post-Partum Centre, Kekri, and Post-Partum Centre, Kishangarh, were studied. About 22 maternal deaths were identified. Fifty-two maternal deaths occurred at JLN Hospital, Ajmer, which were also studied to compare the characteristics in institutional setting of district and sub-district level hospitals.

FINDINGS

Regarding the age of the deceased, it was found that around 63.6 per cent of women belonged to the age between 25 and 34 years. The lowest age found was 18 years.

It was found that 27.3 per cent deceased women were prime (pregnant for the first time) and 31.8 per cent were fourth or more gravida. One woman was eleventh gravida. It shows high degree of multiparity.

From the hospital tickets it was found that all the deceased were anaemic. In eight cases Hb was only 3 gm per cent. Thus, anaemia was certainly a primary factor in atleast 36.0 per cent of cases. Seventy-seven per cent of the deceased had Hb less than 8 gm per cent. Out of 22 maternal deaths, seven occurred during pregnancy, ten in the labour and five during puerperium. Out of the total deliveries, 40 per cent were normal. In 20 per cent cases breech was delivered, in 20 per cent LSCS and in 20 per cent an intervention through forceps was conducted.

Of the deaths which occurred during labour or beyond it, following obstetric conditions were associated.

Out of the deaths occurred during pregnancy, 71.0 per cent had fever and around 29.0 per cent had antepartum haemorrhage. It was found that only 18.0 per cent of the deceased women were educated upto school level and remaining were illiterate, which can certainly be attributed as contributing factor. Deep interrogation with their kith and kin revealed that 77.0 per cent of the deceased were reluctant to go to hospital while they were sick. The study revealed that during pregnancy, 72.7 per cent of the women were seeking care from non-technical hands, 50.0 per cent from close relatives and 22.7 per cent from dais of the villages. In 9.0 per cent of maternal deaths, labour and puerperium were also attended by dai.

In the study of 52 maternal deaths at JLN Hospital, Ajmer, it was found that around 59.0 per cent of deceased were fifth or more gravida, which reflects high level of multiparity. In 30.8 per cent subjects anaemia was at its worst at less than 5 gm per cent Hb.

The commonest complication during pregnancy was anaemia followed by antepartum haemorrhage. The commonest complication encountered during labour was cephalopelvic disproportion followed by sepsis and accidental haemorrhage (Table 1).

TABLE 1
ASSOCIATED OBSTETRIC CONDITIONS

Obstetric Condition	Deaths (%)
Malpresentation	13.33
Accidental haemorrhage	6.67
Post-partum haemorrhage	33.33
Retained placenta	6.67
Sepsis	13.33
CPD and Eclampsia	26.67

Case Control Study

In this study controlled cases equal to the number of maternal deaths were taken and their characteristics were compared to know how the women who die differ from the women who give birth and survive.

Following were the findings of the case control study:

Age

The analysis of age revealed that the proportion of women in younger (15-25) and higher (35-39) age group was higher among the women who died.

Type of Family

The proportion of women who live in joint family was found to be higher in controlled cases.

Literacy

The comparison revealed a significant difference in the literacy level of women. The percentage of literates was only 18.2 per cent in the women who died, whereas the percentage was 40.9 per cent in controlled cases.

Socio-economic Status

The analysis of socio-economic status of the families indicates that the proportion of death case was higher in case of women belong to poor socio-economic status.

Number of Pregnancies

Regarding the number of pregnancies the study revealed that the proportion of women who died were higher in first pregnancy and above third pregnancy. The proportion of women having first pregnancy was just double in death cases as compared to controlled cases, which was 27.3 per cent and 13.7 per cent respectively. The percentage of women having more than third pregnancy was 36.4 per cent and 27.3 per cent in deaths and controlled cases respectively. The interval between last two pregnancies was also less in death cases as compared to controlled cases.

Usual Source of Treatment

Proportion of private sector as a usual source of treatment of illness in family was higher in both, deaths and controlled cases. Proportion of sub-centre was just double in death cases as compared to controlled cases, which was 27.3 per cent and 13.7 per cent respectively.

Haemoglobin Status

Haemoglobin status was higher in controlled cases. It was found that 50.0 per cent of women who died and 18.2 per cent of women who gave birth and survived, were having Hb less than 5 gm. per cent. Percentage of women having Hb above 9 gm. per cent was 18.2 per cent and 45.5 per cent respectively in deaths and controlled cases.

Registration of ANC's

Most of the women who died were not registered at any health centre for anti-natal care. The percentage of registration of ANC's was 31.8 per cent and 63.6 per cent respectively in deaths and controlled cases.

Number of Anti-natal Check-ups

The number of anti-natal check-ups was less in death cases. The percentage of women visited four or more times during pregnancy for anti-natal check-ups was 9.1 per cent and 18.2 per cent respectively in deaths and

controlled cases.

Complications During Pregnancy

Most of the women who died were having some complication during pregnancy. The complications during pregnancy are given in Table 2.

TABLE 2
COMPLICATIONS DURING PREGNANCY

Complications	Deaths (%)	Controlled Cases (%)
Non	4.5	68.2
High fever	22.7	9.1
Excessive bleeding	9.1	4.5
Eclamptic fits	13.7	-
S. Anaemia	50.0	18.2

The above table shows that the proportion of women, having no complication during pregnancy was much higher among controlled cases. Percentage of women having severe anaemia was 50.0 per cent and 18.2 per cent respectively in controlled and death cases.

Maternal Care During Pregnancy

Most of the women who died were seeking maternal care of non-technical hands during pregnancy. Percentage of women to whom maternal care was provided by non-technical hands was 27.3 per cent and 63.6 per cent respectively in deaths and controlled cases.

PROSPECTIVE STUDY

A house to house survey was conducted to identify all ANC's completed 28 weeks of pregnancy and were also followed for their deliveries and full post-natal period of 42 days in the study area. There were 42 deliveries. It was found that 16.7 per cent of women were below 20 years of age. 64.3 per cent of women were between 21 and 30 years of age. Regarding the age at marriage, it was found that 76.2 per cent of women were married when they were under 18 years of age. Highest age of marriage was 25 years.

Height wise breakup of the women revealed that maximum of the subjects were 5' to 5'4". 9.5 per cent of women were below 4'8".

It was found that out of 42 deliveries only four were conducted in hospitals. Not even a single delivery was conducted at sub-centre. 90.5 per cent of deliveries were conducted at home. Around 73.8 per cent deliveries were conducted by non-technical hands and 14.3 per cent of deliveries were conducted by their relatives.

The study revealed that ANC could not be provided by technical hands in 14.3 per cent of women. TT was not given in case of 16.7 per cent of women and 23.8 per cent of women did not take IFA tablets during pregnancy, though 11.9 per cent of women were found to be anaemic.

CONCLUSIONS

Maternal mortality is not a chance event. There are many intervening factors which affect it, like social status, position of women, economic resources, facilities for family planning, maternity care, etc. Maternal mortality is the end point of the process which begins at birth and develops over a women's entire reproductive lifetime.

It is essential to have an integrated strategy to ensure significant impact on the problem.

The strategy should be directed towards the following dimensions:

- i. Adoption of family planning methods to avoid major risk factors of too many children, too close, too early and too late. Effective contraception to avoid unwanted pregnancies is suggested.
- ii. Ensuring access to health facilities capable of providing operative intervention, antibiotic therapy and blood transfusion.
- iii. The strengthening of services on pre-natal care and detection of high risk factors during pregnancy with efficient referral system to high levels of care are desirable. There must be adequate transport for women referred to next level.
- iv. Well designed health education, both in school and in community may be encouraged. In addition, the messages of reproductive health, nutrition, dangers of early marriage and early pregnancy, advantages of pre-natal care and family planning may be

designed and communicated.

- v. Integrated rural development and improving villages infrastructure can also go a long way in preventing and reducing maternal deaths.
- vi. Most of the women died due to maternity causes were having some degree of anaemia, therefore, it is important to lay the emphasis on nutrition and distribution of IFA tablets during pregnancy.
- vii. People including TBAs should be made aware of the importance of clean delivery to minimise the occurrences of sepsis.

सारांश

प्रस्तुत अध्ययन में मातृ-मृत्यु के कारणों का विश्लेषण किया गया है तथा रोकी जा सकने वाली मातृ-मृत्यु घटनाओं में कमी लाने के लिए ठोस उपाय सुझाए गए हैं। मातृ-मृत्यु कारणों का विश्लेषण करने के अतिरिक्त, इस अध्ययन के अन्तर्गत एक केस-नियंत्रण-अध्ययन भी शामिल है, जिससे मृत्यु-केसों के लक्षणों की ऐसे केसों से तुलना की जा सके, जिसमें महिलाओं ने बच्चे को जन्म दिया था तथा तत्पश्चात जीवित रहीं थी। यह अध्ययन दोनों पहलुओं अर्थात् पूर्वपिक्षी तथा भावी पहलुओं को ध्यान में रखते हुए संचालित किया गया था।

REFERENCES

1. TRIVEDI, S.K. AND KHANNA, ANOOP (1994) Study of Causes of Maternal Mortality at Sub-district Level in Rajasthan. Indian Institute of Health Management Research, Jaipur.
2. ROYSTON, ERICA AND ARMSTRONG, SUE (1989) Preventing Maternal Deaths. World Health Organization, Geneva.
3. ABOUZAHAIR, CARLA AND ROYSTON (1991) Maternal Mortality: A Global Factbook. World Health Organization.
4. A STUDY OF MATERNAL MORTALITY IN ANANTPUR DISTRICT, ANDHRA PRADESH (1982) Indian Institute of Management, Bangalore.