

# STUDY OF RISK FACTORS OF MATERNAL MORTALITY IN THE SLUM POPULATIONS OF THE NATIONAL CAPITAL TERRITORY OF DELHI, INDIA

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## **Background**

In developing countries including India, pregnancy complications and childbirth related deaths are believed to be the major causes of death among women in their reproductive ages. Though the situation is changing with the advent of the safe methodology initiatives but the evidence of declining maternal mortality at the time when India's population is becoming increasingly masculine, seems odd and needs further investigation. However, measuring maternal mortality is not only difficult but also complex in specification. As a result, reliable estimates of the dimensions of the problem are generally not available and hence assessing the progress has been difficult. Also, the populations where obstetric care is poor and the lifetime risk of maternal death is much higher, it is essential to study the specific causes of such deaths.

In order to develop, implement and evaluate policy, understanding of why women are dying from pregnancy and childbearing, is more important than waiting to establish the level of maternal mortality. It is in this light, the main objective of the present study is to identify the causes of maternal deaths and to discover the socio-economic, cultural and behavioral health seeking factors behind such maternal deaths. The study will have apparently important policy implications for preventive programmes.

## **Specific Objectives**

- To identify maternal deaths and the risk factor associated with such deaths in the slum population of Delhi.
- To discover the socio-economic, cultural and behavioral factors behind such maternal deaths in the study population.

## **Methodology**

To meet the above objectives a community base case-control study has been designed in the slum population of the National Capital territory of Delhi, India. We considered, a group of women who died due to pregnancy (maternal deaths) as cases and a group of women who survived after childbirth called as controls. For each maternal deaths, three maternal survival or controls have been taken further study. The information on maternal deaths which occurred during the last two years were proposed to be collected from the registers maintained at the health centers under eighth India Population Project (IPP–VIII). Health centre staff was further interviewed to identify additional events. The group of women in the control group was randomly selected from the list of women who gave birth during the reference period and survived. A sample of 150 maternal deaths have been taken from the community through the snow balling sampling in addition to the maternal deaths identified from the records. The number of controls chosen (450) is equal to three times the number of maternal deaths identified (150) selected through systematic approach.

A verbal autopsy instrument was developed to conduct a detailed interview of all identified maternal deaths and controls. The interviewers then visited the house of deceased women and made detailed inquiries about the cause of death and other details like socio-economic and demographic profiles of the deceased woman. Each case study was evaluated with the help of medical scientist to identify the obstetric and clinical causes of deaths.

The factors which were investigated in the study broadly refer to three dimensions viz. maternal, health system and environmental characteristics. Maternal characteristics included age, socio-economic and marital status, medical status and reproductive characteristics. The socio-economic status of the family included variables like income of the household, presence of toilet in the household, drinking water facility in the house, exposure to mass media such as radio, TV, number of years of schooling, main occupation of the head of household etc. Similarly, for reproductive characteristics, number of pregnancies, live births, abortion, contraceptive use etc. is considered. Health system characteristics included adequacy of treatment, staff and equipment, access to care-like distance, travel time, cost, administrative barriers etc. Environment characteristics included residence type, transportation systems, presence of a medical facility etc.

A univariate and multivariate logistic regression has been used to identify the risk factors associated with maternal deaths. The factors considered were age of the mother, parity, birth order, outcome of the delivery. In addition to socio-economic variables like caste religion, type of household, variables related to pregnancy like type of delivery, delivery conducted by whom and place of delivery were also considered.

### **Preliminary Results**

The relative risk, which is a ratio of the probability of dying a woman in exposed group by probability of dying a woman in non-exposed group, is estimated using logistic regression model. We forward results based on the partial sample as follows:

The analysis is based on 68 cases and 150 controls. Of the 68 maternal deaths about half of the women (31) had live births, one-third (31) had still birth, 3 cases had undergone induced abortion, while 13 cases were occurred during ANC period. Among the controls, majority (97percent) had live birth against only 3 percent who had still birth. The cases and control were found to be comparable in terms of socio-economic conditions - illiterate women, scheduled castes and from nuclear families.

Logistic regression revealed that parity of the woman, pregnancy outcome, maternal care services were found to be the significant predictors of maternal mortality. The women with higher parity, particularly 4 and above have significantly higher risk of death compared to women with lower parity. As expected there is a negative association between ANC and maternal mortality while distance of health facility was positively associated. The teenage pregnancy and pregnancy after age 35 were found to have higher risk for maternal death. The major causes of maternal deaths (60 per cent) were related to obstetric problems including labour, hemorrhage and retention of placenta.