



SEVERE OBSTETRIC MORBIDITY: PREVALENCE, RISK FACTORS AND OUTCOME

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INTRODUCTION

Most maternal deaths occur in the developing regions of the world. A larger number of mothers experience serious life threatening illnesses during pregnancy, referred as Severe Obstetric Morbidity (SOM). The frequency of SOM can be considered as a supplementary indicator to maternal mortality. However only limited information is available about SOM from regions where the maternal mortality is high.

Early identification and prompt management of SOM is crucial. Low socio-economic and, educational status lead to underutilization of services.¹ Many maternal health programs focus on inter-

ABSTRACT

Background: Severe Obstetric Morbidity (SOM) can be a supplementary indicator to maternal mortality. We have very little information about its prevalence and risk factors.

Methods: A cross sectional study using a nested case control study design was done to estimate the prevalence and factors associated with SOM. Women delivering at a public run tertiary care facility were screened and cases meeting the criteria for SOM were compared with a control group. The maternal and fetal outcome were analyzed.

Results: The prevalence rate of SOM was 34.3 per 1000 deliveries. Hypertensive disorders and its complications were common causes. Exposure to poverty, undesirable maternal and perinatal outcomes were more frequent among cases than controls

Conclusions: A significant proportion of women with SOM had to bear the dual burden of poverty and serious illness during pregnancy. Early detection and appropriate management of SOM can reduce the incidence and severity of morbidity.

Key words: Maternal mortality, maternal morbidity, poverty, perinatal mortality, preeclampsia

ventions that often do not reach the poor.² We studied the prevalence, causes and factors associated with SOM in a tertiary care centre where the poorer sections of the society seek help.

METHODS

A cross-sectional design was used to estimate the prevalence of SOM. We designed a case control study nested within the cross-sectional study to identify associated factors. After approval of the Institutional Ethics Committee, all women who delivered at Calicut Medical College Hospital, Kerala, India, from 1st March 2007 to 31st August 2007 were screened for SOM. The criteria described by Waterstone et al³ was used to identify

cases. This included specific criteria for severe preeclampsia, eclampsia, HELLP (hemolysis, elevated liver enzymes and low platelets) syndrome, severe hemorrhage, severe sepsis and uterine rupture. Eligible women or their relatives were interviewed. Data was collected using the study proforma.

Women not meeting the criteria for SOM, but delivering immediately before and after a case of SOM were recruited as controls. When two or more women with SOM delivered consecutively, an equal number of women delivering before and after the SOM cases were recruited as controls. The case records of the controls were evaluated. The subjects were classified as Below Poverty Line (BPL) or Above Poverty Line (APL) based on the ration card issued to them by the state government. Subjects with BPL ration cards were considered as hailing from low income families. Chi-square test and Binary logistic regression were used for data analysis with SPSS and Epi info statistical packages.

RESULTS

There were 11037 deliveries during the study period of which 379 met the criteria for SOM. The prevalence of SOM was 34.3 per 1000 (95% Confidence Interval (CI) 30.9 - 37.7). The major causes of SOM are described in Table- 1. Hypertensive disorders and its complications (severe pre-eclampsia, eclampsia and HELLP syndrome) accounted for most of the cases (96.04 %).

Majority (53.3%) of women with SOM came from families classified as living below poverty line (Table- 2) Obstetric interventions and adverse perinatal outcomes among cases and controls were analyzed (Table- 3). Two hundred and thirty three (61.5%) subjects with SOM required in-

duction of labour compared to 242 (31.9%) of the controls. This difference was significant, $p < 0.0001$, odds ratio (OR) 3.4 (95% CI 2.63 - 4.4). Two hundred and thirteen (56.2%) women with SOM had delivered preterm compared to 52 (6.9%) in the control group. This was a significant difference $p < 0.0001$, OR 17.42 (95% CI 12.31 -24.65). One hundred and ninety two women with SOM (50.7 %) underwent Caesarean Section, compared to 126 (16.6 %) among the controls which was significant, $p < 0.0001$, OR 5.15 (95% CI 3.9 -6.8). SOM was associated with hospitalization for a week or more (75.6% for cases and 44.3% for controls). ($p < 0.0001$, OR 3.89 (95% CI 2.96 -5.12). There were two maternal deaths among the SOM cases which included atonic postpartum hemorrhage and suspected amniotic fluid embolism with disseminated intravascular coagulation.

Table 1: Frequency of subtypes of SOM among 11,037 deliveries

Subtypes	Cases	Rate per 1000 deliveries
Severe pre-eclampsia	282	25.6
HELLP Syndrome	50	4.5
Eclampsia	22	2
Eclampsia with HELLP Sy.	10	0.9
Severe Haemorrhage	12	1.1
Uterine rupture	3	0.3
Severe sepsis	0	0
Total	379	34.3

Table 2: Maternal Characteristics & SOM

Characteristic	Cases (n=379)(%)	Controls (n=758) (%)	P value
Maternal age ≥ 35 yr	27 (7.1)	13 (1.7)	<0.01
Multiple pregnancy	14 (3.7)	4 (0.5)	<0.01
Below poverty line	202 (53.3)	308 (40.6)	<0.01

Table 3: Maternal Risk Factors & SOM

Characteristic	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	P value
Maternal age ≥ 35 yr	4.40 (2.24-8.62)	3.88 (1.79- 8.43)	0.001
Multiple pregnancy	7.23 (2.36-22.12)	7.60 (2.47-23.42)	<0.01
Below poverty line	1.67(1.3 - 2.14)	1.65 (1.28- 2.12)	<0.01

The 394 babies born to SOM cases were compared with 762 babies born to the mothers in the control group. There was a strong association between SOM and low birth weight (LBW) ($p < 0.01$ }, odds ratio 13.9 (95% CI 10.36 - 18.66). There was a strong association between fetal loss and SOM ($p < 0.01$, odds ratio 15.82 (95% CI 8.87 - 28.21)). Binary logistic regression was used to examine whether maternal age, socio economic

status and multiple pregnancy were associated with SOM. Maternal age of 35 years or more, multiple pregnancy and poverty were significantly associated with SOM (Table-3).

DISCUSSION

The prevalence of SOM in our study was 34.33 per 1000 births. Khosla et al ⁴ reported the inci-

dence rate of 43.7 per 1000 births for the “near-miss” category of SOM from rural north India. A hospital based study from Delhi⁵ reported a prevalence of 33 per 1000 deliveries. A high proportion of women with SOM (53.3%) delivering in this public run tertiary care facility came from families classified as living below poverty line.

We found preeclampsia to be the commonest cause for SOM. “Hypertensive diseases of pregnancy” remains a leading cause of direct maternal deaths even in developed countries.⁶ Early involvement of specialists may help.⁷ Women with SOM had longer hospitalizations, true even in developed countries.⁸

The strong association between poor fetal outcome and preeclampsia is well known.⁷ Women with severe obstetric complications, and their babies, are more likely to die after discharge when compared to women who had uncomplicated deliveries.⁹ Women from low income group experience substantial difficulties in meeting the costs of care, reflecting the high cost of emergency obstetric care.¹⁰ Access to emergency obstetric care^{11,12} is crucial to prevent death. Quite often, such expenses are beyond the means of low income households. Financial support can help these women to access obstetric care.

A maternal “near-miss” approach for monitoring implementation of critical interventions in maternal health as advocated by the World Health Organization (WHO) can help to improve quality of care. Studies of determinants of maternal “near-miss” from India can inform and guide service development.¹³ Higher maternal age seems to be a prominent risk factor for severe illness during pregnancy.^{13,14}

Strengths and limitations of the study

Prospective screening of a large sample of women and use of well-defined criteria for identifying SOM are strengths of our study. As most of the controls were discharged from hospital within a day or two after delivery, we had to rely on information recorded in their case records. Only those who delivered at our institution were recruited. This led to the exclusion of cases of eclampsia, severe haemorrhage and severe sepsis referred from other centres after delivery.

CONCLUSION

SOM often leads to unfavorable pregnancy outcomes. A substantial number of women with

SOM had to bear the dual burden of serious illness and poverty. Early detection and appropriate management of hypertensive disorders can reduce the incidence of severe morbidity during pregnancy.

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