

## Original Research Article

# Levels and determinants of maternal morbidity in Sangli, Maharashtra, India: a community based study

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### ABSTRACT

**Background:** In developing countries, the leading cause of disability in women aged 15-44 years is pregnancy and childbirth related complications. Many women do not die of causes related to pregnancy but suffer severe morbidities due to pregnancy related physiological stress.

**Methods:** It is a Community based cross sectional study, conducted at randomly selected villages, towns and households in Sangli, Maharashtra, India. Sampling was done by simple random sampling, with a computed sample size of 3200. Study tool was a pre-tested questionnaire. Statistical analysis was done using percentages and Chi-square test. Microsoft Excel and SPSS 22 were used for analysis.

**Results:** The study revealed a high prevalence of maternal morbidity in Sangli, Maharashtra, India. 52.65% women in urban area and 96.53% in rural area suffered from at least one morbidity. In rural area of Sangli, Maharashtra, India maximum of the women surveyed i.e., 30% have primary school education as compared to urban area of Sangli, Maharashtra, India which constitute 34%. A majority of the women in both the districts were suffering from mild complications but the percentage of serious complications is very high in the rural area (15%) than in the urban area (6%).

**Conclusions:** In spite of low levels of perception about maternal morbidities, relatively higher utilization of health services during antepartum period should be taken as an advantage for initiating complete antenatal services, i.e. beyond the coverage of women by TT injection and supply of IFA tablets. The governmental initiation of supplying protein-rich food to pregnant and lactating mothers through ICDS programme has significantly lowered the morbidity levels probably by lessening the levels of anaemia.

**Keywords:** Antenatal, Complications, Maternal morbidity, Pregnancy

### INTRODUCTION

Maternal morbidity is a topic of more concern than maternal mortality. However, maternal mortality is just the tip of the iceberg of the health problems of women. Many women do not die of causes related to pregnancy but suffer severe morbidities. In developing countries, pregnancy and childbirth related complications are the

leading causes of disability among women aged 15-44.<sup>1</sup> The world development report estimated that 18 percent of the burden of disease for these women is due to maternal causes.

Maternal health received greater attention after the safe motherhood initiative was launched at an international conference held in Nairobi in 1987. Maternal mortality estimates are used to highlight the plight of pregnant

women in less developed countries. Pregnancy constitutes a high risk of morbidity and mortality due to associated physiological stress, which is more severe in developing countries like India which is 10 to 20 times higher than that in the developed countries. There are a few studies on the specific problems of pregnancy. Most of them are hospital based, which are not reliable because only about few of the births in India take place in a health facility. These results thus are not representative of the population. Moreover, hospital based studies shed light only on the acute complications of pregnancy. Long-term consequences of pregnancy are not considered in hospital-based studies and, indeed are missing from almost all research. Very few longitudinal studies are available on the pattern of general morbidity amongst the rural pregnant women.

A small prospective study conducted in a village in India reported that there are 16.5 pregnancy-related morbidities for every maternal death.<sup>2</sup> Another analysis indicates that in developing countries for each maternal death, further 10-15 women suffer serious impairments.<sup>3</sup> Based on some of these estimates it has been calculated that there are 8.25 million maternal morbidities every year worldwide.<sup>4</sup> Others have calculated that there are over 100 acute morbid episodes for every maternal death, giving a global total of 62 million morbidities annually.<sup>5</sup> According to another estimate, in each year over 50 million women experience pregnancy related complications. Fifteen million of which lead to long-term illness or disability often because they have no access to medical care, because pregnancy has exacerbated already existing malnourishment or illness, or because the medical care that they do manage to access is substandard.<sup>2</sup>

The Demographic Health Survey (DHS) program has made available national representative data on the receipt of antenatal and postnatal care for a large number of developing countries. For India, the National Family Health Surveys (NFHS), 1992-93, 1998-99 and 2005-06, performed the same functions. Evidence from NFHS-3 (2005-06) suggests that almost one out of every five women in India did not receive any antenatal care for their last birth. Women not receiving antenatal care tend disproportionately to be older women, women having children of higher birth orders, scheduled tribe women, women with no education, and women in households with a low wealth index.

Approximately two-thirds of women had received one antenatal check up from a doctor or other health personnel. Two out of five men thought it was not necessary for the mother to receive antenatal care. Another 15 percent of men said that their family did not think it was necessary or did not allow the mother to receive antenatal care. For 20 percent of men, the main reason for the mother not receiving antenatal care was that it costs too much. Despite strong motivation to take antenatal care less than 40 percent of births in India take

place in health facilities. More than half take place in the woman's own home and 9 percent take place in the women's parents' home. Condition is better in Maharashtra with 64.6 percent births taking place in a health facility.<sup>6</sup> The number of health problems reported by women in the first months after delivery is high, around 23 percent of women indicating problems in India.<sup>7</sup> Severe acute maternal morbidity (SAMM), also known as "near miss", is defined as "A very ill pregnant or recently delivered woman who would have died had it not been that luck and good care was on her side".<sup>8,9</sup> This concept is relatively new in maternal care, but is increasingly becoming important in areas with low maternal mortality ratios or where the geographic area is small.<sup>10,11</sup>

Women become ill during pregnancy and childbirth for many reasons. In poorer countries multiple disadvantages combine to put women at risk. Improving women's nutrition, general health and socio-economic status will reduce the maternal morbidities. Access to tetanus toxoid vaccination, iron supplementation and other simple technologies will reduce maternal morbidity. Appropriate maternity care during pregnancy and delivery will both prevent emergencies and save lives and lessen morbidity. The objective of the present paper is to assess the extent of maternal morbidity and assess the factors responsible for it in Sangli, Maharashtra, India. An attempt is also made to understand the treatment seeking behaviour of the women for the morbidities.

## METHODS

It is a community based cross sectional study, conducted at randomly selected villages, towns and households in Sangli, Maharashtra, India. Sampling was done by simple random sampling, with a computed sample size of 3200. Study was conducted for six months, from 1<sup>st</sup> February 2013 to 31<sup>st</sup> July 2013; wherein women who had been pregnant two years prior to the survey irrespective of the outcome of the pregnancy were included. Unwilling subjects were excluded. The study proposal was approved by institutional ethical committee.

Written consent was acquired from all subjects. A pre-tested, pre-validated, self-administered questionnaire was developed with the help of experienced faculty; based on published literature. Appropriate pilot studies were done for finalizing study tool and data from these pilot studies were not included in the final analysis. Analysis was done using frequency and Chi-square test. Microsoft Excel and SPSS 22 used for analysis. Maternal morbidity includes morbidity during three specific phases, i.e. during antepartum period, intrapartum period, and postpartum period. In the present paper maternal morbidity is assessed only for antepartum period. The data for the present paper is drawn from a larger community based study on maternal morbidity, conducted in Sangli, Maharashtra, India.

### Definition and classification of maternal morbidity

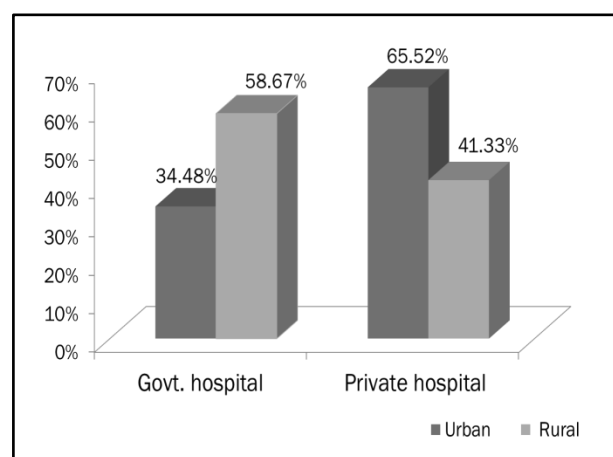
The World Health Organization (1992) has defined obstetric morbidity as morbidity among women who have been pregnant (regardless of site or duration of the pregnancy) from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.<sup>12</sup> Srinivasan et.al. have classified maternal morbidity based on severity as ‘Life threatening’, ‘Serious’, and ‘Mild’. A similar classification is adopted for the present paper (Table 1).<sup>13</sup>

**Table 1: Classification of antepartum morbidities by its severity.**

Severe	Moderate	Mild
Haemorrhage	Oedema	Giddiness
Fits/ Convulsions	Hypertension	Irritative urinary symptoms
	Fever>3days	Blurred vision
	Severe vomiting	Anaemia
	Jaundice	Epilepsy
	Pulmonary TB	Ulcer Disease
	Rheumatic heart disease	No movement in foetus
		Varicose veins

### RESULTS

In rural area of Sangli, Maharashtra, India 24.13% of the women surveyed are illiterate, 30.32% have primary school education and only 28.05% are educated up to high school. In the corresponding urban area of Sangli, Maharashtra, India 33.77% have attended primary school, 28.87% high school and 30.84% hold graduate and above degrees. Of the study population 86.05% and 87.48% are Hindus in rural and urban areas respectively (Table 2).



**Figure 1: Place of antenatal care.**

**Table 2: Socio demographic characteristics of the eligible women.**

Background characteristics		Urban; n = 1981	Rural; n = 1326	Total 3307	
Education	Illiterate	129 (6.51%)	320 (24.13%)	449	
	Primary school certificate	669 (33.77%)	402 (30.32%)	1071	
	Up to High school	572 (28.87%)	372 (28.05%)	944	
	Graduate and above	611 (30.84%)	232 (17.50%)	843	
Work	House-wife	911 (45.99%)	840 (63.35%)	1751	
	Working	Unskilled	299 (15.09%)	309 (23.3%)	608
		Semi-skilled	348 (17.57%)	82 (6.18%)	430
		Skilled	150 (7.57%)	60 (4.52%)	210
	Service	273 (13.78%)	35 (2.65%)	308	
Religion	Hindu	1733 (87.48%)	1141 (86.05%)	2874	
	Muslim	180 (9.09%)	145 (10.94%)	325	
	Christian	32 (1.62%)	12 (0.9%)	44	
	Others	36 (1.82%)	28 (2.11%)	64	

In rural area 36.65% of the women are working women and in urban area the corresponding percentage is 54.01. 42.84% of the rural women were married before the age of 21 years compared to 30.64% of urban women. By reference date, 33.77% in urban and 31.52% in rural area are primiparous women.

Nearly 33.62% of women in urban and 21.78% in rural area had three or more number of children (Table 3). A high percentage of women in the rural area (96.53%) suffered from antepartum morbidities than in the urban

area (52.65%). A majority of the women in both the districts were suffering from mild complications but the percentage of serious complications is very high in the rural area (61.3%) than in the urban area (38.7%) (Table 4). Nearly half the study population in urban area did not suffer from any morbidity.

In urban area majority of women went to a private hospital (65.52%) for antenatal check-up, whereas most of the women in rural area went to a primary health centre or district hospitals (58.67%). (Figure 1).

**Table 3: Obstetric Profile of the Eligible women.**

Obstetric characteristics	Urban; n=1981	Rural; n=1326	Total 3307	
Age at marriage	<=15	11 (0.56%)	21 (1.58%)	32
	16-20	596 (30.09%)	547 (41.25%)	1143
	21-25	1101 (55.58%)	650 (49.02%)	1751
	26-30	202 (10.2%)	95 (7.16%)	297
	>30	71 (3.58%)	13 (0.98%)	84
Parity	1	669 (33.77%)	418 (31.52%)	1087
	2	646 (32.61%)	620 (46.76%)	1266
	3	402 (20.29%)	186 (14.03%)	588
	4+	264 (13.33%)	102 (7.69%)	366

Treatment seeking behaviour of women shows that in urban area a majority of women with serious (62.4%) and mild (78.97%) complications went to private medical

practitioners. In rural area almost all women with any morbidity visited the government district hospitals (Table 5,6).

Socio-demographic factors like parity, work status and education of the women show a statistically significant association with maternal morbidities.

The results have shown that parity level of a woman is negatively associated with 'severe' maternal morbidities. That is primiparous or low parity women are 0.814 times more likely to suffer from 'severe' maternal morbidities than the later parity women.

This is because women in rural areas marry at an early age and have first pregnancy while they are still in adolescent age. At this age, girls' reproductive physiology is still in formative stage and the first pregnancy at this age may become detrimental to her health.

Women's work status is negatively related to the life threatening maternal morbidity. Which means nonworking women suffer 0.470 times more than the working women from 'life threatening' maternal morbidity.

**Table 4: Women suffering from types of antepartum morbidities.**

Residence	Severe	Moderate	Mild	No morbidity	Total
Urban	125 (38.7%)	48 (43.64%)	870 (46.03%)	938 (95.33%)	1981 (59.9%)
Rural	198 (61.3%)	62 (56.36%)	1020 (53.97%)	46 (4.67%)	1326 (40.1%)
Total	323 (100%)	110 (100%)	1890 (100%)	984 (100%)	3307 (100%)

Chi-square = 737.99, P value <0.001

**Table 5: Treatment seeking behavior of urban women with antepartum morbidities.**

Type of hospital		Severe	Moderate	Mild	Total
Govt. Hospitals	PHC	5 (4%)	12 (25%)	10 (1.14%)	27 (2.59%)
	DH	42 (33.6%)	25 (52.08%)	173 (19.89%)	240 (23.01%)
Private Hosp.		78 (62.4%)	11 (22.92%)	687 (78.97%)	776 (74.4%)
Total		125 (100%)	48 (100%)	870 (100%)	1043 (100%)

Chi-square = 150.64, P value < 0.001

**Table 6: Treatment seeking behavior of rural women with antepartum morbidities.**

Type of hospital		Severe	Moderate	Mild	Total
Govt. Hospitals	PHC	32 (16.16%)	22 (35.48%)	236 (23.14%)	290 (22.66%)
	DH	124 (62.63%)	31 (50%)	432 (42.35%)	587 (45.86%)
Private Hosp.		42 (21.21%)	9 (14.52%)	352 (34.51%)	403 (31.48%)
Total		198 (100%)	62 (100%)	1020 (100%)	1280 (100%)

Chi-square = 38.67, P value < 0.001

The educational level of woman showed an inverse relation with maternal morbidity. In the present analysis, it is revealed that if a woman is educated up to primary

level, the chances of her suffering from 'life threatening' maternal morbidity reduces by 0.643 times.

## DISCUSSION

In a study conducted in rural Andhra Pradesh around 56% women had visited a private hospital for ANC which was similarly noted in this study also.<sup>1</sup> In studies conducted at rural Andhra Pradesh and Southern India rural women had significantly higher levels of antenatal morbidity than urban women which were similar in our study too.<sup>1,3</sup> In the present study 52.65% of urban women and 96.53% rural women had at least one antepartum morbidity which was very high as compared to a study conducted in southern India which showed that 18% of the respondents had at least one antenatal morbidity.<sup>7</sup>

In present study, women with less education and low parity has higher morbidity as compared to southern India study which showed women with higher education and primigravidae had a higher morbidity.<sup>7</sup> Urban women had significantly higher levels of antenatal morbidity than rural women which were similarly reported by Rama Padma and Bhatia.<sup>1,7</sup>

Early marriage, successive pregnancies accompanied with low calorie food intake and inaccessibility, and underutilization of medical facilities lead to high maternal morbidity which was seen in similar pattern in rural areas of Sangli but no such pattern seen in urban areas.<sup>14</sup> Treatment seeking behaviour in present study showed 74.44% urban women went to private doctor and 68.52% rural women went to government hospital, whereas in rural Andhra Pradesh study 80% urban women & 66% rural women went to private hospital and in southern India study 39.2% sought treatment in government hospital and 60.7% in private hospital.<sup>1,3</sup>

## CONCLUSION

Utilization of antenatal care services for the most recent birth among ever-married women increased substantially over time, from 66 percent in NFHS-2 to 77 percent in NFHS-3. The rate of increase was higher in rural areas than in urban areas. Seventy-five percent of mothers in urban areas had at least three antenatal care visits, compared with 44 percent in rural areas.<sup>4</sup>

In poorer countries multiple disadvantages combine to put women at risk. Improving socio-economic status of family with special attention to women's nutrition, general health will reduce the maternal morbidities. Access to good medical care and other simple preventive measures like vaccination will reduce maternal morbidity. Appropriate maternity care during pregnancy and delivery will both prevent emergencies and save lives and lessen morbidity. Government's initiation in these areas is the need of the hour. Early marriage and pregnancy in adolescent age among some section of women needs to be changed. Educating women can help improve their own health status and reduce morbidities immensely.

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