Does Illiteracy Influence Pregnancy Complications among Women in Slums in Greater Mumbai

Dr. V. M. Sarode
Associate Professor of Statistics,
Mulund College of Commerce,
Mulund (West), Mumbai – 400 080.

E-mail – vijaymsarode@yahoo.com

ABSTRACT

This paper examines utilization of health services available to the women in the slums on hilly area in Mumbai and also checks whether non-utilization of ANC and having reproductive health problems during pregnancy create complications during child delivery vis-à-vis standard of living index constructed from household amenities, housing quality, drinking water and electricity. This study uses primary data collected using cluster sampling of a sample size of 346 reproductive women who have given at least one live birth prior to the survey on the education of the study women, reproductive health problems during pregnancy and complications during child delivery The findings using logistic regression reveal unimaginably low level of utilization of health services by illiterate women. Besides these respondents did not go for ANC and faced reproductive health problems during pregnancy which created problems during child delivery. This paper suggests that awareness is required at every stage of ANC.

KEYWORDS: ANC; Pregnancy Complications; Illiteracy; Mumbai Slums.

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Dr. V. M. Sarode
Reader in Statistics,
Mulund College of Commerce,
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Introduction

Every seven minutes one woman dies due to complications in pregnancy or child birth in India (The Registrar-General of India, 2007). That makes 77,000 deaths every year. This is further compounded by the high percentage of deaths in the run-down maternity services and mother-and-childcare centers and rural health facilities. The current survey also reports that there are 300 maternal deaths per lakh (100,000) live births and what is most worrying is that women in the 20-24 age group constitute one-third of the total deaths. The main causes for a majority of deaths are haemorrhage, puerperal sepsis (infections after delivery), complications of abortion, obstructed labor, and hypertensive disorders associated with pregnancy and lack of education and awareness (Registrar General of India, 2006). Most of the women are anemic because they don't take good care of themselves. Inadequate health care and child birth in quick succession are the other issues. Abortions done by dais and quacks, which is widely prevalent in India, could also give rise to various infections.

In the poorest parts of the world, the risk of a woman dying as a result of pregnancy or childbirth during her lifetime is about one in six compared to about one in 30,000 in Northern Europe. India being a developing country, contributes 26% of the global burden of maternal deaths with nearly 136,000 women dying annually (UNICEF, 2009) due to causes related to pregnancy and childbirth. Such a discrepancy poses a huge challenge in meeting the fifth Millennium Development Goal to reduce maternal mortality by 75% between 1990 and 2015 (Carine, 2006). It has also been estimated that for every maternal death, there are over 100 acute

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a Mumbai was selected for the trial, in view of presence of large urban slum population (highest among cities in Maharashtra). Situation analysis of the slums revealed existence of unlisted slums, pockets of underserved slum population and underutilization of existing health services.
b. The indexed women were the one who had a live birth during the last 3years preceding the survey.
c. Based on this survey, the information was recorded as the self reported symptoms. This did not necessarily imply check up being carried out at the time of survey.
d. Complete Antenatal Care for a pregnant mother includes at least 3 antenatal check-ups, 2 doses of TT injection and consumption of 90+ IFA tablets prior to the expected date of delivery.
e. An antenatal check-up includes weight and height measurement, blood pressure, abdominal examination and diagnostic tests including urine test etc.

morbid episodes, indicating overall figure of 62 million maternal morbidities annually (Koblinsky, 1993). This invites the attention of researchers to examine the causes and epidemological factors associated with maternal deaths.

Antenatal care provides a preventive service that monitors pregnancy for signs of complications, detects and treats pre-existing and concurrent problems of pregnancy, and provides advice and counseling on preventive care, diet during pregnancy, delivery care, postnatal care and related issues, thereby reducing maternal morbidity and mortality, if delivered effectively. However, the success that it has in achieving this aim is related to the quality of service that is provided, the number of visits that a woman receives during pregnancy, the timing of those visits and the existence of and accessibility to professional delivery care when necessary (World Health Organization, 1996b).

In 1996, safe motherhood and child health services were incorporated into the Reproductive and Child Health (RCH) Programme in India. This program recommends that as a part of antenatal care, women receive two doses of tetanus toxoid vaccine, adequate amounts of iron and folic acid tablets (90+) or syrup to prevent and treat anaemia, and at least three antenatal check-ups that include blood pressure checks and other procedures to detect pregnancy complications (Harrison,1990; Ministry of Health and Family Welfare, 1997; 1998b)

Maharashtra, (India) has the highest number of slum dwellers (Nandita et al., 2002) having a slum population of more than 40 million (Census of India 2001). The study conducted (Godbole and Talwalkar, 1999) in urban slums in Maharashtra (excluding Greater Mumbai) showed that the antenatal care coverage for three or more ante-natal check-ups was 55 per cent for women in the slums. About 58 per cent women in slums reported that they have taken a complete dose of iron and folic tablets and only 34 per cent women reported a birth interval of more than three years in slum areas. Anemia is an underlying cause for a range of morbidities and severe anemia is a cause of maternal mortality. The consequences of anemia are severe, long term and often irreversible. A study (Khilare 2001) conducted in the slum area of Pimpri-Chinchwad area of Pune district indicated that out of a total of 1,797 women registered for antenatal care at the PCMC Bhosari hospital in 2000, about 83 per cent were anemic (hb < 11 gms/dl). The proportion of anemic pregnant women increased to 89.6 per cent for unrecognized slums.

The study conducted (Jean, 2008) in slum in Nairobi where access to appropriate facilities is limited, women with no formal education, availed less appropriate health facilities. Un-educated women, not seeking delivery care at a proper facility are more likely to have pregnancy complications in the later stage of pregnancy. Besides, women who delivered at a health facility indicated that more than 75% of women who delivered at appropriate facilities had at least one complication during delivery compared with about 66% among those who delivered at inappropriate facilities ($p < 0.01$).

Another study conducted in slum areas of Dhaka, Bangladesh, women who delivered in facilities (both elective and emergency transfers) were of significantly higher economic status, and better educated and significantly more likely to have received antenatal care than women who gave birth at home. There were no significant differences in parity, nutritional status, anemia, or serious delivery-related complications between those who delivered at home and those delivered at elected facility. There was no significant difference in postpartum morbidity caused by delivery location (p=0.58). Emergency transfers, however, were more likely than deliveries at home or at elective facility among "primipara" (odds ratio [OR]=1.9; p<0.01,) and among those who met the operational definitions for serious delivery-related complications (OR=3.4; p<0.01). This study also showed that the self-reported postpartum morbidity was associated with maternal characteristics, delivery-related complications, and some birthing practices (Fronczak et al, 2007).

A study (Mayank et al., 2001) of women in the slums of Delhi, (India) reports that among the women who experienced bleeding during pregnancy, 44 per cent actually recognized it as a danger signal; of those experiencing high blood pressure, and swelling of the hands, face and feet, only 33 per cent and 9 per cent respectively, recognized its severity. Indeed, this study concludes that although the vast majority of pregnant women received antenatal care, fewer than 10 per cent had been informed about danger signals.

In Andhra Pradesh, Madhya Pradesh and Orissa, the states of India, women who did not seek care for complications experienced during pregnancy cited lack of mobility and lack of resources as reasons while those who did not seek care for complications experienced in the postpartum stage cited lack of resources as the reason (Murthy and Barua, 2001).

Research study conducted by the Institute of Health Management, Pachod (IHMP) in 27 slums of Pune, (India) indicates that women suffer from much preventable morbidity. Post-abortion

complications are reported in 42 per cent of the cases. As many as 44 per cent women from urban slums did not seek treatment for reproductive tract infections. Data also indicate that 68 per cent women harbour negative gender attitudes against themselves – a result of the process of socialisation. These attitudes have a direct impact on their treatment-seeking behaviour and utilisation of antenatal services (Kapadia-Kundu and Tupe 2001).

It has also been ascertained that pregnancy-related problems have far-reaching consequences on the overall reproductive health of women, in addition to their contribution to maternal mortality (Bhatia Cleland, 1995a). Besides less attention has been paid on pregnancy related problems and treatment to these problems. Gynecological morbidity has been studied at community level to a certain extent (Bang et al, 1989, Bhatia Cleland, 1995b, Parikh et al, 1996, Prakasam, 2004) but study on pregnancy related problems and complications while delivery are scanty. Recently, a few studies have been conducted mainly to explore the prevalence of obstetric morbidity at the community level (Bhatia et al 1996: Srinivasa et al, 1997), but negligible attempts were made to examine the determinants of obstetric morbidity among women in slums. Women, particularly in the poor socio-economic status have the inherent tendency of late reporting of morbidity episodes, which subsequently worsens the intensity of health disorders and co-morbidities (Harikrishnan, 2009).

In general, women in slum remain unaware of their own reproductive health problems occurring during pregnancy such as Danger sign for pregnancy, Excessive bleeding, Anaemia, diet care during pregnancy and Blood pressure checks etc. Further risk involved in repeated pregnancies and proper utilization of antenatal and postnatal care is another concern. Hence it is necessary to impart knowledge about pregnancy related problems and to understand the root causes of generating complications while delivery among such poor women in slums. Besides, women in the urban slums are unaware of the existing health facilities and even though these facilities are available, it has not been adequately utilized.

Thus, keeping in view of the above research work, an attempt is made, to evolve a suitable strategy for knowing

i) the reproductive health of a study women during pregnancy,

ii) utilization of antenatal care among study women and

iii) the determinants influencing complications while delivery among women in slum in the area of Greater Mumbai, this study has been initiated.

2. Background of the study area

According to a UNESCO document, "a slum is a building, a group of buildings, or area characterized by overcrowding, deterioration, insanitary conditions or absence of facilities, or amenities which, because of all these conditions or any one of them, endanger the health, safety or morals of its inhabitants or the community (Anderson N., 1960). "Slums may be characterized as areas of substandard housing condition within a city. A slum is always an area. A single, neglected building even in the worst stage of detoriation does not make a slum"(Bergel E. E., 1955). Apart from these definitions, slum is an area of darkness, an area of poverty and thus poverty is the prime characteristic of slum.

Likewise, Ramabai Nagar, a densely populated slum, situated on the hilly area of Bhandup, comes under S ward of Brihan Mumbai Municipal Corporation, Mumbai and is about 4 kms. away from Bhandup railway station, a suburb in the Central Mumbai, India. This ward spreads over 25.22 sq. km. and has an overall population density of 27,398 per sq. km. (Census of India, 2001, Maharashtra population data with data on slum population in urban units). **Bhandup is ranked second position as far as slum area populations in Mumbai are concerned**. In Bhandup, out of 6.91 lacs of people, 5.71 lacs of people stay in the slum area. The slum sex ratio of S ward is 816 while female and male literacy rates are 81.67 and 93.02. This rate is above the national level.

Pic-1 Profile of the study area

Ramabai nagar slum was formed before 1980. This slum was constructed on the forest land. Most of the residents are either migrants or tribals. This slum area has two parts, Ramabai nagar no. 1 and 2 and spreads over 2 sq.kms. **The present study was conducted in Ramabai nagar slum no. 2 where the population of this slum was 3500.** Many of the residents stay in semi-pucca houses having roof of asbestos sheets or tin or squared tiles. Homes either consist of huts (zopadis) constructed largely of wooden planks, cane, bamboo and occasionally, brick and tiles or of single-room flats in concrete buildings called

(chawls), each of which contains about 20-25 rooms. The area is very much congested and has no amenities worth mentioning.

Pic-2: Environmental condition in study area.

Drinking water facility in the study area is very poor. Many of them do not have their own water taps. Common tap is provided in the area outside their home and they use it for washing clothes and utensils and even for bathing and this leads to the formation of open drains. Toilet facilities are inadequate with an average of one toilet for about 30 chawl residents.

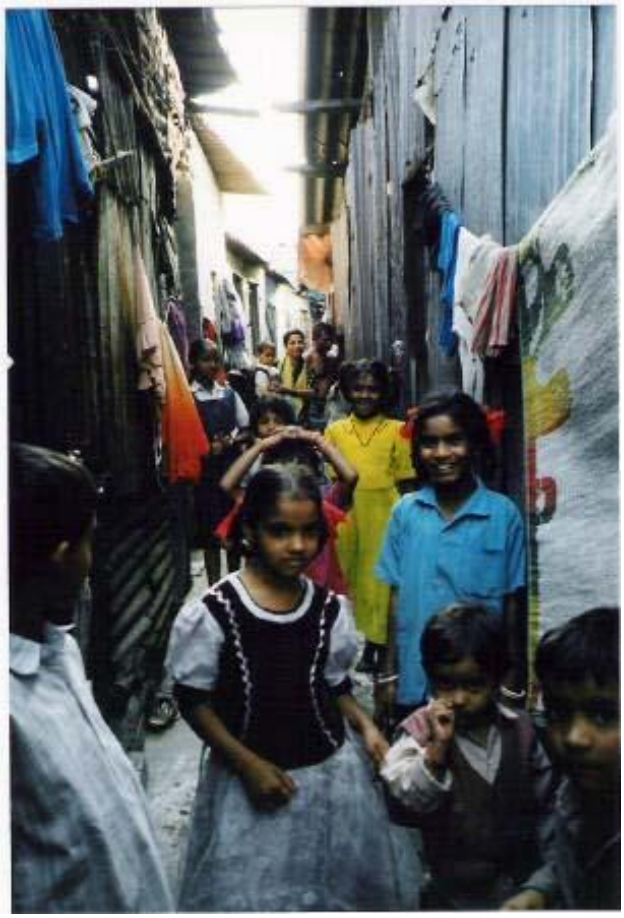
Pic-3: Housing condition in the study area.

Narrow pathways crisscross the slums and are lined with open drains and open garbage. Smoke emitted by nearby factories makes the slum area highly air polluted. Besides it has very limited open space. All these cause many chronic diseases and results in high rate of mortality.

Most of the inhabitants are migrants from UP, Bihar, West Bengal, and interior parts of Maharashtra. Such migrants have low income and so cannot afford to give good education and sufficient food to their wards. Accessing medical facility is another hurdle. The sub-center is situated at the bottom of this hilly area and walking down and reaching back home itself takes almost one hour. Community health volunteers provide essential medical facilities to the slum dwellers, particularly to the pregnant

women during ANC and PNC periods.

Pic-4: Lane in the study area.



For child delivery the study women avail themselves of the government hospital facility near Bhandup railway station while many others prefer delivery at home. For ANC and PNC some of them do visit sub-center of urban health center. In short what is observed is that the life of these residents is very hard as they are deprived of pollution free environment, hygienic and sufficient food, pure drinking water, good education and health facility as they stay on hilly area.

3. Materials and Methods

i) Measuring household standard of living

In the absence of data on income and consumption measures, household standard of living indices are often constructed using three sets of information, namely, source of drinking water, toilet facility, type of house and ownership of selected consumer durables (Montgomery et al., 2000). Index scores for the present study ranges from 1-6 for a low SLI to 7-9 for a medium SLI and >=10 for a high SLI (Appendix). There are three other approaches in the construction of the standard of living indices differing in the manner in which different household amenities, quality of housing materials, and assets are weighted.

ii) Data

For the present investigation, two stage sampling procedures have been adopted. In the first stage, the slums in the Greater Mumbai according to the size of their population were listed using the "Directory of Slums" published by the Office of the Additional Collector (ENC), Mumbai & Mumbai Sub. Dist. (see ref.). Two lists were prepared, one for plain area slums and the other for hilly area slums. From each list, one slum was selected at random. The slum selected from hilly area was Ramabai Nagar slum in Bhandup (w). The population of this slum (study area) was approximately 3500.

In the second stage of sampling from the study areas using cluster sampling two clusters were selected at random. From these two clusters 349 households were selected. The respondents were interviewed carefully using structured schedule by trained investigators who generally work with the doctors in Pulse-Polio campaign. On the whole, this study covers 349 reproductive women in slums representing slum population in Greater Mumbai. This survey was conducted from June to August 2005. Before going for the survey as pilot survey was also conducted.

In order to know the reproductive health of study women during pregnancy utilization of antenatal care, the determinants influencing complications while delivery and children born to the mothers during three years prior to the survey were considered.

iii) Method of Analysis

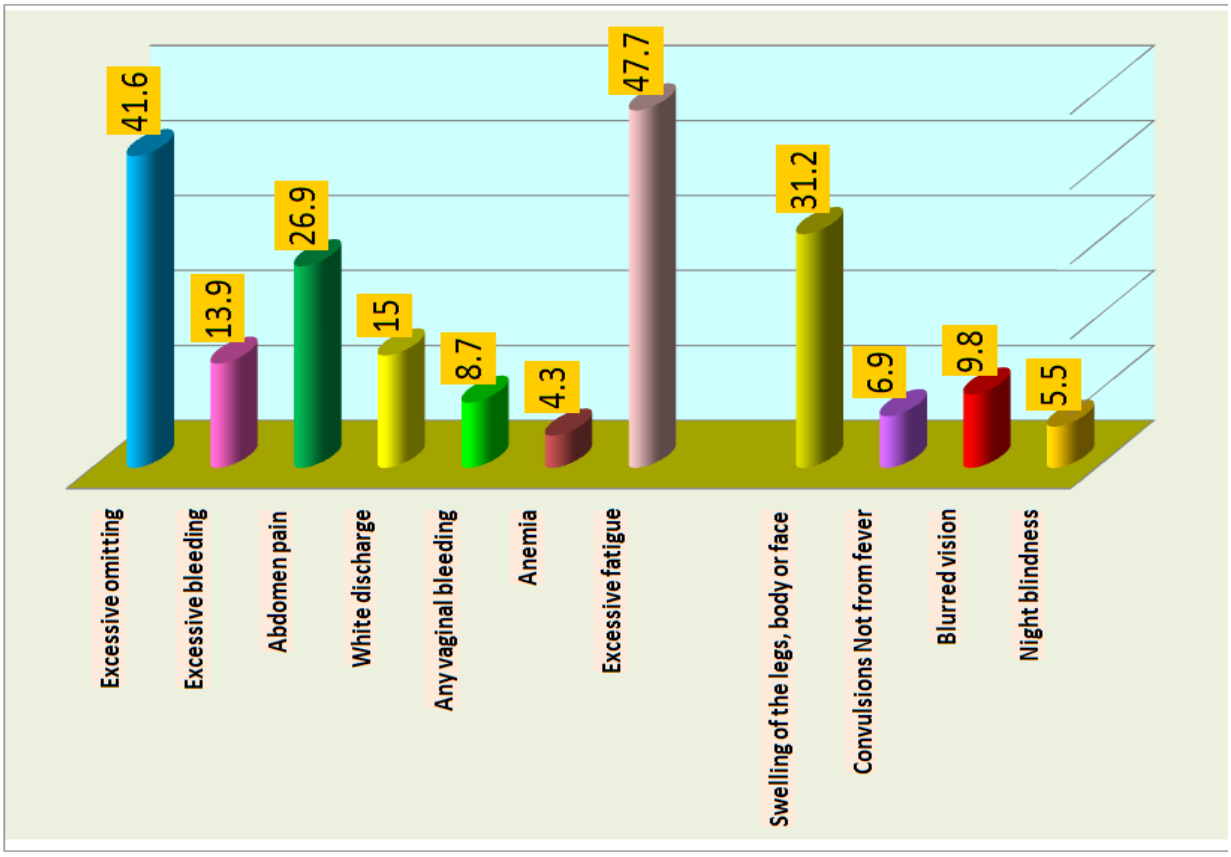
Logistic regression analysis was used to assess the effect of reproductive health problems during pregnancy with no ANC on complications during delivery controlling for other variables included in the model. For the logistic regression analysis purpose, the reproductive women who have given at least one live birth during three years prior to the survey were considered.

4. Results and Discussion

i) Reproductive Health Problems during Pregnancy

Fig 1 shows the problems during pregnancy reported by study women. About 47 percent of the women in the study area reported that they had at least one problem during pregnancy. The major antenatal problems reported were excessive fatigue 48 percent (NFHS-2: 49.1 percent), followed by excessive vomiting 42 percent, swelling of the legs 31 percent (NFHS-2: 35.9 percent), pain in abdomen 21 percent, white discharge 15 percent, blurred vision 10 percent (NFHS-2: 12.1 percent), vaginal bleeding 9 percent (NFHS-2: 3.5 percent), convulsion not from fever 7 percent (NFHS-2: 10.5 percent), night blindness 6 percent (NFHS-2 and RCH: 6.3 percent), and anemia 4 percent (NFHS-2: 16.1 percent). The percentage of these pregnancy problems remains almost same as the problems specially shown in Mumbai slum data in NFHS-2 for Maharashtra state where the survey was taken in 1998-99. This indicates that even after a period of 7 years, the reproductive health condition of study women living in slum on hill remains poor. Probably these women are not utilizing the medical facilities available in that area.

Fig 1: Utilization of Antenatal Care Services showing Problems during Pregnancy in Ramabai Nagar Slum Hill, Bhandup, Mumbai, India.



ii) Antenatal Care

Women not receiving antenatal check-ups tend to be disproportionately older women, women of high parity, women from scheduled tribes, illiterate women and women from households with low standard of living.

Antenatal care is essential for ensuring safe motherhood. During antenatal period, women are likely to face health problems of reproductive nature and there will be a package of measures available for expectant mothers, which ensures safe motherhood. The study women who have given at least one live birth during three years prior to the survey in the study area were considered to analyze the differentials in pregnancy problems experienced by mothers and the extent of utilization of antenatal care services.

a) Components of Antenatal Care Indicators

Table no.1.1 indicates that 90 percent of study women received at least one antenatal check-ups, 58 percent received three or more antenatal check-ups, 67 percent received two or more T.T. injections

and 88 percent have consumed some kind of iron and Folic acid tablets or syrup. Median number of check-ups (for those who received at least one antenatal check-up) is 3, and 10 percent of study women did not go for any antenatal check-up.

Table 1.1: Utilization of Antenatal Care Services showing Antenatal Care Indicators in Ramabai Nagar Slum Hill, Bhandup, Mumbai.

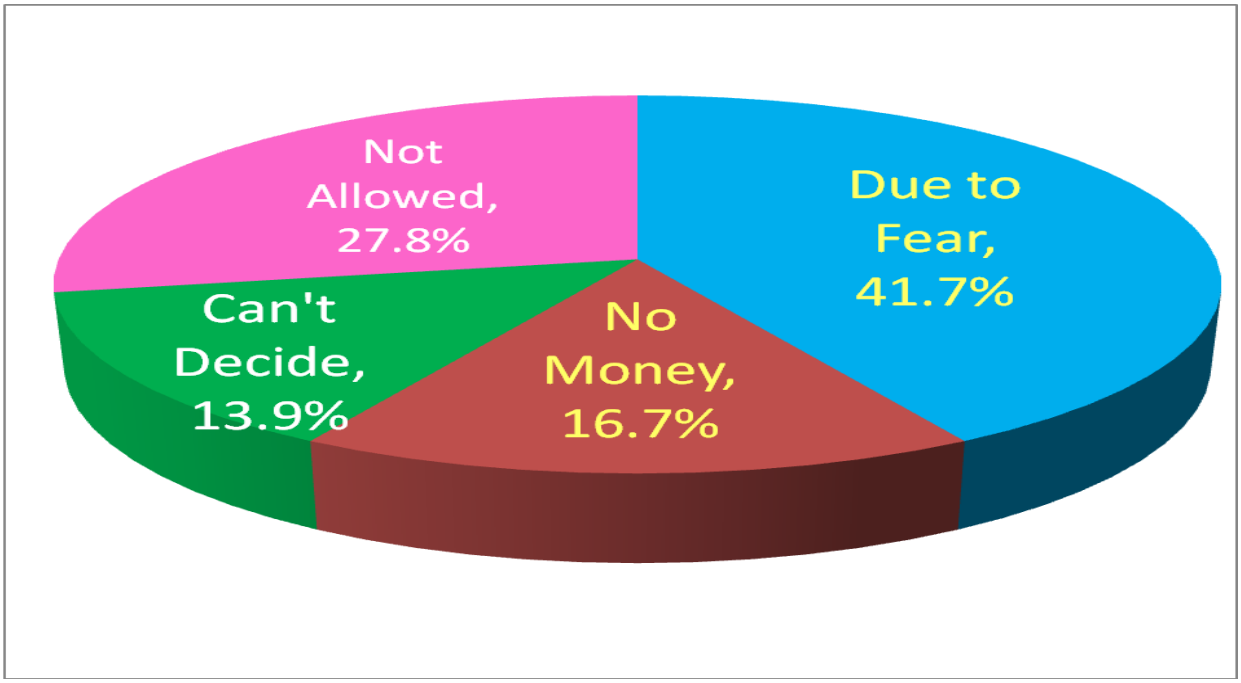
Antenatal care indicators:	Ramabai Nagar Slum, Bhandup	
	Total Cases	**Percent of cases**
Percentage that received at least one antenatal check-up	310	89.6
Percentage that received three or more antenatal check-up	179	57.7
Percentage that received two or more T.T. injections	200	67.1
Percentage given any iron and Folic acid tablets or syrup	274	88.4
Tablets received/purchased		
1-40	138	50.4
41-100	76	27.7
100+	33	12.0
Not received	60	21.9
Median number of check-ups(for those who received at least one antenatal check-up)	3	
No antenatal check-ups	36	10.4

b) Components of Antenatal Check-ups:

Antenatal Measurements / Tests

Data on various components of antenatal check-ups undergone by women in Table no 1.2 shows positive behavior pattern of women in utilizing antenatal care services in the study area. Weight measured is about 94 percent, blood and urine test 92 percent, Sonogram and Abdomen Examination 90 percent, and Blood pressure check-up 85 percent.

Fig 2. Reason for not receiving an antenatal check-up according to residence, Ramabai nagar slum area, Bhandup



c) Antenatal Advice

Data on antenatal care advice in Table no 1.3 reveals that the proportion of pregnant women in the study area who have not utilized proper advice on delivery care since danger sign for pregnancy is 29 percent, new born care is just 50 percent followed by special diet and family planning which is about 44 percent. About 24 percent of women use tobacco during pregnancy.

Table 1.2: Utilization of Antenatal Care Services showing Components of Antenatal Check-ups in Ramabai Nagar Slum Hill, Bhandup, Mumbai.

Components of Antenatal check-ups	Ramabai Nagar Slum, Bhandup			
Antenatal measurements / tests	**Cases**		**Cases**	
	Yes	Per	No	Per
Weight measured	291	93.9	19	6.1
Height measured	233	75.2	77	24.8
Blood pressure checkup	263	84.8	47	15.2
Blood test	286	92.3	24	7.7
Urine test	284	91.6	26	8.4
Abdomen Examined	280	90.3	30	9.7
X-Ray	134	43.2	176	56.8
Sonogram/Ultras	279	90.0	31	10.0
Any other test	105	33.9	205	66.1

Table 1.3: Utilization of Antenatal Care Services showing Antenatal Advice in Ramabai Nagar Slum Hill, Bhandup, Mumbai.

Antenatal advice	Cases	
	Yes	Per
Special diet	136	43.9
Danger sign for pregnancy	91	29.4
Delivery care	161	51.9
New born care	161	51.9
Family planning	136	43.9
Use of any form of tobacco	73	23.5
Walking exercise	131	42.3
Number of births for which the mother received at least one antenatal checkup	414	

Thus from the above tables it can be summed up that still ten percent of women do not avail antenatal check-ups. Fig 1, Table no.1.1 and Table no. 1.2 show quite a good MCH service performance. Data on antenatal care advice in Table no 1.3 reveals that the proportion of pregnant women in the study area have not utilized proper advice on delivery care as new born care is just 50 percent followed by special diet and family planning is about 44 percent. Hence the study reveals excellent antenatal care seeking behavior of women towards antenatal measurements but moderate towards antenatal advice.

5. Socio-economic Correlates

Table no. 2 shows the influence of the socio-economic characteristics of study women on the utilization of antenatal care services in the study area. It is clearly seen from the table that the utilization of antenatal care services increases with rise in the position of women with respect to each of the socio-economic factors. The utilization of antenatal care services decreases with rise in the birth order of children and rise in mother's age where as it increases with improvement in the position of women with respect to education and standard of living. It shows no fixed pattern in religion and caste. In fact the utilization of antenatal care services is almost same amongst Buddhist and Hindu and is quite high, about 90 percent. Whereas the utilization of these services is found to be low among OBC category of women compared with 'SC and ST' and 'Others' caste category.

In order to see the net effect of independent variables (description of the variables is provided in Table 3 for Ramabai nagar slum area) on the dependent variable which is dichotomous, logistic regression technique has been adopted.

Table 2. Percentage received antenatal care by selected background characteristics in Ramabai Nagar slum, Bhandup, Mumbai.

	Ramabai Nagar Slum, Bhandup		
Background characteristics	**Received antenatal checkup**		**Number of Births**
Mother's age	Yes	Percent	
15-24	130	91.5	175
25-29	119	89.5	160
30-49	61	85.9	79
Total			414
Birth order			
1	100	91.7	107
2	127	94.1	176
3	58	87.9	87
4+	25	69.4	44
Mother's education			
Illiterate	53	69.7	89
Literate, <middle school complete(1-6)	59	92.2	78
Middle school complete (7-9)	106	95.5	132
High school complete and above(10+)	92	96.8	115
Religion			
Hindu	211	90.2	277
Buddhist	78	91.8	107
Other	21	77.8	30
Caste			
SC and ST	108	87.8	150
OBC	43	84.3	63
Other	159	92.4	201
Standard of living			
Low	55	76.4	87
Medium	219	92.4	283
High	36	97.3	44
Total	310	-	414

6. Determinants of Utilization of health care services during delivery period (Delivery complications): A Logistic Regression Analysis

Logistic Regression

Table no. 4a shows the influence of the **reproductive health problems during pregnancy** of study women who did not go for ANC **on delivery complications** in the study area. It is clearly seen from the table that delivery complications due to the pregnancy problems such as Night blindness, Anemia, Any vaginal bleeding was 73.7 percent whereas due to Excessive bleeding it had shown 75% which was maximum followed by Blurred vision (64.7%), Convulsions Not from fever (62.5%) and for the rest it was around 55%.

Table 3. Measurement of variables used in the logistic regression analysis for Ramabai nagar slum area, Bhandup

Category	Variables	code
	Dependent variables	
Delivery complications	No (Ref)	0
	Yes	1
	Independent variables	
1. Night blindness	No (Ref)	0
	Yes	1
2. Blurred vision	No (Ref)	0
	Yes	1
3. Convulsions Not from fever	No (Ref)	0
	Yes	1
4. Swelling of the legs, body or face	No (Ref)	0
	Yes	1
5. Excessive fatigue	No (Ref)	0
	Yes	1
6. Anemia	No (Ref)	0
	Yes	1
7. Any vaginal bleeding	No (Ref)	0
	Yes	1
8. White discharge	No (Ref)	0
	Yes	1
9. Abdomen pain	No (Ref)	0
	Yes	1
10. Excessive bleeding	No (Ref)	0
	Yes	1
11. Excessive omitting	No (Ref)	0
	Yes	1
Utilisation of antenatal care service (ANC)	Antenatal Care service not utilized (Ref)	0
	Antenatal Care service utilized	1

Table No. 4a: Percentage reproductive health problems during pregnancy and ANC on delivery complications in Ramabai Nagar Slum, Bhandup, Mumbai.

	Delivery complication	
Problems during pregnancy:	Yes	Percent
Night blindness	14	73.7
Blurred vision	22	64.7
Convulsions Not from fever	15	62.5
Swelling of the legs, body or face	60	55.6
Excessive fatigue	85	51.5
Anemia	11	73.3
Any vaginal bleeding	22	73.3
White discharge	29	55.8
Abdomen pain	53	57.0
Excessive bleeding	36	75.0
Excessive omitting	75	52.1
ANC	136	43.9

The logistic regression results in Table 4b reveals that the study women who have not gone for antenatal care and having pregnancy problems develop complications during the delivery. Here the dependent variable is complications at the time of delivery and the independent variables are problems during the pregnancy and study women who did not go for ANC. The results of logistic regression showed that **excessive bleeding** during pregnancy will influence complications during the delivery of the respondents from Ramabai nagar area.

Table No. 4b: Odds ratios from logistic regression examining the effect of antenatal care and reproductive health problems during pregnancy on delivery complications in Ramabai Nagar Slum, handup, Mumbai.

	Sig.	Odds ratio
Problems during pregnancy:		
Night blindness	0.405	1.800
Blurred vision	0.530	1.408
Convulsions Not from fever	0.197	1.405
Swelling of the legs, body or face	0.905	1.032
Excessive fatigue	0.401	1.714
Anemia	0.889	.951
Any vaginal bleeding	0.893	1.076
White discharge	0.181	1.927
Abdomen pain	0.694	1.121
Excessive bleeding	0.003	3.081**
Excessive omitting	0.373	1.239
ANC	0.744	0.873
Constant	0.201	0.563
-2 Log likelihood	442.771	
Cox and Snell R^2	0.094	
Nagelkerke R^2	0.126	
Number of births	414	

*****p<0.01 , **P<0.05**

7. Conclusions and Policy implications:

Maternal deaths are clustered around labour, delivery, and the immediate postpartum period, with obstetric haemorrhage being the main medical cause of death**.** Skilled attendance during delivery, access to emergency obstetric care and postnatal care (PNC) are cost effective and life saving investments for mothers. The extent of services available and availed during complications related to pregnancy, delivery and postpartum indicates the state of obstetric morbidity and mortality (Ministry of Health and Family, 2008).

This data shows that the extent of utilization of services pertaining to antenatal period is excellent for those other than illiterate women, low category SLI women and SC-ST, OBC women. The roll of socio-economic factors in service utilization is clearly evident in study area. It clearly

shows that as education level increases, the utilization of ANC also increases. This study also reveals excellent antenatal care seeking behaviour of women towards antenatal measurements but moderate towards antenatal advice. *About 35 percent of women from low category of standard of living are not availing delivery care services. This clearly indicates that there is a concentration of women amongst the poorest of economic stratum thatgoes without adequate maternal care.*

Similarly the influence of the reproductive health problems during pregnancy having no ANC creates complications while delivery and the most influencing factor found was ***excessive bleeding.***

More over being on a hill, this slum area has no road infrastructure and public transport services. Further, hiring private transport is unaffordable for many slum-dwellers. The problem with transport is even worse if the referral is made at night because the cost challenge is compounded by the insecurity in slum communities. Though community health volunteers (CHV) are playing a big role in communicating importance of ANC, delivery care and post-natal care to the expectant women, illiteracy and poverty prevent such women from utilizing health facilities.

Thus this paper suggests that there should be:

- effective awareness campaign through urban health centers,
- committed health workers,
- easy access to services,
- awareness about appropriate birth interval and proper diet during pregnancy
- better health care delivery system,
- quality health care,
- Follow-up care

for the betterment of reproductive health of women in such hilly slums particularly to the illiterates.

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Appendix

The standard of living is calculated by adding the following scores:
Type of House: 4 for pucca, 2 for semi-pucca, 0 for kachha;
Toilet facility: 4 for own flush, 2 for public, 1 for public pit or open, 0 for no facility;
Source of lighting: 2 for electricity, 1 for other, 0 for no facility;

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