

Research Article

Inequality in the Utilization of Maternal Healthcare Services in Odisha, India

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Odisha, one of the socioeconomically disadvantaged states of India, registers high maternal deaths. The state features wide regional and sociodemographic diversity with the Koraput-Balangir-Kalahandi (KKBK) districts, dominated by disadvantaged tribal population. This study aims to assess the level and pattern of maternal healthcare services utilization among different subgroups of women in Odisha with a special focus on the regional, economic, and educational inequality using the latest District Level Household and Facility Survey (DLHS-III, 2007-08). Descriptive statistics and bivariate and multivariate analysis were used to understand the pattern of utilization of maternal healthcare services among women by different background characteristics. Concentration curve and decomposition analysis were used to understand the inequalities in utilization of maternal healthcare services and contribution of different socioeconomic factors. Results reveal wide regional variation in the utilization of maternal healthcare services. The utilization of maternal healthcare services is more concentrated among affluent households. Economic inequality in safe delivery is high. Decomposition analysis shows education as the leading contributor in explaining maternal healthcare services utilization. Enhancing literacy among women and improving of health infrastructure and its quality in rural and disadvantaged regions may be prioritized to improve the maternal health in Odisha.

1. Introduction

Maternal health refers to the state of complete physical, mental, and social well-being of women during pregnancy, childbirth, and the postpartum period. While motherhood is often a positive and fulfilling experience, for many women it is associated with suffering, ill health, and even death [1, 2]. According to World Health Organization (WHO), approximately 800 women die from preventable causes related to pregnancy and childbirth every day [3]. Out of all maternal deaths, 99 percent occur in developing countries. Further, maternal mortality is higher among women living in rural areas, among poorer communities [3, 4], and among those with low literacy [5].

Improving maternal health is one of the Millennium Development Goals (MDG) adopted by international community in 2000 [6, 7]. As per this agreement, all member countries

have to reduce maternal mortality by three-quarters between 1990 and 2015 [6, 8]. The maternal mortality in Sub-Saharan Africa has been halved since 1990 [9]. In other regions, including Asia, greater headway has been achieved [1]. In India, among the armed forces there were 10 maternal deaths amongst 27,215 deliveries, making a MMR of 36 per 100,000 live births in the year 2004. This reflects the importance of comprehensive healthcare and institutionalized deliveries [1, 9, 10]. However, between 1990 and 2010, the global maternal mortality ratio (i.e., the number of maternal deaths per 100,000 live births) declined by only 3.1% per year which is far from the annual decline of 5.5% required to achieve MDG-5 [3]. Furthermore, the maternal mortality ratio in low income countries is 240 per 100,000 live births whereas it is only 16 per 100,000 live births in high income developed countries [3]. This disparity is even visible within countries between people with high and low income and between people living in rural

and urban areas [11]. It is a mere indication of inequalities in access to maternal healthcare services and highlights the gap between the rich and the poor [12, 13].

India, like many other developing countries, records high maternal morbidities and deaths. The condition is even worse in the socioeconomically disadvantaged state of Odisha, which registers high maternal morbidities and mortalities well above the national average [14, 15]. Anemia among pregnant and lactating mothers is higher in the state [16]. Absence of health infrastructure and sparse utilization of available healthcare services between different subgroups of population were considered as important factors for the poor maternal health in the state [17, 18]. Though the National Rural Health Mission (NRHM) has firm positive impact in building the infrastructure and improving the maternal health, the development is not uniform across the regions and among diverse groups of population [12, 19, 20]. The reasons are multifactorial and embedded across individual, household, and geographical features [14, 20]. Hence, any insightful assessment of maternal healthcare utilization among different subgroups with varying socioeconomic and demographic characteristics will have better policy implications to enhance the service utilization and reduce maternal mortality and morbidity. In this context, the present study is an effort to assess the level and pattern of maternal healthcare services utilization among diverse groups of women in Odisha, with a special focus on the regional, economic, and educational inequality.

Study Area. Odisha, formerly known as Orissa, is situated in the east coast of India. More than 83 percent of Odisha's population is living in rural areas and 36 percent of women are illiterate [21]. In terms of the Human Development Index, the state ranks at the bottom 22nd position (out of 23), and, according to the Planning Commission's Tendulkar Committee Report 2009, the poverty headcount ratio of Odisha at 57.2 percent is the worst among all Indian states and way above the national average of 37.2 percent. Moreover, the extent of poverty is not evenly distributed in all the regions and among all social groups. The scheduled castes (SCs) and scheduled tribes (STs) of the state that comprise about 40 percent of the total population [21] have high proportion of poverty as compared to the SCs and STs in the country as a whole. In southern and western Odisha, there is heavy concentration of tribal population, whereas they are sparsely distributed in the coastal districts. The Kalahandi, Balangir, and Koraput (KBK) districts, in the southwest, have an inadequate economic infrastructure, low spread of medical facilities, and widespread poverty. Maternal mortality and under-five mortality continue to be at a higher level in this region.

2. Data and Methods

This study analyzed maternal healthcare services utilization based on the 7792 ever married women aged 15–49 years incorporated in District Level Household and Facility Survey (DLHS), third round (2007–08) of the state. The DLHS is a nationwide survey covering 601 districts from 34 states and union territories of India. It is the largest ever demographic and health survey carried out in India to monitor the ongoing

health and family welfare programs at district level. It is designed to provide estimates on maternal and child health, family planning, and reproductive health indicators. It further gives information related to the programs under the NRHM. DLHS-III adopted a multistage stratified probability proportion to size sampling design; the details can be ascertained from the report [14].

2.1. Outcome Variables. The outcome variables used in the study are “utilization of maternal healthcare services,” that is, full antenatal care (ANC), safe delivery, and postnatal care (PNC).

2.1.1. Full Antenatal Care (ANC). In the survey, women were asked whether they “had at least three visits for ANC check-up, received at least one TT injection, and consumed 100 IFA tablets/syrup” for the last birth during the three years preceding the survey from January 1, 2004. This information was used to define full ANC in this study.

2.1.2. Safe Delivery. In the survey, women were asked where (place) their children were born, who assisted during the deliveries, and many other characteristics of delivery. This information was collected for the last two live/still births that occurred during three years preceding the survey. Safe delivery is defined as the deliveries conducted either in medical institution or at home assisted by skilled person (doctor/nurse/Lady Health Visitor (LHV)/Auxiliary Nurse Midwife (ANM)/other health professionals).

2.1.3. Postnatal Care (PNC). In the survey, women who had their last birth/still birth after January 1, 2004, were asked “Did you have any check-up within 48 hours after delivery?” and “How many days after delivery did the first check-up take place?” In this study, women who went for check-up to any health facilities/doctors within two weeks of delivery are considered to have used postnatal care services.

2.2. Predictor Variables

2.2.1. Wealth Index. The economic situation in Odisha largely differs from the national scenario due to its number of disadvantaged attributes. A separate wealth index for the state is constructed for this study using variables on consumer durables, household amenities, and household qualities used on DLHS-III Survey [14]. Each of the assets is assigned a weight (factor score) generated through principal component analysis (PCA). The resulting assets scores are then standardized in relation to normal distribution with the mean of zero and standard deviation of one. Then, the values are divided into equal five categories (index), that is, poorest, poorer, middle, richer, and richest.

2.2.2. Region. To document the geographical differentials in the utilization of maternal healthcare, 30 districts of the state have been divided into three groups based on administrative division. Accordingly, Sonapur, Balangir, Nuapada, Kalahandi, Rayagada, Nabarangpur, Koraput, and Malkangiri are

TABLE 1: Socioeconomic and demographic profile of Odisha and KBK region, India.

Characteristics	Overall	KBK
Number of districts ¹	30	8
Population ¹	41.9 million	8.63 million
Scheduled castes ¹	17.0	17.1
Scheduled tribes ¹	22.9	38.7
Sex ratio ¹	978	1011
Literacy ¹	73.45	56.12
Fertility ²	2.3	—
MMR ³	235	—
Delivery at home ²	28.1	68.1 (Nabarangpur)
Mean age at marriage for females ²	21.7	19.8 (Nabarangpur)

Source: ¹Census, 2011 [21], ²Annual Health Survey [22], and ³Sample Registration System, 2013 [15].

merged as “KBK” whereas Bargarh, Jharsuguda, Sambalpur, Debagarh, Sundargarh, Kendujhar, Mayurbhanj, Dhenkanal, Angul, Kandhamal, and Boudh are merged as “western” and Baleswar, Bhadrak, Kendrapara, Jagatsinghpur, Cuttack, Jajpur, Nayagarh, Khordha, Puri, Ganjam, and Gajapati are merged as “coastal” region.

2.2.3. Education. To capture the inequality in utilization of the maternal healthcare by educational standard, women are classified into four different groups, namely, illiterates, women with less than five years of schooling, women with five to nine years of schooling, and women with 10 or more years of schooling.

The survey further collected information on a number of socioeconomic and demographic covariates which could potentially affect the utilization of maternal healthcare services (Table 1). The other variables included in this analysis are current age of women, religion, caste, educational attainment of husband, age at marriage, and marital duration.

2.3. Statistical Analysis. Descriptive statistics and bivariate and multivariate analysis are carried out to estimate the level and pattern of utilization of maternal healthcare services among women by different socioeconomic and demographic characteristics. Chi-square at the 0.05 level is used to check the statistical association between the outcome and predictor variables in the bivariate analysis. Binary logistic regression is used to check the adjusted effects of selected socioeconomic and demographic characteristics on utilization of maternal healthcare services. The binary logistic regression is used due to the nature of the outcome variable. The outcome variables are in binary form with two categories, namely, no and yes (coded as 0 and 1, resp.). The results are presented in the form of odds ratio (OR) with 95% of confidence interval. The OR explains the probability that a woman of an exposed group will use maternal healthcare services relative to the probability that a woman of an unexposed group will use the same services.

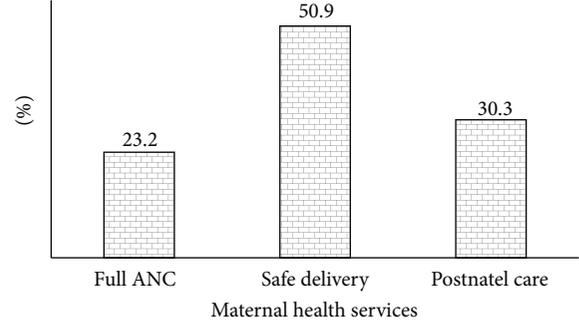


FIGURE 1: Maternal health utilization in Odisha, 2007-08.

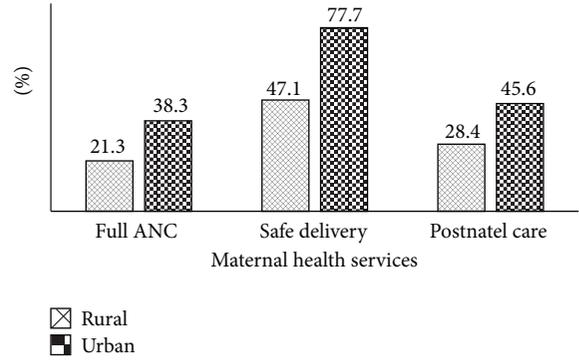


FIGURE 2: Maternal health utilization in Odisha, 2007-08.

The model is usually put into a more compact form as follows:

$$\ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_{1x_1} + \dots + \beta_{Mx_{m,i}}, \quad (1)$$

where β_0, \dots, β_M are regression coefficients indicating the relative effect of a particular explanatory variable on the outcome. These coefficients change as per the context in the analysis in the study.

2.4. Measuring Inequality in Maternal Healthcare Utilization

2.4.1. Concentration Curve. Concentration curve is plotted to estimate the inequality in maternal healthcare utilization by the economic condition of women. It plots the cumulative proportion of selected maternal healthcare services, that is, full ANC, safe delivery, and PNC against the cumulative proportion of women by their level of economic status, beginning with the poorest women. If the curve L coincides with the diagonal, all women, irrespective of their level of economic status, have the same maternal healthcare utilization (Y). If, on the other hand, L lies below the diagonal, as in Figure 6, maternal healthcare utilization is typically higher amongst the affluent women. If L lies above the diagonal, mentioned healthcare utilization is more among the poor women.

2.4.2. Decomposing the Causes of Inequality in Maternal Healthcare Utilization. Turning to the decomposition analysis, it is natural to expect that inequalities in maternal

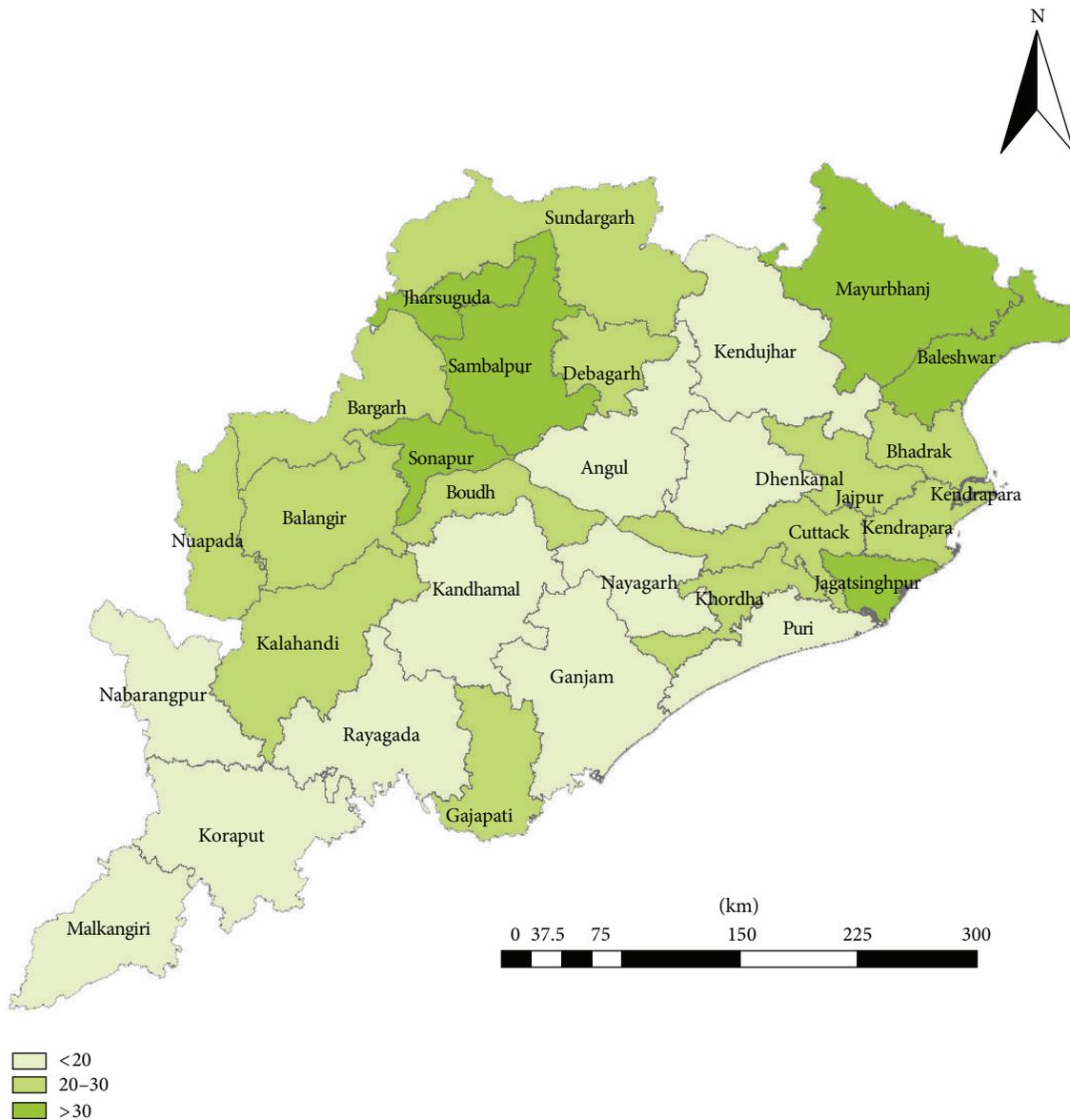


FIGURE 3: Percentage distribution of full antenatal care in districts of Odisha, 2007-08.

healthcare utilization would reflect the inequalities in the determinants of utilization. The Oaxaca decomposition [23] is applied which is capable of explaining the gap in the means of an outcome variable between two groups (e.g., between the poor and nonpoor). The gap is decomposed into that part which is due to group differences in the magnitudes of the determinants of the outcome in question, on the one hand, and group differences in the effects of the determinants, on the other hand [24].

In all the analyses, weights are used to restore the representativeness of the sample. The analyses are done with the help of IBM SPSS 20.0 and Stata 12 statistical packages.

3. Results

3.1. Maternal Healthcare Services Utilization. The level of maternal healthcare services utilization in Odisha is shown

in Figure 1. Less than one-fourth (23 percent) of the women had received full ANC and only half of the women had safe delivery. Further, less than one-third (30 percent) of the women had used postnatal care services.

3.1.1. Regional Variation. Among the three regions, KBK region had a very low utilization of all three maternal healthcare services. Only 32 percent of deliveries were conducted by a skilled health professional (safe delivery) in this region in comparison to 52 percent in the western and 61 percent in the coastal region. The level of full ANC (20 percent) and utilization of postnatal care services (24 percent) were also lower in KBK region than the other two regions (Figure 2). Only 7 of all 30 districts had full ANC level of above 30 percent. Most of the KBK districts recorded lower full ANC (Figure 3). For example, Nabarangpur (12 percent), Malkangiri (13 percent),

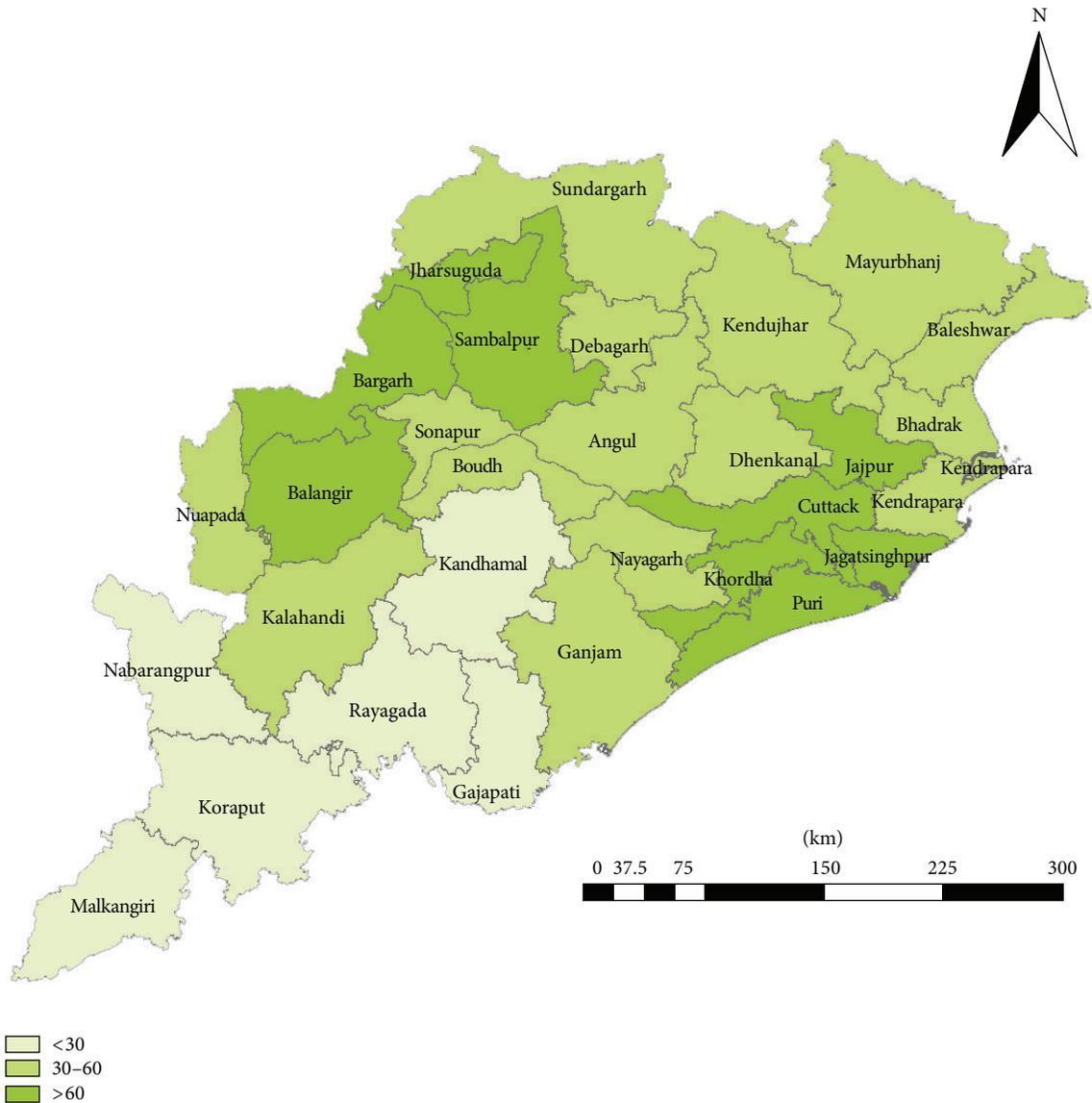


FIGURE 4: Percentage distribution of safe delivery in districts of Odisha, 2007-08.

and Rayagada (14 percent) districts had less than 15 percent of women who received full ANC. The proportion of safe delivery was 60 percent or above only in 9 districts (Figure 4). The percent of safe delivery was found to be lowest in Malkangiri (15 percent) followed by Nabarangpur (19 percent) districts of KBK region and was highest in Jagatsinghpur (83 percent) district of the coastal region. The level of postnatal care services use was also found to be lower in districts under KBK region than districts of the other two regions (Figure 5).

3.1.2. Socioeconomic Variation. The utilization of maternal healthcare services by selected socioeconomic characteristics is shown in Table 2. The poor women were found to have lower maternal healthcare services utilization than the rich groups. Merely 14 percent of the women from the poorest group had full ANC compared to 50 percent of the women from the richest group. Safe delivery was almost universal

among those women from the richest group (92 percent) whereas only 30 percent of the poorest women had safe delivery. More than half of those women from the richest group (55 percent) had PNC while the corresponding figure was only 19 percent among those from the poorest group. Education of women and their husbands was linearly related to maternal healthcare services utilization. The higher proportions of educated women have used maternal healthcare services than women without any formal education. It is evident that, among women with 10 or more years of schooling, 48 percent had received full ANC, 88 percent had safe delivery, and 54 percent had PNC. The corresponding figures among the illiterate women were 13 percent, 28 percent, and 18 percent, respectively.

Utilization of all selected maternal healthcare services was higher among the urban women compared to the rural women. Only 21 percent of women from the rural area had

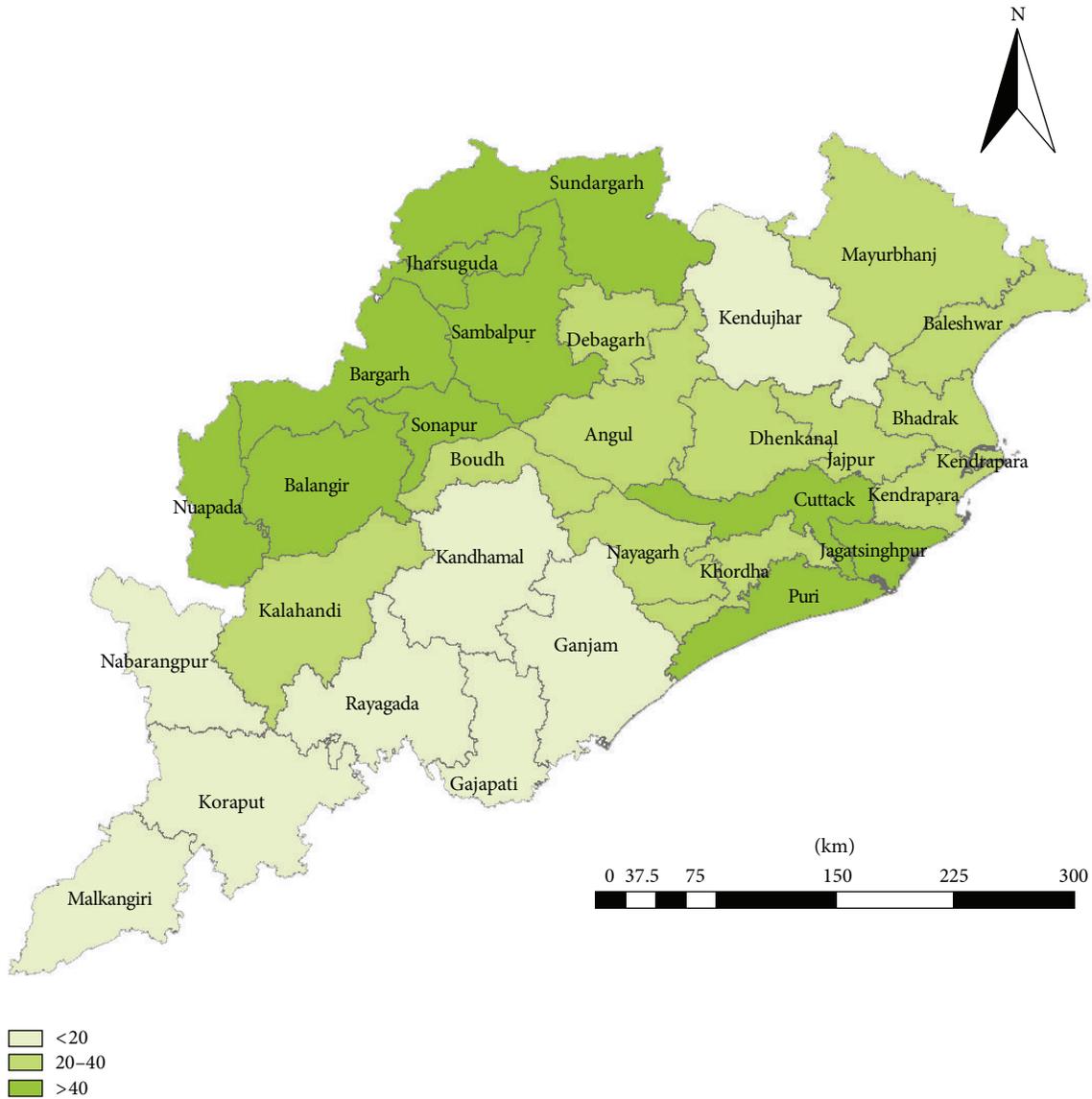


FIGURE 5: Percentage distribution of postnatal care in districts of Odisha, 2007-08.

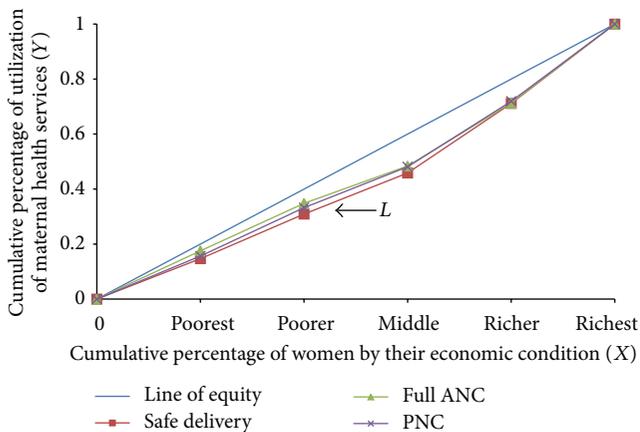


FIGURE 6: Concentration curve of maternal health utilization in Odisha, 2007-08.

full ANC as compared to 37 percent of urban women. Among religious groups, Muslim women had higher utilization of all three maternal healthcare services than the Hindus and women from other religious groups. Around 69 percent of Muslim women had safe delivery against 51 percent of the Hindus and only 28 percent of women from the other religions. A lower proportion of the scheduled tribe women had full ANC, safe delivery, and PNC compared to women from other social groups in the state. Higher proportion of younger women (15–24 years) had gone for safe delivery and PNC compared to their elder counterpart. Number of children ever born was inversely associated with maternal healthcare services utilization.

3.1.3. *Multivariate Analysis.* The predictor variables which proved to be statistically significant in the bivariate result were included in the multivariate analysis. Controlling for

TABLE 2: Utilization of maternal healthcare services by selected socioeconomic characteristics in Odisha, 2007-08.

Socioeconomic Characteristics	Full ANC	Safe delivery	Postnatal care
Residence	$P < 0.000$	$P < 0.000$	$P < 0.000$
Urban	37.3	78.2	45.9
Rural	21.4	47.4	28.3
Religion	$P < 0.001$	$P < 0.000$	$P < 0.000$
Hindus	23.4	51.4	30.5
Muslims	33.1	68.6	39.4
Other	13.5	28.4	19.0
Caste	$P < 0.000$	$P < 0.000$	$P < 0.000$
SC ¹	19.8	49.7	30.9
ST ²	14.6	26.0	16.5
OBC ³	27.1	61.0	35.8
Others	32.8	71.9	40.6
Wealth index	$P < 0.000$	$P < 0.000$	$P < 0.000$
Poorest	14.4	30.0	19.4
Second	18.9	48.8	29.2
Middle	27.7	66.7	37.9
Fourth	35.3	79.0	43.6
Richest	49.9	92.1	54.7
Age	$P < 0.000$	$P < 0.000$	$P < 0.000$
15–24	23.1	56.7	32.7
25–34	24.5	49.9	30.4
35+	15.9	34.5	20.5
Women's education	$P < 0.000$	$P < 0.000$	$P < 0.000$
No education	13.3	27.7	17.8
Less than 5 years	18.8	48.9	29.8
5–9 years	25.2	63.5	35.2
10 or more years	48.4	88.4	53.8
Age at marriage	$P < 0.000$	$P < 0.000$	$P < 0.000$
Below 18	15.3	35.1	20.8
18 and above	27.8	60.0	35.7
Children ever born	$P < 0.000$	$P < 0.000$	$P < 0.000$
1	31.5	72.5	42.9
2	25.5	53.5	31.3
3	18.1	37.9	23.3
4+	10.8	22.9	14.4
Husband's education	$P < 0.000$	$P < 0.000$	$P < 0.000$
No education	12.7	26.5	15.9
Less than 5 years	15.8	39.9	25.5
5–9 years	22.6	54.1	32.3
10 or more years	41.5	82.1	47.6

¹ Scheduled castes, ² scheduled tribes, and ³ other backward class. P is the Chi-square statistic which is significant at the 0.05 level.

other variables included in the model, women from KBK region were significantly less likely [OR: 0.86, CI: 0.73–1.00] to have safe delivery than women from coastal region

(Table 3). However, they were more likely to use full ANC and PNC compared to women from coastal region. Adjusting the effects of other variables in the model, a positive association was observed between economic condition of women and utilization of maternal healthcare services. Women from affluent households were more likely to utilize the selected healthcare services than those from poor households. As evident, women from households of richest wealth quintile were significantly more likely to have full ANC [OR: 1.82, CI: 1.40–2.36], safe delivery [OR: 4.43, CI: 3.14–6.26], and PNC [OR: 1.72, CI: 1.33–2.21] compared to those women from households of poorest wealth quintile. Women's education and utilization of maternal healthcare services were further linearly associated. Women with 10 or more years of schooling were 2.23 (CI: 1.74–2.84), 2.63 (CI: 2.03–3.42), and 1.85 (CI: 1.47–2.32) times more likely to have full ANC, safe delivery, and PNC, respectively, as compared to the illiterate women.

Number of children ever born to women and utilization of selected maternal healthcare services were inversely related in the study. Utilization of maternal healthcare services significantly declines with the increasing number of children ever born to women. Women from rural areas were less likely to use selected maternal healthcare services than those from urban area. Rural women were 40 percent significantly less likely to have safe delivery than the women from urban area. Women aged 25–34 and above were more likely to use all maternal healthcare services than the women aged 15–24 years.

3.1.4. Inequality Estimation. The concentration curve evidently shows that utilization of maternal healthcare services is more concentrated among affluent women (Figure 6). This inequality is observed across all three maternal healthcare services indicators selected for the study. However, the proportion of inequality was found to be more while accessing safe delivery. Women from poor or low income households are less likely to have safe delivery than women from affluent families. The unequal utilization of maternal healthcare services among women from different economic background further motivated recognizing the degree of contribution of the probable factors.

The socioeconomic and demographic characteristics incorporated in the study could explain only 22, 27, and 14 percent of the full ANC, safe delivery, and postnatal care, respectively (Table 4). Demographic factors in general favor the poor in utilizing maternal healthcare services. Age and caste of women are positively associated with full ANC, safe delivery, and postnatal care. However, the gaps in the remaining variables incorporated in the analysis disfavor the poor. Of the latter, it is the gap in the education that accounts for the bulk of the explained gap. It is found that wealth is not highly correlated with inequality in maternal healthcare utilization; rather the lack of awareness about benefits of the services among the poor is the most important contributing factor to inequality.

TABLE 3: Binary logistic regression showing adjusted effects of selected characteristics on utilization of maternal healthcare services in Odisha, 2007-08.

Characteristics	Full ANC	95% CI	Safe delivery	95% CI	Postnatal care	95% CI
Place of residence						
Urban [#]						
Rural	0.86	0.72–1.04	0.60***	0.48–0.74	0.84**	0.71–1.00
Age						
15–24 [#]						
25–34	1.26***	1.10–1.45	1.13*	0.99–1.30	1.17**	1.03–1.34
35+	1.24	0.96–1.61	1.30**	1.03–1.65	1.15	0.91–1.46
Caste						
SC ^{#1}						
ST ²	0.91	0.76–1.10	0.53***	0.45–0.62	0.53***	0.45–0.63
OBC ³	1.11	0.94–1.31	1.09	0.93–1.27	0.95	0.82–1.10
Others	1.10	0.92–1.31	1.10	0.93–1.31	0.99	0.84–1.17
Religion						
Hindus [#]						
Muslims	1.50	0.90–2.50	1.08	0.61–1.90	0.96	0.58–1.60
Others	0.74	0.49–1.14	0.66**	0.46–0.94	0.88	0.61–1.26
Education						
No education [#]						
Less than 5 years	1.22*	0.98–1.51	1.51***	1.26–1.79	1.39***	1.15–1.68
5–9 years	1.32***	1.10–1.59	1.58***	1.35–1.83	1.30***	1.10–1.54
10 and more years	2.23***	1.74–2.84	2.63***	2.03–3.42	1.85***	1.47–2.32
Wealth index						
Poorest [#]						
Poorer	1.03	0.86–1.23	1.31***	1.13–1.52	1.25***	1.06–1.46
Middle	1.33***	1.10–1.62	1.84***	1.54–2.20	1.50***	1.25–1.79
Richer	1.48***	1.20–1.83	2.39***	1.93–2.94	1.52***	1.25–1.86
Richest	1.82***	1.40–2.36	4.43***	3.14–6.26	1.72***	1.33–2.21
Age at marriage						
Below 18 [#]						
18 and above	1.16**	1.01–1.34	1.15**	1.02–1.30	1.21***	1.06–1.37
Children ever born						
One child [#]						
Two children	0.80***	0.70–0.92	0.43***	0.37–0.49	0.63***	0.56–0.72
Three children	0.65***	0.53–0.78	0.30***	0.25–0.36	0.50***	0.42–0.60
Four and above	0.44***	0.35–0.55	0.21***	0.17–0.26	0.35***	0.29–0.43
Husband's education						
No education [#]						
Less than 5 years	1.12	0.90–1.40	1.20**	1.01–1.43	1.40***	1.15–1.69
5–9	1.29***	1.07–1.56	1.25***	1.08–1.46	1.40***	1.18–1.67
10 or more years	1.56***	1.24–1.96	1.70***	1.37–2.11	1.44***	1.16–1.79
Region						
Coastal [#]						
Northwest	1.28***	1.12–1.47	1.23***	1.08–1.40	1.84***	1.62–2.08
KBK districts	1.62***	1.36–1.93	0.86**	0.73–1.00	1.69***	1.44–1.99
Pseudo R ²	0.095		0.249		0.108	

[#] Reference group, * $P < 0.1$, ** $P < 0.05$, and *** $P < 0.01$. ¹ Scheduled castes, ² scheduled tribes, and ³ other backward class. The Pseudo R² is R-squared value of regression value.

TABLE 4: Decomposition result showing the contribution of different socioeconomic variables in utilizing maternal healthcare services in Odisha, 2007-08.

Explained by the selected characteristics	Full ANC	Safe delivery	Postnatal care
	0.216	0.272	0.144
Characteristics			
Place of residence	0.033	0.043	0.025
Age	-0.000	0.001	-0.000
Caste	-0.001	-0.003	0.003
Religion	0.000	0.002	0.000
Education	0.168	0.174	0.116
Age at marriage	0.032	0.047	0.046
Marital duration	0.000	0.002	0.002
Region	-0.017	0.008	-0.048

4. Discussion

The study found that the utilization of maternal healthcare services is considerably low in Odisha along with wide variation by region, economic standard, and literacy level. The disparity is substantial when compared with other developed states like Kerala and Tamil Nadu in India, where utilization of maternal healthcare services is nearly universal [14]. The variations are primarily due to the divergent socioeconomic and demographic characteristics of women. The study revealed “region” as an important covariate affecting the utilization of maternal health services in the state. This too was corroborated by a study in 2008 [25]. KBK region remained as the most disadvantaged region where utilization of all the three selected maternal healthcare services is lower than the other two regions. KBK is the tribal belt of Odisha which is infamous for its prolonged poverty and low literacy among women. This region also lacks good health infrastructure and skilled health personnel [26, 27]. Irregular terrain, long distance to maternal health centers, and absence of good transportation in the region are the other factors that prevent women from seeking medical assistance in delivery [26–29].

Poor economic condition of women was found as another significant predictor for low utilization of maternal healthcare services. This finding corroborates the results of many other studies [30, 31]. The result of concentration curve also shows that utilization of maternal healthcare services is higher among rich or affluent women. The inequality is more for safe delivery. The probable reasons for this could be manifold; they may include organizational and individual level issues. At organizational level, there is ample evidence that most of the government hospitals especially in rural areas lack good infrastructure and skilled personnel, so they are considered not safe for delivering a child. With this backdrop, the private hospitals are the only place to opt for safe delivery. However, the high cost in these hospitals does not support the poor women to deliver a child; they were then enforced to deliver at home in an unsafe or unhygienic condition [32–34].

Apart from region and economic condition of women, place of residence and educational level of women remained

as the other important covariates for the utilization of maternal healthcare services. Rural women have considerably lower maternal healthcare services utilization than the urban women. The result of multivariate analysis confirmed that rural women are less likely to use maternal healthcare services than urban women after adjusting for different socioeconomic and demographic characteristics. This finding substantiates the result of many past studies which documents that rural and illiterate women have lower healthcare utilization than their respective counterparts in urban areas and those who are literates, respectively [25, 26, 35–38]. Among the covariates included in the decomposition analysis, education of women was found as the main contributor while utilizing maternal healthcare services. The poor utilization among illiterate women may be probably due to ignorance of benefits of healthcare utilization owing to illiteracy. Similar finding was found by another study in a slum community [29].

5. Limitations of the Study

There are a few limitations which need to be taken care of while considering the findings of this study. First, the study could not include in analysis many other important determinants of maternal healthcare utilization such as the distance to health centers, availability of skilled health personnel, and quality of care. Second, the study considered PNC as the mere important maternal healthcare indicator without going in detail whether it was required or not.

6. Conclusion

Utilization of maternal healthcare services which is the key to combat the maternal morbidities or death is low and unevenly distributed among different subgroups in Odisha. This is more noticeable in the disadvantaged regions among the poor and illiterates. The distribution of services thus needs to be strengthened, especially among the socioeconomically disadvantaged groups and regions. Upgradation of health infrastructure including positioning skilled health personnel in public health centers in rural and disadvantaged regions can be the main priority in the health planning and programmes. Large scale healthcare awareness programmes in addition to promoting female literacy are pertinent to enhance the maternal healthcare seeking behavior in Odisha.

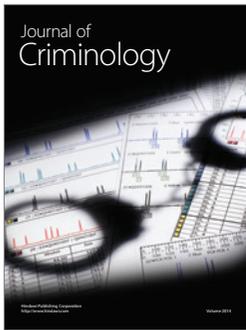
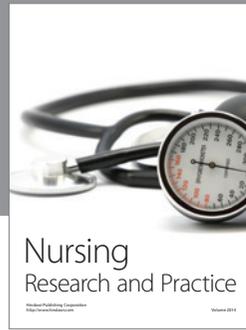
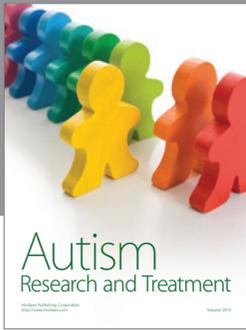
Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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