



International Journal of Advance Research, IJOAR .org
Volume 4, Issue 8, August 2016, Online: ISSN 2320-9186

STATISTICAL APPROACH FOR FINDING THE DETERMINANTS OF MATERNAL HEALTH SERVICES IN UTTAR PRADESH

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Key Words

Binary logistic regression analysis, Antenatal care, DLHS III, Maternal health care

ABSTRACT

The determinants of maternal health care service are complex phenomenon which is influenced by various factors. Therefore, the objective of this study was to analyze the determinants which affect at community and regional levels by using DLHS-III data. Bivariate and multivariate logistic regression analyses were used for analyzing all these factors. Antenatal care was found less in rural area (62.6%) than urban area (73.9%). ANC care was also found to increase when wealth index increases. Utilization of full ANC was found greater in other castes as comparison to SC/ST category. In case of religion in other category there was more utilization of ANC services as comparison to Hindu and Muslims. In case of urban area safe delivery (48.1%) was found more than rural area (27.1%). Age, education, place of residence, caste and wealth index was found as important determinants associated with the use of ANC.

1. INTRODUCTION

The main objectives of eight millennium goals were mainly indicating on socially, productively and healthy life of people [1]. One of its goals is better maternal health. In 2008 WHO, UNICEF, UNFPA and World Bank estimated 358000 maternal deaths in all over world [2]. Maximum percentage of maternal deaths was shared by developing countries in same year [3]. Maternal Mortality Ratio (MMR) was 212 maternal deaths per 100,000 live births in India. Uttar Pradesh state of India with 359 maternal deaths per 100,000 live births was recorded among in all states which was second highest MMR in the country [4]. The main reason behind high MMR in this state are low literacy, low per capita income, low level of utilization of maternal health services like Antenatal Care (ANC), Iron Folic Acid (IFA) tablets, Safe Delivery and post natal care (PNC) [5]. In general, basic causes of high MMR were described as lack of health facility and resources, economic inequality, gender disparities, social traditions and attitudes of society [6]. The literacy rate of this state in 2011 was 80.5 percent for male and 60 percent for females. The state government has attempted to improve maternal health and reduce the MMR to 220 per 100,000 live births by the year 2012. In order to achieve this target, state government is focusing on increasing the use of maternal health care services including institutional deliveries and providing emergency obstetric care services [7,8]. It is fact and widely acceptable that the use of maternal health services help to reduce maternal mortality and morbidity. However, the utilization of maternal health services is influenced by many factors. Various studies were conducted worldwide and in India which recognized that social-economic factors and services delivery environment as important determinants for the use of maternal health services [9,10,]. A study was carried out on community level in Uttar Pradesh which reported various factors influence the maternal and reproductive health services [11] and found that positive relationship between mother education and utilization of maternal health services in India [12,13].

2. Need of the Study

Maternal health care services are very important for reducing maternal mortality rate. The Uttar Pradesh is poor performing state in terms of maternal health care which leads to mortality. Though overall Uttar Pradesh has low level of maternal health care utilization but recent programmatic efforts have given to boost to ANC service utilization in some states in India. This study was an attempt to know the extent of performance of maternal and child health services and to find out associated factors.

3. Objectives

- To assess the level of ANC by education and other demographic variables.
- To examine important determinants of ANC.

4. Material and Methods

4.1 Source of Data

Data used in this paper come from the District Level Household and Facility Survey 2007-08. This report is based on data collected from 7, 20,320 households from 28 States and 6 Union Territories of India during 2007-08. In DLHS III, 6,43,944 ever-married women aged 15-49 years and 1,66,620 unmarried women aged 15-24 years were interviewed to achieve information on fertility, family planning knowledge and its uses, infant mortality rate (IMR), child mortality rate (CMR) and maternal mortality rate. In this study we have used bivariate analysis to examine the significance of association of incidence of maternal health services and its determinants. Multivariate analysis was used to access the influences of socio-demographic background on maternal education.

4.2 Methodology

Binary logistic regression analysis was applied to obtain the odds of maternal health services. The dependent variable was selected as Any ANC, Full ANC, IFA, Safe Delivery, PNC etc. Logistic regression models are commonly estimated by maximum likelihood function. For these outcome variables;

logistic regression model takes the form $\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_nx_n$, Where x_i are

covariates and continuous variable and β_i are coefficients., $\exp(\beta_0)$ = the odds that the characteristic

is present in an observation $X_i = 0$., $\log\left(\frac{p}{1-p}\right)$ is called Logit function.

P is predicted probability and log odds of P and (1-P) provides the odds ratios with respect to reference category. In this paper, I have studied the patterns and determinants of use of maternal health services in Uttar Pradesh. Logistic regression model has been applied to estimate the odds ratio of differentials in maternal health services through socio-economic and demographic background characteristics of women. The whole analysis has been performed by using statistical software SPSS.

5. Variable Construction

Predictor Variables was defined as background characteristics of women, such as age group of ever married women, place of residence, and level of education, caste, religion, and wealth index of respondent.

6. Results

6.1 Background Characteristics of Mothers School Attended and Employed in Uttar Pradesh

The percentage distribution of women among social groups in Uttar Pradesh by background a characteristic has been presented in Table 1.1. Out of total women, majority of the women belonged to rural areas among all the social groups. The 42.2 percent of the women among other castes was followed by scheduled castes (SC) 27.8 and 22.3 percent among scheduled tribes (ST) lived in rural areas. The percentage of women was living in urban areas is highest 56.9 percent and lowest 35.4 percent in rural area. The percentage of school attended women was highest 42.2 per cent among others whereas the percentage of school attended is lowest 22.2 percent among ST category. The highest 63.5 percent of women among ST and lowest 18.5 percent among other castes belonged to poor wealth index category. The highest percent of women among others category and lowest percent among ST belonged to middle wealth index category whereas the highest percent women among other castes and lowest 2 percent women among ST belonged to rich category. The highest 50 percent of the women among other castes followed by 43 percent women among others, 39 percent women among SC and lowest 30 percent women among ST are exposed to mass media.

6.2 Background Characteristic of Mothers Health Services Provided in Uttar Pradesh

The maternal health care utilization among health care services by place of residence has been shown in Table 1.2. It can be seen from table that, the utilization of full antenatal care was higher in urban area as compared to rural area among all health care services. In rural area, the use of full antenatal care was found highest 62.6 percent among women of other castes and lowest 2.7 percent of ST category women. The use of full antenatal care was found highest 1.7 percent of women among other castes and lowest 3.8 per cent of women belonged to SC and ST category women. The percentage of safe delivery was found lower in rural and urban areas 27 percent and 48 percent respectively among health care services. The percentage of safe delivery was found lower among higher among SC and ST women than other castes women. This table was shown that there was gap between utilization of maternal health care services in rural and urban areas. In case of health care services, ST and SC were lagging behind other castes women in utilization of maternal health services. The association between related factors of maternal health services covering various aspects any antenatal care, full antenatal care, Iron folic tablets, safe delivery and post natal. The use of maternal health care services was found low in Uttar Pradesh state comparatively other states of India.

6.3 Background Characteristic of Mothers Health Services Provided in Uttar Pradesh

The odds ratio was shown in Table 1.3 where age, education, place of residence and caste was important factors which were influencing to the any ANC, full ANC, PNC, IFA and safe delivery. Those who was in richer family, they were utilizing more full ANC than poor and middle family.

7. Summary and Conclusions

The analysis revealed that the utilization of full antenatal care is very low as compared to use of any antenatal care in Uttar Pradesh and it varies among social and demographic groups. The Utilization of maternal health care services is lower in rural areas than urban areas and SC and ST women are lagging behind the other castes women in utilization of health care services. The full antenatal care varies among social groups through education. The full antenatal care is lowest among less than five years school attendance and five to ten years school attendance women as compared to higher secondary educated women among all social groups. The full antenatal care is lower among women of scheduled castes and scheduled tribes as compared to women of other castes. Full antenatal care by wealth index of the household of the women is found to be highest in case of rich wealth index followed by middle wealth index and lowest among poor wealth index. The use of full antenatal care is found to be higher among other castes and SC women than ST women. The women are less educated and belong to poor wealth index has lower utilization of maternal health care among the social groups in Uttar Pradesh. The condition of SC and ST is also similar to other caste women in urban areas of Uttar Pradesh. A solution to the problems in general lies in improving the general socio-economic conditions of these under privileged groups. Policy planners need to stress more on strategy to increase their capabilities and empowerment by facilitating their education and health care.

Table 1.1: Background characteristics of mothers- in Uttar Pradesh-school attendance and wealth

Background Characteristics	Percentage of school attended	Wealth Index (%)		
		Poor	Middle	Rich
Age-group				
>20 years	53.2	46.7	22.3	31
20-25	50	38.3	20.3	41.4
25+	34.4	39.6	19.6	40.8
Place of residence				
Rural	35.4	46.4	21.9	31.7
Urban	56.9	9.6	10.8	79.6
Religion				
Hindu	41.6	42.1	20.2	37.7
Muslims	24.9	30.2	19.6	50.1
Others	69.9	8.7	10.3	81
Caste				
SC	27.8	57.4	21.1	21.5
ST	22.3	63.5	18	18.5
Others	42.2	35.3	19.8	44.9
Services				
ANC (Any)	45.2	38	19.7	42.3
ANC (Full)	77.2	15.7	10.8	73.5
Safe delivery	57	27.1	17.5	55.4
Iron folic Acid	37.9	40.2	19.9	39.9
PNC	49.3	30.9	18.7	50.4

Table 1.2: Background characteristics of mothers- in Uttar Pradesh-Health services

Background Characteristics	Any ANC (%)	Full ANC (%)	Safe delivery (%)	Iron folic Acid (%)	PNC (%)
Age-group					
>20 years	65.8	1.8	33.5	78.4	34.8
20-25	69.6	3.7	35.1	54.9	36.7
25+	61.6	3.2	27.4	79.4	32.1
Place of residence					
Rural	62.6	2.7	27.1	74.3	30.6
Urban	73.9	6.8	48.1	75.8	51.4
Religion					
Hindu	65.4	3.4	30.4	75.3	32.7
Muslims	60.4	2.5	29	70.8	37.4
Others	72.9	6.8	59.3	81.3	60.4
Caste					
SC	60.3	1.7	22.6	73	27.7
ST	45.3	1.7	18.2	79.8	20.2
Others	65.7	3.8	32.7	74.9	35.7
Wealth Index					
Poor	54.2	1.1	18.2	74.9	23.2
Middle	62.4	1.7	26.2	74.2	31.2
Rich	78.4	7	48.3	74.5	49

Table 1.3: Background characteristics of mothers health services provided in Uttar Pradesh.

Background Characteristics	OR (95% CI)				
	ANY ANC	FULL ANC	PNC	IFA	SAFE Delivery
Age-group					
>20 years	1	1	1	1	1
20-25	3.38***(3.18-3.59)	1.53***(1.13-2.08)	2.46***(2.28-2.66)	0.33***(0.31-0.35)	0.88***(0.81-0.97)
25+	1.06**(1.00-1.12)	1.61***(1.10-2.08)	0.98(0.91-1.05)	1.01(0.96-1.07)	0.70***(0.64-0.77)
Education					
Illiterate	1	1	1	1	1
>5 years	1.13***(1.07-1.19)	1.88***(1.51-2.33)	1.09***(1.03-1.16)	0.92***(0.87-0.96)	1.37***(1.28-1.47)
5-10.	1.42***(1.36-1.49)	3.08***(2.58-3.67)	1.42***(1.35-1.50)	0.78***(0.75-0.82)	2.15***(2.01-2.29)
10 and above	1.66***(1.56-1.76)	9.32***(7.75-11.20)	1.91***(1.78-2.04)	0.88***(0.86-0.94)	6.18***(5.59-6.82)
Place of residence					
Rural	1	1	1	1	1
Urban	0.90***(0.86-0.94)	1.25***(1.08-1.43)	1.15***(1.09-1.21)	1.12***(1.06-1.17)	1.50***(1.40-1.60)
Religion					
Hindu	1	1	1	1	1
Muslims	1.38***(1.32-1.44)	0.88(0.74-1.05)	1.58***(1.50-1.66)	0.73***(0.69-0.76)	0.89***(0.84-0.95)
Others	0.77**(0.63-0.94)	0.84(0.45-1.54)	1.19(0.96-1.48)	1.35***(1.08-1.68)	1.89***(1.36-2.64)
Caste					
SC	1	1	1	1	1
ST	0.69***(0.60-0.80)	1.02(0.53-1.98)	0.73***(0.60-0.88)	1.46***(1.26-1.69)	0.77**(0.62-0.97)
OBC	0.88***(0.85-0.92)	1.33***(1.09-1.06)	0.95**(0.90-1.00)	1.45***(1.09-1.19)	1.23***(1.15-1.30)
Others					
Wealth Index					
Poor	1	1	1	1	1
Middle	0.99(0.95-1.04)	1.15(0.92-1.44)	1.15***(1.09-1.22)	0.99**(0.96-1.04)	1.34***(1.25-1.43)
Rich	0.99(0.96-1.04)	2.38***(1.97-2.86)	1.35***(1.28-1.42)	1.05***(1.00-1.09)	2.25***(2.11-2.39)

Note: Significance: ***p<0.01, **p<0.05, and *p<0.10, OR: Odds Ratio, CI: Confidence limit, 1: Reference category.

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