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Determinants of Utilization of Health Care Services during Pregnancy/delivery Complications in Rural Allahabad District of Uttar Pradesh, India

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ABSTRACT

Although India has improved significantly in reduction of maternal mortality and near to achieve the sustainable development target of 70 per 1000000 live birth by 2023, however, situation in north and north eastern states is still gloomy particularly in Uttar Pradesh who contributes highest number of maternal deaths in India. The major reasons of maternal mortality is the non-utilization of health services during pregnancy/delivery complications. To explore the determinants of non-utilization of health services, the present study has contacted 401 such women from six villages of rural Allahabad district of Uttar Pradesh who had faced pregnancy/delivery complications during the last birth. Binary logistic regression analyses were carried out to identify the determinants for the said objective. Results show that antenatal care, level of birth preparation, pregnancy intention and attitude towards the reasons for poor obstetric care in rural areas were emerged as prominent factors for utilization of health services during pregnancy/delivery complications.

Keywords- Health care services, Pregnancy, Morality, Rural Allahabad.

I. INTRODUCTION

The target 3.1 of Sustainable Development Goals (SDG) set by United Nations aims at reducing the global maternal mortality ratio to less than 70 per 100,000 live births (UN 2015). Although maternal mortality ratio (MMR) in India has declined substantially from 398 in 1997 to 97 per l00, 000 live births in 2018-20 (RGI, India, 2022). However, in terms of absolute number, this ratio is a big number. Every year around 10,000 women in India are still dying due to pregnancy or child birth related causes (WHO, 2023). India alone shares almost 9 percent of the total world maternal deaths. Therefore, keeping in view the trend of declining of maternal mortality ratio, it seems achieving the target of MMR 70 per 100000 live births at national level by 2030 would not be difficult task but continuous effort is required as for as North and North Eastern states are concerned where maternal mortality ratio is still substantially high.

Majority of maternal deaths, however, can be prevented by providing appropriate care during pregnancy and child birth. Studies show that if mother delivers baby in such health facility where lifesaving equipment and hygienic conditions are available the risk of complications that causes death or illness to mother and child reduces significantly (Campbell OM, Graham WJ, 2006). However, latest report of National Family Health Survey, India 2019-21 elucidates that 13 percent births in rural India are still taking place at homes while universalization of accessibility to reproductive health services has been recommended as solution to reduce maternal deaths under third goal of SDG.

As far as MMR at state level is concerned, as reported by RGI, India 2022, all southern states, Maharashtra and Gujarat have already achieved the desired level of MMR of below 70 per 100000 live birth, however, the states located in north and north eastern states, except Jharkhand (56), MMR is still high ranging from highest in Assam (195) followed by Madhya Pradesh (173) Uttar Pradesh (167), Chhattisgarh (137), Odisha (119), Bihar (118), Rajasthan (113) and

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Uttarakhand (103). Although, MMR is highest in Assam but in in terms of absolute number of maternal deaths Uttar Pradesh contributes almost one fifth of total maternal deaths of India.

Due to lack of direct availability of data on maternal mortality in India it is difficult to find the reasons for maternal mortality, however, through proxy maternal health indicators reasons for the same can be determined. As far as Uttar Pradesh is concerned, performance on maternal health indicators are relatively poorer than other states. For instance, only 42 percent women of Uttar Pradesh had received at least four ANC visits and only 12 percent of them had received all recommended ANC care for their last birth. Those who received ANC care only 78 percent were informed about where to go if pregnancy complications arises. Whereas only 83 percent women delivered their last baby in health facility compared to universal coverage in Kerala. Most abortions (34%) in Uttar Pradesh are performed by a self followed by doctor and nurse/ANM/ LHV (30% each). Moreover, these indicators get further worsen for women living in rural areas, belonging to lower caste categories, not educated and are poor.

Several studies have been carried out to address the issues of poor utilization of health facilities during pregnancy complications or for delivery of baby. However the pioneer study in this area was done by Thanddeus and Maine, 1994 who provided three delays framework to explain the reasons for not utilizing health facilities during pregnancy complications which results into maternal death. This framework referred delays at three levels: delay in making decision to go to health facility at household level, delay in accessing efficient transportation at community level, and finally, delay in receiving quality care at hospital level. These delays play crucial role in determining the utilization of health services during obstetric complications.

In the Indian context, several studies have carried out to find the reasons of not utilizing health services by using secondary data sets. Results of these studies informed that type of households (Saikia & Singh, 2009), economic status (Kesterton et al., 2010; Pathak PK et al., 2010; Mohanty SK and Pathak PK, 2009; Ladusingh L and Singh CH, 2007, Das NP et al., 2001) health care programme (Sunil et al., 2006, Navaneetham & Dharmalingam, 2002), provision of ANC services (Ram & Singh, 2006; Pallikadavath S. et al., 2004), accessibility and availability of health services (Stephenson & Tsui, 2002 ; Kandel et al., 2004; Mohanty & Pathak, 2009) are the major significant determinants for utilizing of maternal health services in India. However, major limitations with secondary data is that it provides information in a predetermined range and most of them do not provide data at subnational level because of which researchers are constrained to explore the reasons for not utilizing health services at micro level. There are paucity of such studies who had used primary data on the proposed subject. Keeping this in view the present study has made an attempt to explore the determinants of utilization of health services during pregnancy/delivery complications through primary data gathered directly from the women who had suffered from complications of pregnancy/delivery.

II. METHODOLOGY

The Study area and Data Collection

Study was carried out in rural areas of Allahabad district of Uttar Pradesh. Allahabad is the most populous district of Uttar Pradesh (Census of India, 2001 & 2011) and around seventy five percent of its population resides in rural areas. Allahabad is relatively performing poor on related to maternal health indicators than districts of Uttar Pradesh. The data for the present study was collected during 2005 as part of doctoral programme. Keeping in view the current status of maternal health indicators of Allahabad now known as Prayagraj, the data is still useful and valid for analyzing the reasons for not utilizing the health services by the women who had suffered from pregnancy/delivery complications.

The Sample selection

Amongst seven tehsils (administrative unit) of Allahabad, Karchana tehsil has the highest female literacy hence it was selected purposively for study. There are two Community Health Centers (CHCs) in this tehsil; one was selected randomly to examine influence of CHC in accessing obstetric health care services. Subsequently, villages were stratified into three groups based on the distance from CHC; villages within 3 km, 3-5 km and, more than 5 km away. Further, villages having less or equal to 100 households were filtered out from the list of villages of each group thinking that they will provide less chance of getting sufficient number of cases; and then randomly 2 villages from each group of villages with more than 100 households were selected. Thus, total 6 villages were selected for the study. After selection of the villages, complete house listing was done in the six villages to identify respondents as mentioned above. Each female investigator was given a list of pregnancy complications. If the respondent has suffered from any of the listed complications she was selected for the study sample. Finally, 401 such respondents constituted the sample and were contacted for individual interviews.

III. RESULTS

Background Characteristics

Table 1 presents the background characteristics of the respondents. It was observed that majority of women (70 percent) who had faced complications were from SC,ST and OBC social groups who are comparatively from poor

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socioeconomic background than the women belonging to others. Further, majority were illiterate (68 Per cent), belonging to poor economic households (47 Per cent), having on average 8 persons in family, only 40 percent of them had pucca house, electricity connection only with 55 percent households, 37 percent households had no agricultural land, only 44 percent women had some sort of exposure on maternal health issues, on average every girl got married at the age of 16 years, only 11 percent of women were as such who got married after 18 years of legal age remaining before 18 years. Since age at marriage was low, therefore age of experiencing first birth was also very low i.e. 18.5 years which is physically not matured age to deliver the baby therefore, there were 38 percent of women as such who had experienced child loss.

Table 1: Per Cent Distribution of the Households by their Socio-Demographic Characteristics

	Per cent	Total
Caste/tribe		
Scheduled caste	20.4	82
Scheduled tribe	4.2	17
Other backward class	44.6	179
Others	30.7	123
Mean Household size	7.6	
% having *Pucca* houses	39.7	159
% of having Electricity	55.1	221
Standard of living index		
Low	47.4	190
Medium	34.7	139
High	18.0	72
Agricultural land in acres		
No land	37.4	150
< 2 acres	39.4	158
>= 2 acres	23.2	93
Education of the respondent		
No education	68.1	277
3-8 years complete	20.0	80
9 or more years complete	11.0	44
% Exposed to maternal health issues	44.1	177
Mean age at marriage	15.7	
Mean age at first child	18.5	
% of mothers ever experienced child loss	37.7	
Total	100.0	**401**

Types of Obstetric Complications Faced by the Respondents

Of the 401 women, majority reported having prolonged labor (26 Per cent) during their recent pregnancy followed by anemia which is precursor for other complications (22 Per cent), hemorrhage (12 Per cent), perennial tear (11 Per cent), swollen over hands and feet (9 Per cent), fever (8 Per cent), obstructed labor (7 Per cent), abdominal pain (6 Per cent), fetal death (4 Per cent), retained placenta (4 Per cent), convulsions (4 Per cent), sepsis (3 Per cent), severe headache (2 Per cent), jaundice (1 Per cent), severe nausea (1 Per cent), uterus related problem (1 Per cent) and other problems (4 percent) .

Obstetric Complications and Place of Delivery

It was observed that a very low percentage of women who had pregnancy/delivery complications utilized health facilities for delivery of baby (20 percent) remaining 80 percent did not. It is clearly evident from table 2 that highest utilization of health facility for delivery of baby was by the women who had faced obstructed labor (42 percent) for which without assistance further progress in labour is not possible and hence women were compelled to visit health facility. Women who had prolonged labour only 26 percent of them opted for institutional delivery followed by child was dead in womb (25 percent), heavy bleeding (23 percent), severe headache (20 percent), convulsion and fever (18 percent), swollen over hands and feet (17 percent), water broken, sepsis and retained placenta (12-13 percent) and lack of blood and other problems (9-10 percent).

Table 2: Percent distribution of the currently married women with their place of delivery by types of obstetric complications which they faced during their last pregnancy

Types of obstetric complications	Place of delivery[1]		Total women
	Non-institutional delivery	Institutional delivery	
Obstructed labor	57.7	42.3	26

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Prolonged labor	74.3	25.7	101
Child dead	75.0	25.0	4
Heavy bleeding	76.9	23.1	39
Severe headache	80.0	20.0	5
Convulsions	81.8	18.2	11
Fever	82.1	17.9	28
Swollen over hand & feet	82.8	17.2	29
Water broken	87.5	12.5	40
Sepsis	87.5	12.5	8
Retained placenta	88.2	11.8	17
Lack of blood	90.1	9.9	71
Other	90.6	9.4	32
Total women	**80.4**	**19.6**	**342**
[1] Women who were currently pregnant were excluded from the analysis.			

Socioeconomic and demographic Characteristics of the Respondents and Utilization of Health Care Services during pregnancy/delivery complications

Table 3 presents percentage of women who had utilized health care services during pregnancy/delivery complications by their socio-demographic characteristics. Only one third women (32 percent) who had faced pregnancy complications visited health facility for the treatment reaming stayed back to home. It was clearly visible that respondents' caste, literacy status (maximum variation), age at marriage, age at first birth, and pregnancy intention, is significantly associated with high utilization of health care facilities during pregnancy/delivery complications. Table also highlights that the utilization of health care services increases according to respondents' position in caste hierarchy from 26 percent of women belonging to scheduled caste to 40 percent by the women of other caste.

Similarly, standard of living index and level birth preparedness was also significantly associated with utilization of health services. Women belonging to high economic status and had high level of birth preparations were two times more likely to visit health facility for treatment than the women of poor economic households and who had no or low level of birth preparedness.

Table 3: Percentage of the currently married women who utilized obstetric health care services for the treatment of complications by their selected socio- demographic characteristics

Socio- demographic characteristics	Percent of women utilized health facility	Number of women	Chi square p value
Caste			
SC/ST	26.3	99	
OBC	30.3	179	0.073*
Others	39.8	123	
Respondent's education			
Illiterate	23.7	274	
literate	50.4	127	0.000***
Husband education			
Illiterate	25.7	109	
literate	34.6	292	0.094*
Age at marriage			
<=17 year	26.2	294	
>=18	48.6	107	0.000***
Age at first birth[1]			
<=17 years	24.4	127	
>=18 years	33.8	260	0.062*
Pregnancy intention			
Unintended	21.4	131	
Intended	37.4	270	0.001***
Standard of living index			
Low	23.7	190	
Medium	31.7	139	0.000***
High	55.6	72	

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Exposure to maternal health issues			
Not exposed	23.2	224	0.000***
Exposed	43.5	177	
Village distance from CHC			
<=3Km	31.6	158	
3-5 Km	36.5	148	0.250
5+ Km	26.3	95	
Level of birth preparedness			
No or low level of preparedness	20.5	161	0.000***
High preparedness	40.0	240	
Total	**32.3**	**401**	

[1] Excludes those women who were first time pregnant
Significant at * p<=0.1; **p<=0.05; *** p<=0.001

Determinants of Utilization of Obstetric Health Care Services

Although several background characteristics of the respondents were significantly associated with utilization of health care services during pregnancy/delivery complications, however, binary logistic regression analysis was carried out to examine causal relationship between background variables and dependent variable i.e. utilization of health services coded as 1 if utilized health services and 0 otherwise. Three binary logistic regression analyses were carried out. In model-I, logistic regression was done only with background variables, in Model-II, ANC and level of birth preparedness were also controlled along with background variables and, in Model –III, along with background variables, ANC, and birth preparedness, respondents' attitudes towards obstetric care in rural areas and respondents' knowledge on obstetric care were also fitted into regression analysis.

It was evident from table 4 that in model-I, only educational status and age at marriage of the respondents emerged as significant determinants for utilizing health care services during obstetric complications while controlling other background variables. Literate and women married at age 18 years or above were two times more likely to utilize health care services than their counter parts. In the second model, the existing significant variables became insignificant after introducing of ANC and level of birth preparedness, ANC emerged as most highly effective factors (odds ratio was five times higher for women who had received ANC) followed by level of birth preparedness and pregnancy intention (odds ratio was two times higher for women who had high level of birth preparedness and last pregnancy was intended) to utilize health services.

In third model, ANC, level of birth preparedness and pregnancy intention remained significant even after inclusion of two more variables i.e. respondents' attitude toward obstetric care in rural areas and respondents' knowledge on obstetric care. In addition, respondents' attitude that factors related to households and facility level are major reasons for poor obstetric care in rural areas also emerged as a significant factors in determining utilization of health care facilities.

Table 4: Logistic estimates of utilizing obstetric health care services for obstetric complications by selected characteristics of the respondents

Background characteristics	Model- I			Model-II			Model-III		
	Exp (B)	95% C.I.		Exp (B)	95% C.I.		Exp (B)	95% C.I.	
		LR	UR		LR	UR		LR	UR
Caste									
SC/ST [R]									
OBC	.913	0.503	1.658	.729	0.383	1.389	.763	0.394	1.478
Others	.733	0.358	1.498	.633	0.296	1.356	.688	0.311	1.520
Education									
Illiterate [R]									
literate	2.018**	1.171	3.478	1.469	0.824	2.616	1.453	0.803	2.627
Age at marriage									
<=17 years [R]									
>=18 years	1.941**	1.142	3.297	1.536	0.874	2.700	1.368	0.764	2.449
Pregnancy intention									
Unintended [R]									
Intended	1.616	0.927	2.818	2.025**	1.111	3.691	1.913**	1.030	3.552
Children ever born									
0-2 [R]									
3 or more	.868	0.523	1.440	.884	0.515	1.517	.831	0.477	1.447

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Exposure on maternal health issues									
Not exposed [R]									
Exposed	1.533	0.822	2.861	1.326	0.686	2.560	1.334	0.679	2.621
Standard of living index									
Low [R]									
Medium	1.085	0.584	2.015	1.011	0.526	1.942	1.040	0.534	2.025
High	1.644	0.707	3.823	1.430	0.586	3.488	1.470	0.590	3.662
Level of birth preparedness									
Low level [R]									
High level				2.087***	1.277	3.547	2.263***	1.299	3.940
Received ANC									
No [R]									
Yes				5.210***	2.907	9.337	5.064***	2.799	9.161
Knowledge of obstetric care									
No knowledge[R]									
Complete knowledge							1.414	0.732	2.732
Incomplete knowledge							.462	0.205	1.041
Factors related to household and facility level problems≠							1.496***	1.121	1.997
Factors related to logistical problems≠							.939	0.730	1.207
Factors related to pregnancy care ≠							.859	0.657	1.122

Note: [R]= Reference category
LR= Lower Limit, UR= Upper Limit
# = Continuous scale
Significance level: * p<0.1; **p<0.05; *** p<0.001

IV. CONCLUSIONS

The objective of the present chapter was to identify the factors determines to utilize health care service during pregnancy/delivery complications faced by women. The results of the study clearly reveal that in rural areas of Allahabad, the educational status of women and their age at marriage do not make any difference in visiting health center for the treatment of pregnancy/delivery complications mainly because those who were literate had just completed primary/upper primary standard for name sake who are as equal as women who were not literate. As far as age at marriage is concerned, the mean age at marriage was very low in the study area (16 years) and there were only 11 percent women who were married between 18-20 years of age. However, women who had received antenatal care services (ANC) and who had done high level of birth preparedness, which is interconnected with ANC, emerged as strong determinants for utilizing health care services during pregnancy/delivery complications. In addition, women's intention to become pregnant also affect utilization of health care services.

Therefore, in view of the above results it is concluded that there is strong need to implement the educational programmes in such way that every girl child is covered under educational programme and efforts should be made to provide higher education to them. Awareness campaign through community workers such as ASHA and Aaganwadi workers should be organized on regular basis to stop the child marriages and laws against child marriages should be strictly implemented. Since ANC has emerged as the strongest factors, therefore, it is strongly recommended that every expectant mother must be provided all the essential services of antenatal care without fail and during ANC visit all women should be provided with the information of birth preparations.

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