

ORIGINAL ARTICLE

Predictors of Availing Maternal Health Schemes: A community based study in Gujarat, IndiaKranti Vora¹, Sandul Yasobant², Dileep Mavalankar³¹Associate Professor, ²Research Associate, ³Professor (Director), Indian Institute of Public Health, Gandhinagar, India

Abstract	Introduction	Methods	Result	Conclusion	References	Citation	Tables
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Abstract

Background: India continues to face challenges in improving key maternal health indicators with about 1/3rd of global maternal deaths happening in India. Utilization of health care services is an important issue in India with significant proportion of home deliveries and majority of mothers not receiving adequate antenatal care. Mortality among poor rural women is the highest with lowest utilization. To make maternal healthcare more equitable, numerous schemes such as Janani Suraksha Yojana, Chiranjeevi Yojana, Kasturba Poshan Sahay Yojana have been introduced. Studies suggest that utilization of such schemes by target population is low and there is a need to understand factors affecting maternal health care utilization in the context of these schemes. Current community based study was done in rural Gujarat to understand characteristics of women who utilize such schemes and predictors of utilization. **Methodology:** Data collection was done in two districts of Gujarat from June to August, 2013 as a pilot phase of MATIND project. Community based cross-sectional study included 827 households and socio-demographic details of 1454 women of 15-49 years age groups were collected. 265 mothers, who had delivered after 1st January, 2013 are included in the regression analyses. The data analysis carried out with R version 3.0.1 software. **Results:** The analysis indicates socioeconomic variables such as caste, maternal variables such as education and health system variables such as use of government facility are important predictors of maternal health scheme utilization. Results suggest that socioeconomic and health system factors are the best predictors for availing scheme. **Conclusion:** Health system variables along with individual level variables are important predictors for availing maternal health schemes. The study indicates the need to examine all levels of predictors for utilizing government health schemes to maximize the benefit for underserved populations such as poor rural mothers.

Key Words

Maternal Health; Availing Scheme; Utilization; Predictors

Introduction

To improve maternal and child health indicators, India has implemented national level programs such as Child Survival Safe motherhood (CSSM) and Reproductive Child Health (RCH) I and II). [1] Majority of interventions implemented in Gujarat along with other states were supply side such as training of health providers and improving physical infrastructure. Reduction in maternal mortality ratio in Gujarat is from 160 (2006) to 122 (2012) per 100,000 live births despite a significant increase in institutional deliveries. [2] This reduction is slower at about 24% than the national average of about 30%. One of the reasons for poor maternal health indicators is low utilization among poor rural women who are the most vulnerable to maternal mortality and morbidity.

Inequities in utilization of healthcare in general have reduced from NFHS-2 (1998-2000) to NFHS-3 (2004-06) while inequities have increased for maternal

healthcare utilization. [3] Many schemes under National Rural Health Mission (NRHM) are implemented to improve financial and geographic access to quality care for poor mothers such as Janani Suraksha Yojana (JSY), Chiranjeevi Yojana, Indira Gandhi Matritva Sehyog Yojana (IGMSY) - Conditional Maternity Benefit (CMB), Madilu Yojane, Prasuthi Araiike, Mamta, Dr. Muthulakshmi Reddy Maternity Benefit Scheme etc. Research shows that low proportion of target population receives benefit of such schemes. [4, 5]

Utilization of maternal health care services is an important public health and policy issue in developing world including Gujarat. [6] Many studies have assessed the individual and household determinants of utilization of maternal services. No consistent pattern of relationships between service utilization and individual and household predictors has emerged. In some cases, even when a strong association has been reported, the extent and nature of the relationship are

not uniform across the continents, for instance positive relationship between education and the use of skilled birth attendants. [7-11]

It is reasonable to assume that utilization of maternal health services depends on individual and household factors, as well as factors operating at the community or policy levels. The review of literature however shows that few studies have gone beyond individual and household factors to consider factors at the community and higher levels. [5-6]

Aims & Objectives

This study efforts to examine the characteristics of rural women utilizing maternal health schemes and predictors for utilization of maternal health schemes.

Methods

Study area and data collection: Gujarat is a western state of India bordered by Pakistan and the Arabian Sea. The population of Gujarat is 60,383,628 according to the 2011 census data.

Data collection was done in two backward districts of Gujarat, Surendranagar and Dahod (a tribal district) of Gujarat ([Figure-1](#)) from June to August, 2013. This community based cross-sectional study included the eligible mothers of the age group 15yrs to 49yrs of selected villages. Questionnaires were prescribed by trained data collectors in local language (Gujarati) to collect information on socioeconomic, demographic and individual level data. An additional questionnaire was used to gather information on maternal health indicators and maternal healthcare utilization data for women, who delivered after 1st January, 2013. Questionnaire was validated in the local language using field test. For quality control, district coordinator and field supervisors accompanied data collectors and checked filled questionnaires in the field itself every day. Any discrepancies were resolved by calling the mother or revisiting the same household within a week. Total 827 households surveyed and socio-demographic details of 1454 women of 15-49 years age groups were collected. 265 mothers, who had delivered after 1st January, 2013 are included in the regression analyses.

Data Analyses: Data were summarized using the descriptive statistics of mean, standard deviation and percentages. Univariate analysis compared the independent variables of the household/individual levels with utilizing govt. health scheme using independent sample t-test for continuous variables and chi-square for ordinal/nominal variables. Univariate and multiple logistic regression analyses were used to determine the degree to which the independent variables are predictors of availing maternal health schemes. Level of significance is $p < 0.05$ for both univariate and multivariate logistic

regression. The data analysis carried out using R version 3.0.1 software.

Result

Descriptive statistics show that about half of the women lived in a household that had below poverty line card (53%) and did not have any formal education (48%). More than half of the women surveyed (60%) were earning but majority was working on daily wages. Of all women surveyed 22% were pregnant and about 30% had availed government scheme for maternal child healthcare. Janani Suraksha Yojana was the most utilized scheme (45%) followed by Kasturba Poshan Sahay Yojana (22%) and 108 (free transportation) was used by 18% of women. Chiranjeev Yojana (CY) which is a public private partnership was utilized by only 5% women. [Table-1](#) presents descriptive statistics.

[Table-2](#) compares characteristics of women who used schemes with women who did not use schemes. There is a statistically significant difference between women who used schemes versus women who did not with regards to predictors such as documentation of poverty, house type, caste and earning status. These groups of women were not different with regards to education, age and religion.

[Table-3](#) describes comparison of pregnant women who availed schemes and those who did not with regards to various periods of maternity. This data includes 265 women, who delivered after 1st January, 2013. ANC checkup, place of ANC and delivery and delivery conductor are found to be statistically significantly different for both groups. There is no difference between two groups with regards to ANC provider and pregnancy complications and delivery expenditure.

[Table-4](#) provides multivariate analysis of all predictors of availing any scheme. These factors were chosen based on results of univariate analysis and literature review. The documentary evidences such as name in BPL list or having BPL card have significant relationship with availing any type of schemes, as compared to other types of documentation for both univariate and multivariate analyses. Caste is a significant predictor for availing schemes in both univariate and multivariate analyses as most of schemes have targeted for backward caste families. Literacy helps educated women to read advertisements and exposure to media such as television hence, maternal education has positive relationship with utilization of schemes in this study. Utilization of government facilities for maternal healthcare increases the chances of utilization of schemes. House type, family type and wealth index do not have statistically significant relationship with utilization of schemes in this study.

Discussion

Major challenges faced by Gujarat in the area of health are slow reductions in Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR), which has drawn crucial attention. Issues of quality and access to basic health services by the poor have emerged as a top priority for the state government. Equitable access to basic services for the tribal population is limited by difficult geographical reach and remoteness, which leads to low utilization among marginalized groups with poor health indicators. [12] The findings of this study show that apart from documentation of poverty such as BPL card, other determinants have a significant influence on the utilization of maternal health schemes such as individual variables, socio-environmental and health system variables. Within individual level predictors, maternal education exerts a significant influence on the utilization of maternal healthcare schemes, after controlling for other covariates. However, the effect of education is not constant across all educational levels, as significant proportion of women (48%) did not have formal education. This reflects findings from studies conducted in developing countries that maternal education is one of the most important determinants of maternal healthcare utilization, after controlling for other factors. [13-16] In the Indian context, caste may be considered broadly as a proxy for socio-economic status and poverty. In the identification of the poor, scheduled caste and scheduled tribes and in some cases the other backward castes are considered as socially disadvantaged groups and such groups have a higher probability of living under adverse conditions and poverty. [17] The maternal health status and utilization patterns of such groups give an indication of their social exclusion; in the current study we found the backward caste women having higher probability of availing schemes. This finding reflects awareness among these women regarding schemes focused on them and also another reason could be that one of the chosen districts is tribal.

Antenatal care visits and use of government facility for obstetric care had significant positive relation with utilization of maternal health schemes which suggests that contact with health system improves awareness regarding schemes [18, 19] Also health workers such as Auxilliary Nurse Midwives (ANM) can help obtain documentation required for utilization of schemes. One of the reasons quoted for adequate coverage of target population for maternal healthcare schemes is lack of awareness among potential beneficiaries and inability to procure documentary proof. [20] To improve awareness of the schemes among poor, backward caste women, messages need to be communicated in a manner that it is available to

majority of these uneducated women. These women do not have access to audio-visual media such as television or radio and also are not able to read billboards or banners. Culturally appropriate messages can be adapted to be delivered in local context to improve utilization of schemes.

One of the significant findings of this study is that half of the women who did not avail maternal health scheme had documentation of eligibility. Despite being eligible, they did not receive benefits which indicate that there might be health system barriers such as administrative issues or disinterest on the part of health care provider. There is evidence that suggest that providers find paperwork associated with scheme utilization tedious. [21, 22]

Major strength of this study is primary data analysis as majority of studies on predictors of maternal healthcare utilization in India have used survey data such as NFHS and both government and public private partnership schemes are included in the analysis. [23-25] The drawback of the study is cross-sectional nature of data collection and absence of generalizability as data was collected in selected villages of two backward districts of Gujarat. Yet, study highlights the need for prospective study of predictors of utilization of maternal health schemes and use of mixed methods to know perceptions of providers and reason for not availing schemes by women who had documentation.

Conclusion

Under NRHM, India had implemented numerous schemes to improve financial and geographic access for poor and marginalized women. Current study highlights that multiple level factors decide utilization of such scheme by the target population. Individual level factors seem to be the most significant predictors of utilization while health system factors also play a vital role. To reduce inequities for maternal healthcare utilization, it is important to pay attention to different levels of predictors.

Recommendation

There is a need for systematic research including impact evaluation of schemes for efficient use of limited resources in a developing country such as India. There is a long way to go before child birth is safe for Indian women and all the stakeholders including researchers need to play their important part by building evidence through robust evaluation research.

Authors Contribution

Conceived and designed the study: KV SY DM. Performed the experiments: KV SY. Analyzed the data: KV SY. Wrote the paper: KV SY DM.

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Tables

TABLE NO. 1 DESCRIPTIVE STATISTICS OF DEMOGRAPHIC & SOCIO-ECONOMIC VARIABLES (N=1454):

Variables	Category	Percentages
Type of house	Kutchha	13.2
	Kutchha-Pucca	62.8
	Pucca House	24
Religion	Hindu	95.4
	Muslim	4.6
Caste	SC	21.4
	ST	14.6
	OBC	50.4
	General	13.6
Sex of Head of HH	Male	88.6
	Female	11.4
Women Age	15-19 yrs	13.5
	20-34 yrs	30.1
	35-49 yrs	56.4

Women Education	No Education	48.4
	1st-5th	14.6
	6th-10th	32.4
	>10th	4.6
Earning Status of Women	Absent	39.3
	Present	60.7
Pregnancy Status	Absent	78.1
	Present	21.9
RSBY Card	No	61.8
	Yes	38.2
Ration Card	No	1.7
	Yes	98.3
Type of ration Card	APL Card	47
	BPL Card	53
Name in BPL List	No	40.6
	Yes	59.4
Poverty Certificate	No	98
	Yes	2
Govt. Scheme Availed	No	70.1
	Yes	29.9
Type of Scheme Availed	RSBY	10
	JSY	45.4
	KPY	21.6
	KKY/108	17.6
	CY	5.4

TABLE NO. 2 COMPARISON OF CHARACTERISTICS OF WOMEN WHO UTILIZED AND WOMEN WHO DID NOT UTILIZE SCHEMES (N=1454)

Variables	Category	Govt. Scheme Availed		p-Value
		Yes	No	
Documentary Variables				
RSBY Card	No	44.6	69	0.000***
	Yes	55.2	31	
Ration Card Type	APL Card	36.8	51.6	0.000***
	BPL Card	63.2	48.4	
Name in BPL List	No	18.4	50.3	0.001**
	Yes	81.6	49.7	
Poverty Certificate	No	95.2	99.1	0.005**
	Yes	4.8	0.9	
Socio-Environmental Variables				
House Type	Kutcha/ No house	14.9	12.5	0.002***
	Kutcha-Pucca	67.6	60.6	
	Pucca House	17.5	26.9	
Religion	Hindu	93.8	96.1	0.156
	Muslim	6.2	3.9	
Caste	SC	21.1	21.6	0.000***
	OBC	47.6	51.7	
	ST	24.6	10.3	
	General	6.7	16.4	
Individual Variables				
Women Age	15-19 yrs	11.7	14.4	0.408
	20-34 yrs	31.3	29.5	
	35-49 yrs	57	56.1	
Women Education	No Education	52.4	46.7	0.060
	1st-5th	16.6	13.8	
	6th-10th	26.7	34.8	

	>10th	4.3	4.7	
Pregnancy Status	Absent	78.4	78.1	0.882
	Present	21.6	21.9	
Earning Status of Women	Absent	33.1	41.8	0.005**
	Present	66.9	58.2	
Signif. Codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '' 1				

TABLE NO. 3 COMPARISON OF PREGNANT WOMEN WHO UTILIZED AND WOMEN WHO DID NOT UTILIZE SCHEMES (N=265)

Variables	Category	Govt. Scheme Availed		p-Value
		Yes	No	
ANC Check ups	No	3.4	11.9	0.024*
	Yes	96.6	88.1	
Place of ANC	Home	5.6	3.5	0.019*
	Private	37.7	49.2	
	Govt.	56.7	47.3	
ANC Provider	Nurse/ANM	52.31	48.3	0.141
	Doctor	7.33	4	
	Gynecologist	40.36	47.7	
ANC Complications	No	79.5	82.5	0.561
	Yes	20.5	17.5	
Place of Delivery	Home	14.8	31.6	0.003**
	Govt.	40.9	20.9	
	Pvt.	44.3	46.3	
INC Complications	No	81.8	87.6	0.208
	Yes	18.2	12.4	
Type of Delivery	Normal	64.8	65	0.739
	Normal with Episiotomy	25	27.1	
	LSCS	10.2	7.9	
Del Conductor	Unqualified Staff	9.9	9.6	0.021*
	Relative/Dai	13.6	31.1	
	Nurse/ANM	34.1	19.2	
	Doctor	5.7	3.4	
	Gynecologist	37.5	36.7	
Del. Expenditure	No	0	8.3	0.251
	Yes	100	91.7	
PNC Complications	No	87.5	86.9	0.897
	Yes	12.5	13.1	
Treatment Received(all)	No	11.1	35	0.060
	Yes	88.9	65	
Signif. Codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '' 1				

TABLE NO. 4 MULTIVARIATE ANALYSIS OF GOVT. SCHEMES UTILIZATION (N=265)

Independent Variables	Govt. Scheme Availed		
	Adj OR	95% CI	p-Value
Documentary Variables			
RSBY Card	0.98	0.9-1.06	0.569
BPL Card	0.37	0.16-0.85	0.019*
Name in BPL List	14.72	5.18-18.79	0.000***
Poverty Certificate	4.31	0.43-14.91	0.213
Individual Variables			
Women Age	0.98	0.95-1.01	0.118
Women Education	1.08	0.71-1.41	0.011*
Pregnancy Status	0.6	0.06-5.75	0.647
Women Occupation	1.11	0.35-3.53	0.856
Earning Status of Women	1.61	0.89-2.91	0.962

Socio-Environmental Variables				
House Type	Pucca House	Ref		
	Kutchcha-Pucca	1.95	0.95-4	0.093
	Kutchcha	1.13	0.42-3.02	0.125
Family Type	Joint	Ref		
	Nuclear	0.9	0.47-1.75	0.76
Religion	Muslim	Ref		
	Hindu	0.37	0.13-1.04	0.05*
Caste	General	Ref		
	OBC	0.96	0.34-2.71	0.032*
	SC/ST	2.11	0.71-6.33	0.021*
Wealth Index	Lowest	Ref		
	Middle	1.16	0.33-4.11	0.572
	Second	1.49	0.65-3.42	0.728
Maternal Health Variables				
ANC Checkups	Yes	3.08	0.73-12.92	0.103
Place of ANC	Home	Ref		
	Private	0.39	0.11-1.38	0.14
	Govt.	1.37	0.38-4.88	0.628
ANC Provider	Nurse/ANM	Ref		
	Doctor	1.21	0.35-4.12	0.765
	Gynecologist	2.17	0.5-9.4	0.296
ANC Complications	Yes	1.2	0.58-2.45	0.625
INC Complications	Yes	1.83	0.74-4.56	0.193
PNC Complications	Yes	0.73	0.3-1.75	0.473
Type of Delivery	Normal	Ref		
	Nor with Episiotomy	0.73	0.37-1.45	0.368
	LSCS	0.96	0.32-2.86	0.948
Place of Delivery	Home	Ref		
	Pvt.	2.13	0.95-4.79	0.068
	Govt.	4.39	2.02-9.51	0.001**
Signif. Codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '.' 1				

Figures

FIGURE NO. 1 MATIND-GUJARAT PHASE-III PILOT STUDY AREA

