



ORIGINAL RESEARCH PAPER

Economics

IMPACT OF ANTENATAL CARE ON MATERNAL HEALTH OF THE KARBIS IN ASSAM

KEY WORDS: Maternal health, antenatal care, mortality, Karbi tribe.

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ABSTRACT

This paper studies the impact of antenatal care on maternal mortality rate among the tribal society through a cross section study on the Karbis, the third largest scheduled tribe of Assam, India. Applying the regression analysis, it has been found that utilization of antenatal care service and maternal death has negatively related. Full antenatal care visits can reduce the number of maternal deaths. The paper recommends for expansion of antenatal care services through public awareness programmes, involvement of the community and increase government intervention to remove the gap between availability and accessibility of healthcare services and thereby improve the maternal health of the Karbis.

Introduction:

Maternal death is an important dimension of population studies. Classical demographic and epidemiological studies mainly focussed on the levels and determinants of maternal and infant mortality in developed and developing countries on the proximate determinants of child and mother survival (N. Singh, R. Patel, S. Chauhan). High maternal mortality rate (MMR) in the developing countries like India, has been a serious public health problem since few decades. Though government has taken various policies and preventive measures to improve the maternal health, yet there is large gap in the improvements rates of health. As per the fifth round National Family Health Survey (NFHS-5) report the MMR have been slowly decreases, still not achieve the target set by the Sustainable Development Goal (SDG). Maternal death can be reduced by adopting some preventive measures. Antenatal care (ANC) service is one of the important determinants of maternal health. ANC is the care that helps a pregnant woman to overcome the complications arises during pregnancy period through consultations with a doctor or other medical personals. An analytical review of the World Health Statistics showed that ANC coverage, between 2006 and 2013, was indirectly correlated with maternal mortality ratio (MMR) worldwide. This indicates that countries with low ANC coverage are the countries with very high MMR (WHO-2016, Lincetto, Bustreo, Osungbade, Doctor HV, Ashir). Minimum four ANC visits is necessary for a pregnant woman. Routine ANC visit may raise awareness about the need for care at delivery (Sai FT) or give women and their families a familiarity with health facilities that enables them to seek help more efficiently during crisis (Palaniappan B). Studies conducted by J.C. Bhatia and P.N. Anandalakshmy et al found that lack of ANC was an important risk factor of maternal death in India. Under the National Rural Health Mission scheme EAG (Empowered Action Group, a high focus group of states) were formed. Assam with its high rate of maternal mortality rate also a member of EAG. As per the report of NFHS-5 Assam has the highest MMR (205) per 1laks live-births than the country (103).

Several studies have examined the relationship between utilisation of ANC services and maternal outcomes. Studies conducted by Kwast BE, Bhatia J.C., Anandalakshmi PN, Hartfield VJ, Garenne M, Mbizvo found that a lack of ANC was an important risk factor of maternal death. The quality of maternal care during pregnancy, childbirth and postpartum period could reduce pregnancy related complications and can increase the positive childbirth experience for women (Chauhan BG & Jungari S). Another study by Shelah S. Bloom et al focus on the measure of frequency and timing of ANC visits, which have direct impact on the better maternal and child

health. Affordability, availability and accessibility of antenatal providers are the most common problems facing utilization of ANC in Nigeria. Poor rural women with limited resource of education will find difficulty in utilising healthcare services. (Fagbamigbe FA and Idemudia SE.).

The health status of scheduled tribe population is poor compared to the other counterparts of the country. Tribal people are living in those backward areas where basic healthcare amenities are unavailable. Availability of healthcare facility, education and economic status mainly effect the maternal health.

The paper deals with the following questions-

- a. Does socio-economic factors responsible for utilization of Ante-natal Care (ANC)?
- b. How far the utilization of ANC is related with Maternal health?

The main aim of this paper is to analyse the ANC utilization by women of Karbi tribe in India. More specifically the study, aims to analyse the socio-economic factors that influences on utilization of ANC. Further this study traces the reasons for non-utilization of ANC services of the Karbi women.

Assam is situated in the North-Eastern part of India. Karbi's are the third largest (11.1 percent) scheduled tribe of Assam followed by Bodo and Mishing. Karbi's are mainly inhabited in Karbi Anglong, Kamrup, Biswanath Chariali districts of Assam. Majority of the Karbi population were inhabited in the Karbi Anglong district and therefore it has been taken as sample district for the study. It consists of 56 percent of scheduled tribe population.

Data and Methodology:

The study is based on the primary data collected in the year 2018 from four blocks viz. Manja, Howraghat, Bokajan and Donkamokam. Multiple logistic regression model has been applied to find out the determinant of the utilization of ANC services. Chi square test has been done to test the association between utilization of ANC and maternal death of the sample population. Also, various tables, graphs, charts are used to analyse the socio-economic and demographic characteristics related to the use of ANC services.

To deal with the objective of this paper two linear regression models have been set. In each model maternal mortality rate has been taken as the dependent variable. Maternal mortality rate is defined as the number of maternal deaths per one lakhs live-births during pregnancy or at the time of child birth. In all model independent variables are same. The first

model is used to examine whether the ANC plays a significant role in the determination of maternal health of the Karbi women or not? The model traces the independent impact of the number of ANC visits taken by the respondents along with age of the mother at child birth, education of the respondent, income of the family, type of family and distance to health facility. The second model tries to examine whether the availability of health care services impacts on utilization of maternal health care services.

Results and Discussion: The maternal mortality rate of the sample respondents has been found to be 368 per lakh live-birth. Table:1 shows the maternal health care services taken by the sample Karbi respondent. This study found that 52 percent women visits the antenatal care services, 46.49 percent women taking their medicines regularly. Amount of nutritious food consumption by pregnant women among the Karbi's are seems to be very low i.e; 23.52 percent. Lack of proper nutrition, vitamin supplement adversely effects the maternal health and her child.

Table:1 Maternal Health Care Services

Services	Response	No of Respondents	Percentage
Antenatal Care Attended	Yes	550	51.55
	No	517	48.45
Antenatal Medicine	Yes	496	46.49
	No	571	53.51
Nutritious Food Consumption during pregnancy and lactation period	Yes	251	23.52
	No	816	76.48
Avoid Strenuous works in the last 2 months of delivery	Yes	340	31.87
	No	727	68.13
Ultrasound	Yes	52	4.9
	No	1015	95.1
Attended PNC	Yes	121	11.34
	No	946	88.66
Total	1067		

Total Number of Respondents: 1067
Source: Field Survey Data

Table:2 Independent Variable (with level) and their unit of measurement

Independent Variable (with label)	Unit of measurement
1. Age at marriage of the respondent (AM)	In years
2. Education of the couple (EC)	Dummy Variable (1= If any one of the couples are literate, 0=If both are)
3. Family Type (FT)	Dummy Variable (1= Nuclear, 0= Joint Family)
4. Knowledge about Ante Natal Care (KANC)	Dummy Variable (1=No knowledge about ante natal care, 0= Otherwise)
5. Work Participation of Wife (WPW)	Dummy Variable (1=Employed, 0= Unemployed)
6. Income (I)	In Rupees 1000/-
7. Infant and Child Mortality (ICM)	Dummy Variable (1=Experiencing Infant and Child Mortality, 0=Otherwise)
8. Distance to Health Facility (DHF)	Dummy Variable (1=Within 5 k.m., 0=Otherwise)
9. Order of Pregnancy (OP)	First, Second, etc.

Table 3 shows the descriptive statistics of the ANC services taken by the sample respondents and the selected independent variables. Early marriage leads to early motherhood. The percent of girls marry before reaching their legal age at marriage in India is lower in general than scheduled tribes of India. Among the scheduled tribes of Assam 11.3 percent of women in the age group of 15-19 years had their first child which is lower than the general 13.6 percent as per the report of National Family Health Survey-IV (NFHS-4). The mean age of marriage of Karbi women is 19 years and get motherhood within less than 12 months. Early marriage leads to early motherhood which adversely effects the maternal health condition. It has been found that among the Karbi tribe's younger mothers (15-24 years) and older mothers (35-49 years) were less likely to go for ANC services than mothers at the age group of 25-34 years. Education is one of the significant factors of utilization of maternal health care services by the respondents.

Table: 3 Socio-economic and Demographic factors related to ANC utilization:

Background Characteristics	ANC (%)	β	Exp (β)	
Age of the Mother's at childbirth (AM)	15-24	17.78%	0.94*	1.098
	25-34	64.05%		
	35-49	18.17%		
Education Level of the Respondent (ER)	Literate	13	0.965**	2.625
	Illiterate	87		
Education Level of the Husband (EH)	Literate	97		
	Illiterate	3		
Family Income (monthly) (I)	>2000	11% (58)	0.379	1.461
	2001-4000	36% (197)		
	4001 and above	53% (295)		
Family Type (FT)	Nuclear	57%	-0.347	0.707
	Joint	43%		
Distance to Hospital (DH)	Within 5 k.m.	89.37	0.683**	1.98
	5-10 k.m	10.63		
ICM	Yes		-0.312	.732
	No			
Work Participation of Women (WPW)	Yes	26 % (145)	0.535*	1.708
	No	74% (405)		
Knowledge of Ante-natal Care (KANC)	Yes	72% (398)	-2.754**	0.064
	No	28% (152)		
Order of Pregnancy (OP)	> 1	23	-0.186	0.830
	Above 1	77		

N=1067, Cox & Snell R²=0.36, Nagelkerke R²=0.48, Hosmer-Lemeshow goodness of fit test Statistics=9.050
** p < 0.01; * p < 0.05

Table: 4 Significance of age of the mother, education, distance to health institution and other variables explaining the use of Ante-natal Care.

Regressor	B	t-ratio	VIF
Constant	-.1774435	-1.39	
AM	.001	.18	1.03
EC	.173	6.16**	1.03
FT	.116	4.16**	1.07
KANC	.099	3.03**	1.05
I	.023	12.54**	1.03
WPW	.049	1.76*	1.05
ICM	.132	4.02**	1.03
DH	.201	7.18**	1.06
OP	-.010	0.77	1.12

$R^2=0.22; F=33.40; d.f.=9; N=1067$
 $**P < 0.01; *P < 0.05$

The results of regression model in table:4 establish that EC, FT, KANC, I, ICM, DH and WPW plays a significant role in the use of ANC service among the sample Karbi women. In the model the regression co-efficient for education of both the couples are found to be positively significant implying the positive impact of education on utilization of ANC services. Results shows that as the number of years of schooling of the couples increases by one year, the number of ANC visits increases by 0.173. In this study the education of the couples and their use of ANC services are found to be significantly positively correlated at 0.01 level of significance.

Age of Marriage and use of ANC services are found to be positively related to each other. Increase in education delayed the age of the marriage, in turn, increases the number of ANC visits.

Increase in the years of schooling of the sample wives and husbands and their knowledge about the maternal healthcare services are found to be significantly positive impact on use of ANC. One unit increase in KANC, the number of ANC use increases by 0.099.

Women experiencing infant and child death are also found to be significant impact on utilization of ANC services. One unit increase of ICM, increases the use of ANC by 0.132. Utilization of ANC services are found to have positively correlated with type of family whether it is nuclear or joint family. Respondent lives in joint family are more likely to go for ANC visits than respondents live in a nuclear family.

This study also shows that the income of the household and the work participation of wives are found to be positively significant at 0.01 level of significance implying the positive impact of income and WPW on the use of ANC visits. One unit increase in coefficient of I and WPW, the no of ANC visit increase by 0.023 and 0.049 respectively.

People are found to visit health institution regularly when it is situated nearby their residential places. DH also have positive impact on use of ANC visits.

Increase in order of pregnancy decrease the use of ANC services. This study found that order of pregnancy (OP) and use of ANC services are negatively correlated with each other. One unit increase in order of pregnancy reduces the ANC visits by -0.010.

Utilization of ANC is related with Maternal health:

In rural India, most of the maternal death takes places due to delivery at home by untrained dhai or relatives with unhygienic condition, results, maximum maternal death at the time of delivery. As per the report of NFHS-4, 68 percent of institutional delivery takes place among the scheduled tribe population which is lower than the country level 79. This study found that 346 nos. of respondents (68 %) who have attended ANC visits were more likely to go for delivery at health institution where doctors or trained personnel were available. Among the non-user of ANC services, only 40 respondents (8 %) delivered their babies at hospitals and left were delivered at home. The positive correlation between the various socio-economic factors with utilization of ANC has direct effect on maternal health (Bloom S. Shelah et al 1999). Table: 5 shows the association between utilization of ANC visits on institutional delivery and skilled attendant at the time of delivery. The observed value is greater than the expected value with significant probability ($P < 0.05$) proved that there is strong relationship between utilization of ANC and ID and SA and therefore the maternal health.

Table:5 Association between Use of ANC and Institutional Delivery (ID) and Skilled Attendant at delivery (SA).

ANC	ID		SA		Total	
	Yes	No	Yes	No		
Attended	376	178	387	167	554	
Not Attended	40	473	52	461	513	
Total	416	651	439	628	1067	
χ^2 result			χ^2 result			
	Observe d 2 value	d.f.	Cramer's value	Observe d 2 value	d.f.	Cra mer'
	4.04	1	.615	4.74	1	.666

Source: Field survey data

Conclusion:

The study finds that utilization of ANC plays an important role in determining the maternal health. Various socio-economic and demographic factors are significantly and positively related with ANC care utilization. Increasing the level of education of the mother will increase the utilization of maternal health care services. Use of adequate and quality ANC services among the pregnant mothers could be an effective way to detect the complications may arise at the time of delivery and reduce the rate of maternal death. Furthermore, wide intervention is required among the tribal women to use the ANC service. Utilization of ANC services and delivery at hospital with skilled attendant has positive association. It can be recommended that policies for motivating tribal people living remote/ hilly areas for institutional delivery with skilled attendant will reduce their maternal death.

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