Research Article

Factors associated with the utilization of antenatal care services in rural areas of Assam, India

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ABSTRACT

Background: Utilization of antenatal care services is very essential for reducing maternal mortality in a country like India which is experiencing high maternal mortality especially in the state of Assam being at the top position. Almost 90% of the maternal deaths can be prevented by timely medical interventions. However, adequate utilization of antenatal care (ANC) services is far away from WHO recommendations. The objective is to assess the utilization of antenatal care services and also to determine the underlying factors influencing the utilization of antenatal care services in rural areas of Assam.

Methods: A cross sectional study was conducted from September-December 2015. Eight villages were selected randomly and sample size was calculated as 300. All currently married women having children of less than one year of age comprised of study population.

Results: Out of 300 women all were registered during antenatal period and among them 53% were registered during first trimester. Among them 68.7% women had more than three antenatal visits, 90% were immunized with TT and 71.6% had consumed 100 or more IFA tablets. The utilization of antenatal care services were found to be significantly associated with the age of the women, religion, caste, socioeconomic class, place of delivery, mode of delivery, parity ($P < 0.05$).

Conclusions: The present study revealed that factors like age, religion, caste, socioeconomic status, place of delivery, parity were associated with utilization of antenatal care services. Government should make effort to increase the level of awareness and knowledge among the women about the adequate utilization of antenatal care services.

Keywords: Antenatal care, Factor, Healthcare, Maternal mortality, Utilization

INTRODUCTION

More than 500,000 mother's die each year because of pregnancy and pregnancy related complications (WHO). It was found that about 88%-98% of all maternal deaths could be avoided by proper care and handling during pregnancy and labor.¹ As per WHO recommendations 4-visit ANC should be necessary for lowering the risk of pregnancies. Antenatal care (ANC) services are considered to be the key element in the primary health care delivery system of a country, which aims for a

healthy society. Over the past sixty years, the maternal health situation in the country has been staggering despite several changes in a rapidly evolving socioeconomic environment. As deadline for Millennium Development Goals is approaching, the need for improving the standard of maternal care is more than ever. In the last decade, as per the National data, health indicators including utilization of antenatal care services were as poor as 60% in rural India.² Women's age plays an important role in utilization of antenatal care services. Age of the mothers may sometimes serve as a reflection

for the women's build up knowledge of health care services, which may have a positive force on the use of health services. Moreover, because of development in health care delivery system and improvement in educational opportunities for women in recent years, younger women might have an enhanced knowledge of available health care services and place more value upon modern medicine.³⁻⁴

The child bearing functions of women, especially in developing countries, have been granted as a normal or routine process. Yet these valued and precious parts of life are among the most hazardous experiences that women often engage in without being aware of the risks or dangers that they are in. Maternal mortality ratio in India is 178/100,000 live births despite the existence of National program for improving the maternal and child health. Most of the maternal deaths can be prevented if mothers have access to maternal health services through timely medical interventions. In India, these services are provided by government through a network of health centres at various levels in out-patient clinics, as well as through home visits by health workers.⁵

Assam and EAG states still fall in the high maternal mortality states categories Assam being at the top position with the score of MMR 328.⁶ Poor utilization of the health care services by the antenatal mothers were considered to be the important factor for high maternal mortality in Assam. Mothers who had ANC in first trimester was 39.4%, who had three ANC was 45.2%, mothers who had at least one dose of TT injection was 69.3%, mothers who consumed 100 IFA tablets was 36.9%, institutional delivery was 35.3%, delivery at home was 63.6%, safe delivery was 40.9%, mother received PNC within two weeks of delivery was 32.2%, 36.2% mothers BP was taken, girls marriage before 18 years was 20.8%.⁷

The reason behind the poor utilization of health care services by the mothers in Assam was found to be associated with many factors like, most of the people in Assam lives in rural areas, rigid hierarchy and class structure moulded by tradition and long-standing customs, family often a joint family is a strong binding force, isolation caused by distance, poor communication and transport.⁸

Knowledge, awareness and motivation regarding the utilization of antenatal care services are very much essential to improve the scenario n of maternal health. Therefore, the present study was conducted basically to assess the utilization of antenatal care services provided to women having a child of less than one year of age in Titabor Block of Jorhat district, Assam, India.

The objective of this study was to assess the utilization of antenatal care services and also to determine the underlying factors influencing the utilization of antenatal care services in rural areas of Assam.

METHODS

It is a community based cross sectional study conducted during Sept-Dec 2015. Jorhat district has divided into three subdivision. Titabor subdivision is one of the three civil subdivisions of Jorhat district, others being Majuli and Jorhat. Titabor has three development block (Titabor, a part of Bagchung and a part of Selenggat). The total area of Titabor is 632.89sq.km. The block consists of population of as per census 2011. The population pattern of Block is mixed one accounting of tribal, which again comprises of the Bodos, the Rabhas and the Garos. About 80% of the population is Hindu while rest of the population is Muslim and Christians. Our study area i.e. Titabor Block has 227 villages.

Inclusion criteria

All currently married women having children of less than one year of age comprised of study population.

Exclusion criteria

Mothers not willing to co-operate, mothers not available during the time of data collection and women having children of more than one year of age.

The sample size for the study was calculated using the formula $N = \frac{4pq}{P^2}$, where $P=74.8\%$ (As per DLHS-III Assam, 74.8% women received any antenatal check up) and 5% of absolute precision sample size was calculated as 300.⁹ To attain this sample size eight villages were selected randomly out of 227 villages in Titabor Block of Jorhat district, Assam to cover maximum number of women. All currently married women having children of less than one year of age were interviewed using house to house survey.

The study was conducted in each of the eight villages and if one house is found locked the adjacent house is approached we examined the health seeking behaviour of the mothers in terms of utilization of antenatal care (ANC). Permission to conduct the study was obtained from the Institutional Ethics Committee, Jorhat Medical College and informed consent from the mothers was taken and respondents were explained about the purpose of the study. Age of child was ascertained from birth certificate, hospital discharge certificate, mother and child protection card (MCPC) and local event calendar prepared for this purpose.

The data were collected using a predesigned and pretested proforma with both open ended and closed ended questions. The proforma asked about the age of the mother's at birth, parity, religion, type of families, educational status and occupational status, socioeconomic status (Modified BG Prasad classification 2016) and household decision-making autonomy as predictor variables of maternal health care seeking behaviour. All the information regarding antenatal check up (ANC),

immunization status and iron and folic acid tablets consumption during pregnancy, place of delivery, mode of delivery were recorded.¹⁰

Data were analyzed and presented in suitable tables and appropriate statistical tests were applied to test significance where ever necessary. Data were collected and entered in Microsoft Office Excel and analyzed by using SPSS- Version 18. Criteria of significance used in the study were $p < 0.05$.

RESULTS

As shown in Table 1, out of 300 enrolled in the study 79.6% were belonged to Hindu religion and most of them (46.6%) were belonged to OBC categories. Most of the women (66%) live in nuclear families. Almost 50% of mothers were in the age group of 26-30 years. Concerning the educational status of the mothers 17.6% were illiterate, 21.6% had attended primary school, 23.4% had attended middle school, 10.6% had attended higher secondary school and only 3.6% were graduate. Majority (53.3%) of mothers, house wife by occupation followed by 21% cultivators and 12.3% daily wage earners.

Among them 6.5% were service holders. Among the study population 46% of the mothers belonged to lower middle class family followed by 26.3% were belonged to upper middle class family and 12.4% were belonged to poor socioeconomic class. Majority (79.6%) of the mothers had delivered their children at govt. hospital followed by 10.6% at private hospital and 10% at home. Majority (79%) of the children had delivered normally followed by 14% by CS and 7% by assisted vaginal delivery. Majority of the mothers (69.6%) had single child followed by 30.4% had more than two children.

As shown in Table 2, out of 300 study population all (100%) the women were registered during the antenatal period and among them 53% were registered during first trimester and 45% were registered during second trimester. Among the registered women 68.7% had more than three antenatal visits followed by 31.3% had less than three antenatal visits. Majority of the women (90%) were fully immunized with TT vaccine followed by 8% were partially immunized i.e., received only one dose of TT vaccine.

Among the study population 71.6% of women consumed 100 or more IFA tablets followed by 26.3% of women received <100 IFA tablets. As shown in Table No. 3, Considering more than three antenatal visits as adequate, 73% of women in the age group of 19-30 years had adequate ANC followed by 56.8% of women in the age group of <19 years had adequate ANC and

42% of women in the age group of >30 years had adequate ANC and the association was found to be statistically significant ($P < 0.0006$). Among 239 Hindu

mothers, 71.6% women had adequate antenatal visits and out of 61 Muslim women 32 (52%) had adequate ANC ($P < 0.05$).

Table 1: Sociodemographic profile of the study population.

Socio-demographic profile	N (%)
Age of mothers at last birth (years)	
<19	37 (12.3%)
19-25	76 (25.3%)
26-30	149 (49.7%)
>30	38 (12.7%)
Religion	
Hindu	239 (79.6%)
Muslim	61 (20.4%)
Castes	
General	96 (32%)
OBC	140 (46.6%)
SC	42 (14%)
ST	22 (7.4%)
Type of Family	
Nuclear	198 (66%)
Joint	102 (44%)
Educational status of the mothers	
Illiterate	53 (17.6%)
Primary school	65 (21.6%)
Middle school	70 (23.4%)
High school	69 (23%)
Higher secondary school	32 (10.6%)
Graduate	11 (3.6%)
Occupational status of mother	
House wives	160 (53.3%)
Cultivator	63 (21%)
Daily wage earner	37 (12.3%)
Service	19 (6.3%)
Shop-keeper	21 (7%)
Socioeconomic status (Per capita income in Rs.)	
Upper high (>=6186)	15 (5%)
High (3093-6185)	31 (10.3%)
Upper middle (1856-3092)	79 (26.3%)
Lower middle (928-1855)	138 (46%)
Poor (<927)	37 (12.4%)
Place of delivery	
Govt. Institution	239 (79.6%)
Private Institution	31 (10.3%)
Home	30 (10%)
Mode of delivery	
Normal	237 (79%)
CS	42 (14%)
Others	21 (7%)
Parity	
<2	209 (69.6%)
>2	91 (31%)

Utilization of antenatal care services were found to be better in Genera category (79.2%) as compared to other categories ($P<0.05$) and nuclear families (70.3%) as compared to joint families (62.8%). Concerning the educational status of the mothers, utilization of antenatal care services was found to be better in women with higher educational status (78.3%) as compared to lower educational status (56.7%). Utilization of ANC services were found to be better in housewives (73.2%) as compared to mothers with others occupational status. Utilization of antenatal care services were found to be better in women belonged to upper middle class families (84%) followed by high class families (77%) as compared to lower class families ($P<0.0005$).

Concerning the place of delivery of the women who had delivered their children at govt. hospital (77.9%) had adequate ANC as compared to home (30%) and private hospital (64.6%) ($P<0.0001$). Women who had delivered normally had adequate ANC (77.7%) as compared to CS (31%) ($P<0.0001$) and women with more than two children (79.2%) were found to be better utilization of antenatal care services as compared to women with less than two children (62.7%) ($P<0.005$).

As shown in Table 4, out of 97 women who did not attend the ANC, 26.7% of women were reported being residence in remote areas followed by 22.6% were reported of unwillingness of ANC. Among them 21.6% of women were not aware about the need of antenatal care services and 18.6% had reported with difficulty in transportation.

Table 2: Distribution of study population according to the pattern of utilization of antenatal care services.

Pattern of utilization of antenatal care services	N=300 (%)
Place of conduction of ANC	
Sub-centre	136 (45.3%)
State Dispensary/MPHC	50 (16.6%)
BPHC/CHC	43 (14.3%)
Civil Hospital/District Hospital	39 (13%)
Medical College	25 (8%)
Private practitioner	07 (2.3%)
Timing of registration	
<12 weeks	159 (53%)
12-24 weeks	135 (45%)
>24 weeks	06 (2%)
Numbers of antenatal visits	
None	0 (0)
1-3 visits	97 (32.3%)
> 3 visits	203 (68.7%)
Immunization status (TT)	
Not immunized	06 (2%)
Partially immunized	24 (8%)
Fully immunized	270 (90%)
Intake of IFA tablets	
None	06 (2%)
<100	79 (26.3%)
≥100	215 (71.6%)

Table 3: Sociodemographic profile of study population and number of antenatal visits.

Socio-demographic profile	No. of antenatal visits		P value
Age of mothers at last birth (years)	1-3 visits (97) n (%)	>3 visits (203) n (%)	<0.0006
<19 (37)	16 (43.2%)	21 (56.8%)	
19-25 (76)	20 (26.3%)	56 (73.7%)	
26-30 (149)	39 (26.1%)	110 (73.9%)	
>30 (38)	22 (57.8%)	16 (42.2%)	
Religion			0.004
Hindu (239)	68 (28.4%)	171 (71.6%)	
Muslim (61)	29 (47.5%)	32 (52.5%)	
Castes			0.02
General (96)	20 (20.8%)	76 (79.2%)	
OBC (140)	52 (37.1%)	88 (62.8%)	
SC (42)	18 (42.8%)	24 (57.2%)	
ST (22)	07 (31.8%)	15 (68.2%)	
Type of family			0.1
Nuclear (198)	59 (29.7%)	139 (70.3%)	
Joint (102)	38 (37.2%)	64 (62.8%)	
Educational status of the mothers			0.1
Illiterate (53)	23 (43.3%)	30 (56.7%)	
Primary school (65)	25 (38.4%)	40 (61.6%)	
Middle school (70)	21 (30%)	49 (70%)	
High school (69)	15 (21.7%)	54 (78.3%)	

Higher secondary school (32)	8 (25%)	24 (75%)
Graduate(11)	5 (45%)	6 (55%)
Occupational status of mother		0.1
House wives (160)	43 (26.8%)	117 (73.2%)
Cultivator (63)	23 (36.5%)	40 (63.5%)
Daily wage earner (37)	12 (21%)	25 (79%)
Service (19)	9 (47.3%)	10 (52.7%)
Shop-keeper (21)	10 (47.6%)	11 (52.4%)
Socioeconomic status (per capita income in rs)		0.0005
Upper high (5156 & above) (15)	5 (33.3%)	10 (66.7%)
High (2578-5155) (31)	7 (22.5%)	24 (77.5%)
Upper middle (1547 – 2577) (79)	12 (15.1%)	67 (84.9%)
Lower middle (773 – 2546) (138)	60 (43.4%)	78 (56.6%)
Poor (<773) (37)	13 (35.1%)	24 (64.9%)
Place of delivery		<0.0001
Govt. Institution (239)	65 (27.1%)	174 (77.9%)
Private institution (31)	11 (35.4%)	20 (64.6%)
Home(30)	21 (70%)	9 (30%)
Mode of delivery		<0.0001
Normal (237)	53(22.3%)	184 (77.7%)
CS (42)	29 (69%)	13 (31%)
Others (21)	15 (71.5%)	6 (28.5%)
Parity		0.005
<2 (209)	78 (37.3%)	131 (62.7%)
>2 (91)	19 (20.8%)	72 (79.2%)

Table 4: Reasons for inadequate utilization of antenatal care services.

Reasons for inadequate utilization of antenatal care services	(N=97) (%)
Unawareness	21 (21.6%)
Unwillingness	22 (22.6%)
Family constraints	10 (10.3%)
Living in remote area	26 (26.8%)
Transportation problems	18 (18.5%)

DISCUSSION

The present study was conducted in rural areas of Jorhat district, Assam to study the utilization of antenatal care services among the women having the children of less than one year of age. The study was conducted during the period of Sept-Dec 2015.

The Most (50%) of the women in our study were in the age group of 26-30 years where Gupta et al in a study found that 58% of women in the age group of 20-26 years.¹¹ In the present study majority (79.6%) of the study population were Hindu and 17.6% were illiterate,

23.4% had attended middle school, 24% had attended high school which is comparable to the findings of Srivastava A, Gupta *et al.* who had reported 37% and

27% of illiterate women respectively.¹² However, this result is in similar with the Coverage Evaluation

Survey Report of 2012-13 from Assam.¹³ This may be due to better of literacy rate amongst the women in Jorhat district. In the present study 79.6% women had delivered in govt. hospital followed by 10% had delivered at home. The findings of the present study is found to be better than the similar study conducted by Srivastava A et al revealed that 50.4% had delivered at government hospital followed 32% at home.

In the present study 53% of the women registered in the first trimester and 45% were registered in 2nd trimester and only 2% of women were registered in 3rd trimester of pregnancy. The results a bit lower than the coverage evaluation survey report of 2012-13 from Assam (76.7%). This result are in contrast to the similar study conducted by Arsart MA found that 65.1% currently married women and 46% of recently delivered women registered in first trimester of pregnancy.¹⁴ Saraswathy G in a similar study find the similar result (54%).¹⁵ According to Srivastava A 88.7% of women were registered during first trimester.

In the present study 68.7% of the women had more the three antenatal visits. The findings of this study are bit higher than the Bui TT Ha 53.9% of the women had more than three antenatal visits.¹⁶ This result is contrast to the similar study conducted by Shrivastava A find that only

16.3% of women had three ANC. In the present study 90% of the women were immunized with TT. This findings are a bit higher than the similar study conducted by Srivastava A (83.4%). According to the study by Khatib *et al*, all the participants had received tetanus toxoid injection; while according to the study by Shindhaye 68.9% had received tetanus toxoid injection.^{17,18}

In the present study, 71.6% of women consumed full course of IFA or at least 100 tablets. According to Srivastava A only 33.5% of women consumed at least 100 IFA tablets. According to the study by Khatib *et al*, only 35.7% women consumed at least 100 IFA tablets while 64.3% women did not consume the full course.

Women in the age group of 19-25 (73.7%) and 26-30 (73.9%) years were more likely to received adequate ANC as compared to women in the age group <19 (56.8%) and >30 (42.2%) years of age group. The utilization of antenatal care services were significantly associated with the age of the women at last child birth, religion, castes ($P<0.05$). Our findings are consistent to those reported by other studies.¹⁹⁻²¹

The association between the utilization of ANC services and educational status were found to be insignificant in the present study whereas Srivastava A in his study find it highly significant.

In the present study the association between ANC utilization and socioeconomic status, place of delivery and mode of delivery were found to be significant ($P<0.05$).

Utilization of ANC services were found to be better in multigravidae (79.2%) as compared to primigravidae (62.9%). This result is contrast to the findings of Shrivastava A, Verma D and Singh RK which reported better ANC utilization amongst the primigravidae.^{22,23} High parity women are more likely to seek maternity care services due to greater due to their awareness and knowledge about the services.

Amongst the women of inadequate utilization of ANC services, reasons given for those were living in remote areas (26.8%) followed by unwillingness (22.6%), unawareness (21.6%) and transportation problems (18.5%).

CONCLUSION

The present study indicates that utilization of ANC was associated with women's age, education, educational status, occupational status, religion, place of delivery, mode of delivery and parity. Utilization of ANC services are very importance as it influences the well-being of the mother as well as her children. Government should make

efforts for increasing the awareness among the women especially those women living in remote areas for better utilization of the antenatal care services for better and healthy outcome of pregnancy.

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