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Original Research Article

Utilization of antenatal services among mothers and its impact on birth weight: a community based cross-sectional study

P. Narmada Reddy, Sangeeta Das*, Nivedita Karmee, Durga Madhab Satapathy, Jugal Kishor Bhoi

Department of Community Medicine, M.K.C.G. Medical College and Hospital, Berhampur, Odisha, India

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***Correspondence:**
Dr. Sangeeta Das,
E-mail: drsangeetadas@gmail.com

ABSTRACT

Background: Safe motherhood initiatives was a worldwide effort launched by WHO in 1987 with an aim to reduce the number of deaths of women associated with pregnancy and childbirth. Appropriate antenatal care (ANC) is one of the pillars of this initiative and an important component of reproductive and child health. The present study was conducted to assess the utilization of antenatal care services, its contributing factors and its impact on birth weight of new-born.
Methods: A community based cross-sectional study was conducted for a period of 3 months at Ankuli, field practice area of urban health training centre, Department of Community Medicine. A total of 138 mothers (delivered within 2 years) were included by cluster sampling. Women who were sick and did not give consent were excluded from the study. A pre-designed and pre-tested questionnaire was used for data collection and analysed in SPSS version 16. Chi-square test and bivariate logistic regression was applied at p value <0.05.
Results: About 55.07% of mothers were in 25-34 years of age group, 47.82% had studied secondary education and 36.23% mothers belonged to lower middle-class socioeconomic status (SES). About 60.87% of mothers had availed antenatal services completely. Education of the participant and her husband, SES and family type were significant contributors of ANC service utilization. There was a significant association between complete ANC utilization and birth weight of the baby (p<0.05).
Conclusions: The utilisation of the antenatal services was low among the mothers in our study which can be increased by proper IEC activities.

Keywords: Antenatal service, Complete utilization of antenatal service, Low birth weight

INTRODUCTION

Pregnancy and childbirth are important stages in a woman's life. During pregnancy, both the mother and their unborn babies face health problems which can lead to complications. Prevention of these complications can be possible only when all pregnancies are monitored by skilled care providers.[1] So, to improve the women's health "Safe Motherhood Programme" was launched in the year 1987. Family life remains protected if the woman is safe and protected.[2]

Pregnancy related deaths which are largely preventable results in about 830 deaths of women per day globally. Most of these are in developing countries. Maternal mortality ratio in developing countries in 2015 was 239 per 1,00,000 live births versus 12 per 1,00,000 live births in developed countries.[3] India's maternal mortality rate

contributes to 19% of the global burden of maternal deaths.[4,5] Most of the maternal deaths can be prevented by access to quality antenatal health care, skilled assistance at delivery and postnatal care.[6] High-quality antenatal care alone could reduce maternal deaths by more than 20% if accessed and used regularly.[7]

Antenatal care is defined by WHO (2000) as the "care a pregnant mother receives before birth".[8] At least four antenatal check-ups, immunization against Tetanus, screening and treatment for infections and identification of warning signs during pregnancy are essential.[9] According to NFHS-4 data four antenatal visits during last pregnancy was only 51% in India.[10] Maternal mortality ratio should be less than 70 per 1,00,000 live births by 2030 as per Sustainable Development Goal 3.[11]

The present study was conducted with the following aims and objectives: (1) to assess the utilization of antenatal care services and its contributing factors among the mothers residing in Ankuli-the field practice area of UHTC and (2) to find out the impact of antenatal services on birth weight of new-born.

METHODS

The study was a community based cross sectional study conducted among the mothers residing at Ankuli- the field practice area of UHTC of Department of Community Medicine. The study was conducted from July to September 2018. In Ankuli there are 2 wards- 37 and 38. Out of these 2 wards, one ward- 38 was selected randomly. In ward number 38, there are 23 streets, which were considered as the clusters. Women who were pregnant, severely ill or having mental illness were excluded from study. By taking the estimated ANC utilisation as 78.5%, with precision of 10%, confidence interval of 95% and design effect of 2, the required sample size was found to be 130.[8] From each cluster 6 women who had delivered in last 2 years were selected randomly. A total of 138 women were identified. Ethical clearance was taken prior to the study from Institutional Ethical Committee (IEC) of M.K.C.G. Medical College. A pre-designed, pre-tested questionnaire was used to collect the data. The data was analysed in SPSS version 16.0. Percentage, mean was calculated as univariate analysis. Statistical tests like chi square test were applied for binary categorical variables. Odds ratio with logistic regression model was applied as bivariate analysis. The criterion for statistical significance was set at the value of $p<0.05$.

RESULTS

The study was conducted among 138 mothers to assess the utilization of antenatal care services and its contributing factors and also to know its impact on birth weight of the newborn. The mean age of participants was 30.5 years. About 55.07% of the participants were in the age group of 25 to 34 years followed by 34.79% in the age group of 15-24 years. Majority were Hindus (97.83%) and 63.04% were from general caste. About 84.78% of the participants were married at the age of 18-29 years. Around 47.82% of the mothers had secondary education and 14.49% had higher secondary education. The educational status was higher secondary and above in 50% of the spouses. About 52.9% of the participants had 2 or more children and 36.23% belonged to lower middle-class families according to Modified Kuppuswamy Scale. About 59.42% of women were from nuclear families and most of the women (91.3%) were homemakers (Table 1).

Table 1: Socio-demographic profile of reproductive women (n=138).

Characteristics of respondents		Number (%)
Age (years)	15-24	48 (34.79)
	25-34	76 (55.07)
	≥34	14 (10.14)
Caste	General	87 (63.04)
	OBC	5 (3.62)
	ST	19 (13.77)
	SC	27 (19.57)
Religion	Hindu	135 (97.83)
	Muslim	2 (1.45)
	Christian	1 (0.72)
Age at marriage (yrs)	<18	5 (3.62)
	18-29	117 (84.78)
	>29	16 (11.60)
Education of respondent	Illiterate	25 (18.11)
	Primary	27 (19.57)
	Secondary	66 (47.82)
	≥Higher secondary	20 (14.50)
Education of husband	Illiterate	13 (9.42)
	primary	24 (17.39)
	Secondary	32 (23.19)
	≥Higher secondary	69 (50)
Occupation of Respondent	Home	126 (91.30)
	Service	7 (5.07)
	Labourer	5 (3.63)
Occupation of Husband	Service	69 (50)
	Self-business	36 (26.09)
	Labourer	27 (19.56)
	Unemployed	6 (4.35)
Family type	Nuclear	82 (59.42)
	Joint	56 (40.58)
Parity	P1	65 (47.10)
	≥P2	73 (52.90)
SES	Upper (I)	24 (17.39)
	Upper middle (II)	35 (25.36)
	Lower middle (III)	50 (36.23)
	Upper lower (IV)	24 (17.40)
	Lower (V)	5 (3.62)

Around 67.39% women had registered in 1st trimester, 25.36% in 2nd trimester and 7.25% in 3rd trimester. About 65.22% women had received more than 4 antenatal visits

during their pregnancy, 18.11% had 3 ANC and 16.61% had less than 3 ANC. 66.67% of study participants had received 2 doses of TT whereas 28.98% had received 1 dose of TT and 4.35% had not taken TT. Around 60.87% women had taken 180 IFA and calcium tablets during the prenatal period. About 55.07% had availed services at Government setup whereas 32.61% in the private setup (Table 2).

Table 2: Distribution of mothers according to utilization of antenatal services (n=138).

Antenatal services		N	%
Time of antenatal registration	1st trimester	93	67.39
	2nd trimester	35	25.36
	3rd trimester	10	7.25
No antenatal visits	1	6	4.35
	2	17	12.32
	3	25	18.11
	≥4	90	65.22
No of TT taken	Nil	6	4.35
	1	40	28.98
	2 or only booster	92	66.67
No of IFA and Calcium tablets	≤180	54	39.13
	180	84	60.87
Place of ANC	Government	76	55.07
	Private	45	32.61
	Both	17	12.32

About 60.87% of mothers had availed antenatal services completely (Registration in 1st trimester, minimum 4 antenatal check-ups, 2 doses of TT and 180 IFA and calcium tablets) (Figure 1).

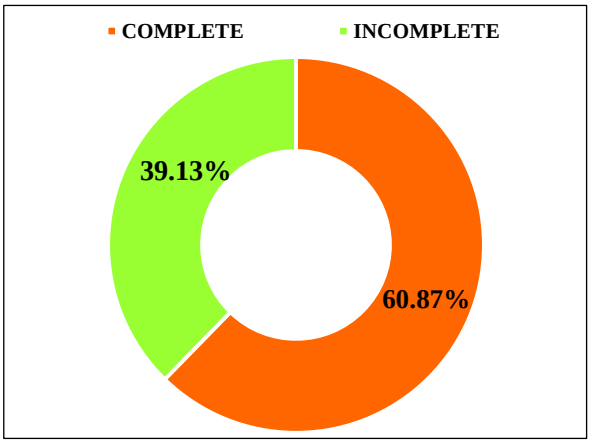

Figure 1: Utilisation of antenatal services.

There is a significant association between the antenatal service utilization with the education of participants and their spouse, SES and type of family (p≤0.05). Mothers with education of more than 10th class were 2.516 times (OR=2.516, CI=1.016-6.798) more likely to receive complete antenatal services than those who had education less than 10th class. The utilization of ANS among participants above the lower middle-class status was 3.268 times (OR=3.268, CI=1.516-7.053) more as compared to the rest. Likewise, mothers who were from nuclear family were 2.141 times (OR=2.141, CI=1.061-4.36) more likely to receive complete antenatal service than the mothers from joint family (Table 3).

Table 3: Association between the utilisation of antenatal services (ANS) and its contributing factors.

Variables		Utilisation of ANC (%)		OR[a]	95%CI[b]	P value
		Complete (84)	Incomplete (54)			
Age (years)	≥30	52 (37.68)	26 (18.84)	1.73	0.87-3.513	0.06
	<30	32 (23.19)	28 (20.29)	1		
Education of participant	≥10th	23 (16.67)	7 (5.07)	2.516	1.016-6.798	0.02*
	<10th	61 (44.20)	47 (34.06)	1		
Education of husband	≥10th	49 (35.51)	20 (14.49)	2.365	1.174-4.841	0.007*
	<10th	35 (25.36)	34 (24.64)	1		
Occupation of participant	Home maker	75 (54.35)	51 (36.96)	2.03	0.5443-9.692	0.31
	Others	9 (6.52)	3 (2.17)	1		
Occupation of husband	Service/business	65 (47.10)	40 (28.99)	1.196	0.530-2.66	0.32
	Others	19 (13.77)	14 (10.14)	1		
SES	Above lower middle	45 (32.61)	14 (10.15)	3.268	1.516-7.053	0.001*
	Upto lower middle	39 (28.26)	40 (28.98)	1		
Family type	Nuclear	56 (40.58)	26 (18.84)	2.141	1.061-4.36	0.016*
	Joint	28 (20.29)	28 (20.29)	1		
Parity	≥P2	46 (33.34)	27 (19.56)	1.209	0.606-2.414	0.29
	P1	38 (27.54)	27 (19.56)	1		

Prevalence of low birth weight was 28.98%. Proportion of low birth weight babies were more (46.29%) in mothers who had not availed complete antenatal care in comparison to mothers who had utilized complete antenatal care (17.85%) and the difference was statistically significant (Chi square=12.91 and p=0.0003) (Table 4).

Table 4: Association between utilization of antenatal services and its impact on birth weight.

Utilisation of antenatal services	Birth weight		Chi square value; p value
	Normal (%)	Low (%)	
Complete (84)	69 (82.15)	15 (17.85)	12.91; 0.0003
Incomplete (54)	29 (53.71)	25 (46.29)	

DISCUSSION

A number of strategies have been adopted to improve maternal health and newborn health. Maternal health during pregnancy influences the health of the newborn. This cross-sectional study was conducted to assess the utilization of antenatal services among the mothers and its impact on birth weight of new-borns.

WHO recommends early registration of pregnancy or early antenatal care so that the woman gets the best possible care for herself and for her unborn child. Inadequate early antenatal care leads to increase in maternal deaths.[12] According to WHO, every pregnant woman should receive at least 4 visits during pregnancy.[13] In this study, only about 60.87% of mothers had availed antenatal services completely. Registration in first trimester was only 67.39%, at least 2 doses of TT injection or 1 booster (66.67%), at least 4 ANC check-up (65.22%) and complete iron and folic acid tablet intake (60.87%). It was similar to studies conducted by Mumbare et al and Sumitra et al.[14,15]

Education of the mother and her spouse influenced ANC utilisation which was similar to some studies conducted by Mumbare et al, Agrawal et al, Simkhada et al and Gurmera et al.[14,16-18] Utilization of antenatal services by the educated groups could be due to their better understanding of the importance and benefits of antenatal services.

The socioeconomic status of mother also significantly influenced the ANC utilization. The mothers belonging to higher socioeconomic status had utilized the antenatal services fully as compared to mothers of low socioeconomic status. It is similar to some studies done by Mumbare et al and Metgud et al.[14,18]

Utilization of antenatal services was more among mothers of nuclear family as compared to those of joint family. On the contrary, a study conducted by Uppadhaya et al found that women from joint families showed better utilization of antenatal services as other members took care of the pregnant women.[19]

Low birth weight is a preventable cause of neonatal mortality. Antenatal care and regular antenatal visits help in early detection and timely management of feto-maternal complications. The present study revealed that proportion of low birth weight babies was more among the mothers who had not availed complete antenatal services as compared to mothers who had complete antenatal care. Similar findings were observed by Uppadhaya et al and Joshi et al.[19,20]

Limitations

The findings of the study cannot be extrapolated to the general population and there is also a possibility of recall bias.

CONCLUSION

The grass root level workers should be encouraged to educate and make women aware regarding antenatal care and its impact on birth weight of baby. Complete antenatal care should be utilised by each and every pregnant woman. Appropriate counselling should be done during the antenatal visits. Health camps and education programs should be conducted regularly in the study area to increase knowledge and awareness among the women.

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