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Factors associated with use of antenatal care services in a rural area of Bangladesh

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Abstract

Antenatal care (ANC) includes care during pregnancy, should begin from the early stages of pregnancy. ANC allows management of pregnancy, detection and treatment of complications, and promotion of better maternal and child health. This study assessed the factors relating to maternal healthcare practices in rural Bangladesh and examined the association between use of antenatal care services and socio-demographic variables of rural women. A community based cross-sectional study was conducted in Madhupur upazila of Tangail district. Postnatal mothers who visited the Expanded Programme on Immunization (EPI) centers constituted as sampling frame and selected. The sample size was determined based available information on the Bangladesh Demographic and Health Survey (BDHS) 2007. In total 360 randomly selected postnatal mothers were interviewed using structured questionnaire for collecting information on demographic characteristics, knowledge on ANC and practices. The mean (±SD) age of the respondents was 24(±4.4) years. Most (95.6%) of them were housewives. Twenty-two percent of the respondents were from the poorest socioeconomic class. Mothers who had one living child had the highest percentage of adequate ANC use compared to those who had two or more living children. Access to mass media (newspapers and TV) had a positive significant ($p<0.001$) effect on the use of ANC services. The results of logistic regression analysis showed that, after adjusting other factors, respondents who had secondary-level education were 4.5 times more likely to use ANC adequately compared to those who had no education. The findings suggested that education of the mothers is an important determinant of ANC visits during pregnancy. Therefore, information, education and communication on ANC must be intensified in order to reach the rural mothers.

Keywords: Antenatal care, Factors, Community-based study, Rural area, Bangladesh.

Introduction

Antenatal care (ANC), which includes care during pregnancy, should begin from the early stages of pregnancy. Women can access ANC services either by visiting a health centre where such services are available or from health workers during their domiciliary visits. One of the most important components of ANC is to offer information and advice to women about pregnancy-related complications and possible curative measures for the early detection and management of complications.[1]

The World Health Organization (WHO) defines women of reproductive age as those who are aged 15-49 years.[2] They constitute more than one-fifth of the world's population and are repeatedly exposed to the risk of pregnancy and childbearing. According to the WHO recommendation, every pregnant woman should receive at least four ANC visits during pregnancy.[2] The use of ANC in developing countries is low compared to developed countries (97%).[3] The Bangladesh Demographic and Health Survey (BDHS) 2011 showed that 55% of women with a birth in the three years preceding the survey received ANC at least once from any provider.[4] More than half (55%) of the women received care from a medically-trained provider, such as doctor, nurse, midwife, family welfare

Practice Points

- ANC allows management of pregnancy, detection and treatment of complications, and promotion of better maternal and child health.
- Seventy-one percent of the postnatal mothers had knowledge about antenatal care services.
- Fifty-five percent of pregnant mothers received two antenatal visits, about 33% received 3-4 visits, and 12% received five or more than five visits (mean visits 3±1.6).
- Education level, number of living children, access to media and mode of transport during pregnancy were the important correlates of ANC of the postnatal mothers.
- Women empowerment through informal education and income generating activities as well as involvement of husbands in information, education and communication are recommended.

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visitor, community skilled birth attendant, medical assistant or sub-assistant community medical officer.[4] In developing countries, women often encounter serious health risks during pregnancy either for themselves (e.g. anemia, edema, eclampsia etc) or for their children (e.g. sepsis and pneumonia , birth asphyxia and injuries, tetanus, congenital anomalies, with low birth weight etc).[3]

Maternal health refers to the health of the mother during pregnancy, childbirth, and the postpartum period.[3] Maternal health services usually are preventive and patients are not usually ill, [5] resulting in the underuse of services. The use of maternal healthcare services is important for the early detection of mothers who are at a high risk of morbidity and mortality during pregnancy.[3] In developing countries, these problems are even more prevalent due to the current socioeconomic conditions and inaccessibility to health facilities.[6] The wide disparity in the maternal healthcare indicators might explain the wide difference in the maternal mortality ratio (MMR) between the developed and the developing countries. Of the 210 million women who become pregnant each year, 30 million, or about 15%, develop complications, which are fatal in 1.7% of cases.[7]

Available information suggests that about 12,000 women in Bangladesh die due to pregnancy-related complications.[8] These complications can be managed and treated if timely and appropriate care is sought from facilities with necessary skilled care providers. Bangladesh has made a significant improvement towards achieving the Millennium Development Goal (MDG) target the 5 of 75% reduction in the MMR between 1990 and 2015.[9] Therefore, this study was conducted to assess the factors that determine the use of ANC services in a selected rural area of Bangladesh.

Materials and methods

A community based cross-sectional study was conducted in Madhupur upazila (sub-district) in Tangail district of Bangladesh, during January-June 2012, to assess the status of ANC service used by the postnatal mothers and the associated factors affecting mothers' health. Madhupur is located northwest of Dhaka. Most (80%) people of the upazila live in the rural area and are economically dependent on agriculture.

Postnatal mothers who visited the Expanded Programme on Immunization (EPI) centers constitute the sampling frame. Randomly selected post natal mothers were interviewed using a pre-tested structured questionnaire by trained interviewer to collect information on socio-demographic, knowledge on ANC, and practice on ANC. Sampling of all postnatal mothers who visited the EPI centers was done using the EPI register. All the EPI centers of Madhupur upazila constituted the sampling frame. Postnatal mothers were randomly selected. The sample size was determined based on the available information of the BDHS 2007[10] and for calculation of the sample size we used the following formula: $n = Z^2pq/d^2$.[11] The BDHS 2007 shows that about 30% of mothers visited health facilities for postnatal care services. Considering the 10% non-response, the final sample size for this study was, thus, calculated to be approximately 360.

Data were analyzed using the SPSS software for Windows (version 17). Analysis of data on postnatal mother was done taking into consideration socioeconomic status and total number of antenatal care. Descriptive summary statistics, such as mean and standard deviation (SD), were computed for continuous variables and proportions for categorical characteristics of the post natal mothers. The significance of the differences in patterns among values of the associated factors was tested using chi-square test at a 5% level of significance. Odds ratios with 95% confidence interval (CI) were calculated using the binary logistic regression model to control confounders and identify the factors associated with the use of ANC services.

Results

The mean age of the respondents was 24 (SD±4.4) years. Most (95.6%) of the respondents were housewives, followed by service holders, and who engaged in farming, and small business. About eighty-two percent of the post natal mothers were Muslims. Twenty-two percent of the respondents were from the poorest socio-economic class, 20% were from the middle class, and 19% were from the richest class. In the case of accessibility to mass media, about 83% had never read newspapers, 90% had never listened to radio, 40% had never watched television (TV), and 54.4% had no mobile phones (Table 1).

About 71% of the respondents had knowledge about ANC (Table 2). One in four had knowledge about receiving service from the field health workers, 31.7% from the government hospitals, 9.2% from the community clinics, and 8.3% from the local NGO clinics. About two-thirds (62.5%) of the respondents received ANC. Of them, 34.2% received it from field health workers, 28% from the government hospitals, 14% from the community clinics, and 12% from the local NGO clinic service providers. Fifty-five percent received two antenatal visits, 33% received three to four visits, and 12% received five or more than five visits. The mean number of visits was about three with SD of 1.6.

Results of categorical bivariate analyses showed that the socio-demographic characteristics, such as being educated ($p<0.001$), total number of living children ($p<0.001$), access to newspapers ($p<0.001$), watching TV ($p<0.001$), and the wealth index ($p<0.001$) were positively associated with ANC use (Table 3).

Binary logistic regression analysis was conducted taking into consideration ANC as a dependent variable. The model suggests that primary-level of education ($p<0.010$), secondary level of education ($p<.001$), living children ($p<0.001$), read newspaper ($p<.024$), watching TV ($p<0.001$), and mode of transport ($p<0.001$) were the important correlates of ANC during pregnancy of the postnatal mothers after adjusting age, wealth index and being a member of any NGO (Table 4).

Table 1: Socio-demographic characteristics of respondents (n=360)

Variable	Respondents (%)
Age-group (years)	
Up to 20	105 (29.2)
21-25	145 (40.3)
26-30	89 (24.7)
31 – 35	18 (5.0)
36 – 40	3 (0.8)
Mean ± SD	24 ±4.4
Occupation of respondents	
Housewife	344(95.6)
Farming	2 (0.6)
Service	10 (2.8)
Others	4 (1.1)
Religion of mother	
Islam	295 (81.9)
Hinduism	24 (6.7)
Christianity	40 (11.1)
Others	1 (0.3)
Number of total living children	
1	151 (41.9)
2-3	184 (51.1)
4+	25 (6.9)
Mean ± SD	1.9±1.1
Wealth index	
Poorest	80 (22)
Poor	64 (18)
Middle	72 (20)
Rich	75 (21)
Richest	69 (19)
Access to mass media	
Reading newspaper	
Yes	63 (17.5)
No	297 (82.5)
Listening to radio	
Yes	35 (10)
No	325 (90)
Television watching	
Yes	217 (60)
Never	143 (40)
Having mobile phone	
Yes	164 (45.6)
No	196 (54.4)

Results were expressed as n (%) and mean±SD

Table 2: Knowledge and practice of antenatal care (n-360)

Variable	Respondents (%)
Knowledge about antenatal care	
Yes	254 (70.6)
No	106 (29.4)
Knowledge about ANC service provider	
Government hospital	114 (31.7)
Community clinic	33 (9.2)
Satellite clinic	13 (3.6)
UHFWC	15 (4.2)
Field health worker	79 (21.9)
BRAC health worker	15 (4.2)
Local NGO clinic	30 (8.3)
Don't know	61 (16.9)
ANC received	
Yes	225 (62.5)
No	135 (37.5)
Source of ANC services (n-225)	
Government hospital	63 (28)
Community clinic	31 (13.8)
Satellite clinic	11 (4.9)
UHFWC	7 (3.1)
Field health worker	77 (34.2)
BRAC health worker	10 (4.4)
Local NGO clinic	26 (11.6)
Number of ANC visits	
Up to 2	124 (55.0)
3-4	74 (33.0)
5+	27 (12.0)
Mean ± SD	2.6±1.6

Results were expressed as n (%)

Discussion

Antenatal care allows management of pregnancy, detection and treatment of complications, and promotion of better maternal and child health. However, women rarely recognize childbearing as problematic and, therefore, do not seek care[1]. The results of the present study showed that 62.5% of the mothers received ANC services from health centers. In this study, 55% of the mothers had at least one or two visits, and 45% had the recommended four and above ANC visits. The BDHS conducted in 2011 showed that about 55 percent of the mothers received at least one ANC during their entire period of pregnancy.[4] This is also consistent with the report from North Godar zone in Ethiopia where 45.7% of mothers had ANC visits.[12] The results of our study showed that mothers with education had the highest percentage of adequate ANC use compared to those who have no education. This finding is supported by that of a study by Erlindawati *et al.*[13] in Indonesia which found that literacy of women had a significant association with the use of ANC services, indicating that education has an impact on awareness among the population and use of health services by them.

Mothers who had one living child had the highest percentage of adequate ANC use compared to those who had two or more children. Access to mass media (newspapers and TV) had a significant ($p<0.001$) and positive effect on the use of ANC services which is similar to the study conducted in Bangladesh.[14] High family income of mothers had the highest percentage use of ANC services compared to those with a lower family-income. Studies in Bangladesh, [14] Tamil Nadu (India) [15] and Indonesia[13] reported that monthly family-income had a positive influence on postnatal check-ups. With regard to accessibility and availability of services, mothers with difficult access had a higher percentage of

Table 3: Association between ANC and other related demographic variables (n-360)

Variable	Yes	No	*p*-value*
Age (Yrs)			0.586
≤18	24	12	
19+	201	123	
Education			0.001*
No	52	36	
Primary	50	72	
Secondary	33	117	
Total no. of living children			0.001*
1	107	44	
2	75	40	
3	43	51	
Wealth index			0.001*
Poorest	37	43	
Poor	38	26	
Middle	46	26	
Rich	47	28	
Richest	57	12	
Read newspaper			0.001*
Yes	56	7	
No	169	128	
Watch TV			0.001*
Yes	160	57	
No	65	78	
Member of any NGO			0.642
Yes	124	71	
No	101	64	
Mode of Transport			0.052
On foot	70	15	
By transport	155	120	

χ^2-test was used. *The level of significance at α=0.05

inadequate ANC use compared to those who had easy access, which is comparable with findings of the studies in Tamil Nadu[15] and Indonesia.[13]

The results of logistic regression showed that, after adjusting for other factors; respondents who had secondary-level education were 4.5 times more likely to use ANC adequately compared to those who had no education. Several studies in other countries demonstrated that education of women was an important determinant of ANC use .[16-19] The findings of the present study also showed that education of mothers is an important determinant of ANC visits during pregnancy. A study in rural Bangladesh confirmed that higher education was associated with the higher use of ANC.[20] Primary-level of education (p<0.010), secondary level of education (p<.001), living children (p<0.001), read newspaper (p<.024), watching TV (p<0.001), and mode of transport (p<0.001) were the important correlates of ANC during pregnancy of the postnatal mothers.

The study has a number of limitations. This study was conducted only in a selected rural area of Bangladesh with a cross sectional design on postnatal mothers and their newborns, therefore, caution needs to be taken to generalize the findings. Moreover, as this is a cross-sectional study, associations have been established among variables but not the casual inferences.

Conclusion

The findings of the study suggests that specific efforts are needed to target women of lower socioeconomic status, especially those who are from the lower wealth quintiles, with provision of basic maternal healthcare services. The findings indicate that formal education, number of living children, access to mass media, mode of transportation, accessibility to healthcare centers, and wealth index are important correlates in using ANC services. Therefore, information, education and communication on ANC must be intensified in order to reach the rural mothers. In a long run, women empowerment through informal education and income generating activities as well as involvement of husbands during information, education and communication are recommended.

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Disclosure

The authors have no conflicts of interest in this work.

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Table 4: Logistic regression analysis considering antenatal care as dependent variable (n-360)

Independent variable	β	*p*-value*	OR	95 % CI for Exp (β)	
				Lower	Upper
Age	-0.410	0.371	0.664	0.271	1.628
Education					
No	Reference		1		
Primary	0.732	0.010*	2.080	1.191	3.632
Secondary	1.525	0.001*	4.596	2.580	8.189
Higher Secondary	1.571	0.999	2.180	0.001	2.07
Total no. of living children					
1	Reference		1		
2	0.549	0.103	1.731	0.896	3.345
3	1.168	0.001*	3.216	1.585	6.527
Wealth index					
Poorest	Reference		1		
Poor	0.758	0.117	2.133	0.828	5.497
Middle	0.118	0.814	1.126	0.420	3.014
Middle Upper	0.458	0.327	1.582	0.632	3.960
Richest	0.741	0.100	2.098	0.868	5.073
Read newspaper					
No	Reference		1		
Yes	1.071	0.024*	2.918	1.151	7.398
Watch TV					
No	Reference		1		
Yes	1.120	0.001*	3.064	1.705	5.508
Member of NGO					
No	Reference		1		
Yes	0.236	0.366	1.267	0.759	2.114
Mode of Transport					
On foot	Reference		1		
By transport	1.843	0.001*	6.315	3.140	12.704
Constant	-23.306	0.998	0.000		

*The level of significance at a=0.05

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