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## PUBLIC HEALTH RESEARCH

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### Assessing Barriers for Delayed Antenatal Care Services among Tribal Women of Bangladesh

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#### ABSTRACT

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**Introduction** The time to start Antenatal Care (ANC) check-up is very significant because it determines the way to resolve complications and remedies during pregnancy. Different parameters play important roles in participating ANC in a society. A global consensus gives us the idea that most tribal people living in remote areas are far from basic needs related to education, employment, and affordable healthcare. The study aimed to delve into delayed ANC practices and the factors affecting the decision to receive ANC among tribal women dwelling in the Chittagong Hill Tracts (CHT) of Bangladesh.

**Methods** This paper is a quantitative study. Interview schedule or questionnaire was mainly used as an instrument for data collection from 556 married women having babies for less than one year. Multinomial logistic regression was performed to determine significant factors related to the time of the introduction of ANC.

**Results** Only 16.4% of the women had started to receive ANC in the early stage of pregnancy ( $\leq 3$  months) and 13.5%, after three months (delayed ANC) of their pregnancies. 70% did not seek ANC. The result found that one-third (29.9%) of the pregnant women wanted ANC from a trained doctor, but only 16.4% initiated attendance within three months of the pregnancy.

**Conclusions** The study results suggest that specific efforts are needed to advance the socio-economic status of the tribal people; they need to increase the educational level of women and their husbands, build their nearest health centers, and strengthen family planning programs.

**Keywords** Antenatal care - Tribal women - Maternal mortality - Non-attendance and delayed antenatal care.

## STATEMENT OF SIGNIFICANCE

### *Problem or Issue*

The delayed ANC services create many complications and increase maternal and child mortality rates.

### *What this paper adds*

The clear inference is that the farther the people live in, the worse the ANC is affected. It is reasonable to infer that education acts as the lighthouse for receiving proper maternity health care services. The study revealed that women having affluence and belonging to the privileged class preferably remained in early antenatal care services.

## INTRODUCTION

Early Antenatal care plays a vital role in detecting and treating certain complications of pregnancy and provides a supportive foundation for proper childbirth. ANC check-up within the first three months of conception is significant as it paves the way for necessary diagnosis and subsequently cures.<sup>1</sup> Initiation of the first ANC tour is not unique. Failure to initiate ANC care causes complications during pregnancy and childbirth.<sup>2</sup> Due to insufficient antenatal care or delayed ANC cause poor results, such as; low birth weight, immaturity and prolonged delivery.<sup>3</sup>

After 22 weeks of gestation, the mother who started the ANC, missed four regular prenatal visits, who did not care their pregnancy, the maternal death rate of those mothers was 17%.<sup>4</sup> Mothers who sought antenatal care before the end of the third month had infants who weighed heavier compared to the infants of mothers who sought care later.<sup>5, 6, 7</sup>

Early antenatal care for HIV prevention works as an entry point; the ANC creates an interest in renewal and access to services, especially when preventing HIV from the mother to the baby.<sup>8</sup> WHO recommends the first visit within 8 to 12 weeks after the pregnancy and the 2nd visit between 24 and 26 weeks of gestation, the 3rd visit between 32 weeks and the 4th visit between 36 and 38 weeks.<sup>9</sup> During ANC, the WHO recommends that women should receive a tetanus toxoid immunization, intermittent preventive treatment of malaria, iron and folic acid, and insecticide-treated bed nets.<sup>10</sup>

Urban women were more likely than rural women to have made four or more antenatal visits (46 percent compared with 26 percent). For urban women this percentage has hardly changed between 2011 and 2014 (from 45 to 46 percent), while in rural areas the percentage of women who made four or more antenatal care visits increased from 20 percent to 26 percent between surveys. In Bangladesh, only 31% of women made four or more ANC visits during their pregnancy, and that is

very low<sup>11</sup>. Pregnant mothers who do not start their first visit recommended by WHO are treated as delayed ANC.

According to the revised Focused Antenatal Care (FANC) model of the World Health Organization (WHO) admonishes visit to the ANC to be at least 4 times to avoid complicated pregnancies and the first visit should start before 12 weeks of gestation with following contacts taking place at 20, 26, 30, 34, 36, 38 and 40 weeks' gestation.<sup>12, 13</sup>

Acceptance of ANC services in a society is mostly shaped and reshaped by personal, socio-environmental, psycho-cultural, and eco-political parameters existing in those areas. A study conducted by Kamal has revealed that the health care system in Bangladesh is not homogeneous and has socioeconomic inequalities, the deficit of knowledge regarding the merits and drawbacks of consumption of maternal health care services (MHCS) and financial crisis are the major causes of lower use of the MHCS.<sup>14</sup>

A study conducted by Islam found that one out of every nine women received antenatal care among Mru tribal community which is a small group out of 13 tribal groups living in CHT.<sup>15, 16</sup> There are 13 different tribal groups in the CHT. These diverse groups are culturally different from the majority of Bengalis. Various groups also have variations between themselves.<sup>17</sup> Some of these groups live in valleys close to rivers and streams, and some on hillcrests. Hence the study conducted by Islam does not represent the maternal health status of whole tribal women of CHT.

While going through the review, it has been observed that no significant research has yet been conducted on early ANC services among the tribal women of CHT of Bangladesh. Therefore, the current study was conducted to delve into delayed ANC practices and factors associated with these practices among tribal women dwelling in the Chittagong Hill Tracts of Bangladesh.

## METHODS

### *Study and sampling design*

This paper is based on a quantitative study, data was collected from 556 tribal married women (aged between 15 to 49) who had given at least one live birth in the last twelve months prior to the survey date and it was to explore, identify the socio-economic issues concerning the factors affecting the decision to go for delayed ANC check-up among tribal women of Chittagong Hill Tracts (CHT) of Bangladesh. There are three (3) districts in the hilly area, 556 households were covered from 25 Upazillas, and 20 households were not possible due to the absence of the respondents during the survey. The collected data was summarized, tabulated, and analyzed by the SPSS-20. Associations were evaluated through

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Chi-square tests, and binary logistic regression analysis, the multinomial analysis was used to discover issues related to early ANC services. The outcome of the multivariate analysis was given by the odds ratio (OR) with 95% confidence interval (CI) for easy understanding and interpretation.

### *Sampling Technique*

This survey effectively used convenience sampling technique in data collection. Reasons behind choosing convenient sampling technique:

- i. Sampling frame (a specific list of sampling elements in the target population) does not exist. It was quite tricky to know where a mother was having at least a child aged not more than one year living in CHT.
- ii. The topography of my study area is featured by rough, hilly environment, narrow valley, and remote localities. So, it was difficult to go everywhere to collect data.
- iii. The villages are scattered sporadically. That means, a village consisting of 2 or 3 families is generally seen somewhere, then no habitation is noticed within the distance of 2 or 3 kilometers. Again, at a pretty remote distance, a village is suddenly observed.

### *Dependent Variables*

The time to start the ANC check-up was considered as the dependent variable.

Multinomial Logistic Regression is the linear regression analysis to conduct when the dependent variable is nominal with more than two levels. Time of the beginning of ANC visit refers to the month of pregnancy from when a woman starts to receive antenatal services. This variable was categorized into three types:  $\leq 3$  months,  $>3$  months, and no care. Here 1 was coded for 'within first 3 months', 2 for 'after 3 months' and 0 for 'not at all'. Here,  $\leq 3$  months refers to visit which takes place during the first trimester (early ANC),  $>3$  months means visit which takes place in the second or third trimester (delayed ANC).

### *Independent Variables*

The demographic, socioeconomic and cultural-behavioral predictors, such as the age of the respondent, age at first marriage, family members, current age of the husband, parity/birth order (number of children), wealth index, occupation of the women, husband's occupation, exposure to media, women's education, spouse education, place of residence, distance from the nearest health care facilities, religion, tribal identity, family

planning were considered as independent variables.

One background characteristic used in this study is the economic status of the women, namely, "wealth index." The wealth index used in this study was developed to measure inequalities in household income, use of health services, and health outcomes. It is an indicator of the level of wealth that is consistent with expenditure and income measures. The wealth index was constructed from data on household assets, including ownership of durable goods (such as televisions, mobile and bicycles) and dwelling characteristics (such as source of drinking water, Source of light, sanitation facilities, and construction materials, cooking fuel, etc.), income and property (land facility, income source etc).

To create the wealth index, each of the assets was assigned a weight (factor score), the scores were summed for each household and generated through principal component analysis, and the resulting asset scores were standardized in relation to a normal distribution with a mean of '0' and standard deviation of '1'; individuals were ranked according to the total score of the household in which they resided. The principal component analysis was run with all constructed variables with specific criteria. The component score coefficient matrix was multiplied by the standardized variables to produce factor scores, which were termed as household wealth score. The wealth scores were further classified into quintiles (index). Wealth index was used as a background variable to assess the socioeconomic status of women. This variable was coded as 1, 2, and 3 for the poor, middle, and rich, respectively. The poor category was taken as the reference category.

## RESULTS

### *Background of the respondents*

556 tribal married women (aged between 15 to 49) who had given at least one live birth in the last twelve months prior to the survey were used for this study. The data on the demographic characteristics showed that 80% of the participants were from rural and 20% were from urban area, 43% of the participants were aged 15-24 and 49.5% were aged 25-34, 28.8% were at the level of secondary education, more than half of the women's husbands (53.4%) were involved in agriculture, majority of the women (94.2%) were unemployed. Only 35.8 % of the respondents live within 05 km. In terms of wealth index, 30.8% of the women belong to an upper-middle-class family. Only 29.9% of the women received antenatal care while 70.1% did not receive antenatal care from anyone at all.

**Table 1** Percentage Distribution of time of the beginning ANC Visit

Variable Name	Frequency (N)	Percentage (%)
The time of the Beginning ANC Visit		
No Care	390	70.1
<=3 months	91	16.4
>3 months	75	13.5
Total	556	100.0

Table 1 describes that only 16.4% of the women had started to receive ANC care in an early

stage of pregnancy (≤3 months) while 13.5%, after 3 months of their pregnancies.

**Table 2** Association between variables and the time to start ANC

Demographic Characteristics	Total	Time of the beginning ANC visit			$\chi^2$	P-Value
		No Care	<=3 months (Early)	>3 months (Delayed)		
Age of respondent					10.090	0.039
15-24	239	164 (68.6%)	34 (14.2%)	41 (17.2%)		
25-34	275	196 (71.3%)	53 (19.3%)	26 (9.5%)		
35+	42	30 (71.4%)	4 (9.5%)	8 (19.0%)		
Age at First Marriage					3.475	0.176
<18	120	89 (74.2%)	13 (10.8%)	18 (15.0%)		
18+	436	301 (69.0%)	78 (17.9%)	57 (13.1%)		
Family members					2.058	0.357
<5	361	249 (69.0%)	65 (18.0%)	47 (13.0%)		
5+	195	141 (72.3%)	26 (13.3%)	28 (14.4%)		
Parity (Children Ever Born)					2.220	0.330
One -Two	418	288 (68.9%)	74 (17.7%)	56 (13.4%)		
Three +	138	102 (73.9%)	17 (12.3%)	13.8%		
Wealth Index					136.007	.001
Poor	223	209 (93.7%)	6 (2.7%)	8 (3.6%)		
Middle	162	113 (69.8%)	25 (15.4%)	24 (14.8%)		
Rich	171	68 (39.8%)	60 (35.1%)	43 (25.1%)		
Education of the respondents (women)					140.180	.001
No Education	169	151 (89.3%)	4 (2.4%)	14 (8.3%)		
Primary	128	108 (84.4%)	9 (7.0%)	11 (8.6%)		
Secondary	160	104 (65.0%)	32 (20.0%)	24 (15.0%)		
Higher	99	27 (27.3%)	46 (46.5%)	26 (26.3%)		
Education of the husband of the respondent's					123.588	.001
No Education	76	69 (90.8%)	0 (0.0%)	7 (9.2%)		
Primary	87	76 (87.4%)	5 (5.7%)	6 (6.9%)		
Secondary	197	163 (82.7%)	17 (8.6%)	17 (8.6%)		
Higher	196	82 (41.8%)	69 (35.2%)	45 (23.0%)		
Distance from Maternal Facility (km)					92.989	.001
<5	199	92 (46.2%)	64 (32.2%)	43 (21.6%)		
5-9	104	78 (75.0%)	14 (13.5%)	12 (11.5%)		
10+	253	220 (87.0%)	13 (5.1%)	20 (7.9%)		
Occupation of the respondents					52.779	.001
Unemployed	524	385 (73.5%)	73 (13.9%)	66 (12.6%)		
Employed	32	5 (15.6%)	18 (56.2%)	9 (28.1%)		
Husband's Occupation					104.833	.001
Agriculture	297	247 (83.2%)	21 (7.1%)	29 (9.8%)		
Business	105	58 (55.2%)	27 (25.7%)	20 (19.0%)		
Service	100	37 (37.0%)	41 (41.0%)	22 (22.0%)		
Day laborer	54	48 (88.9%)	2 (3.7%)	4 (7.4%)		

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Media Exposure							
Do you watch Television						89.626	.001
No	371	308 (83.0%)	31 (8.4%)	32 (8.6%)			
Yes	185	82 (44.3%)	60 (32.4%)	43 (23.2%)			
Listening to the Radio						18.344	.001
No	512	371 (72.5%)	75 (14.6%)	66 (12.9%)			
Yes	44	19 (43.2%)	16 (36.4%)	9 (20.5%)			
Residence						97.676	.001
Rural	445	352 (79.1%)	42 (9.4%)	51 (11.5%)			
Urban	111	38 (34.2%)	49 (44.1%)	24 (21.6%)			
Religion						5.808	.055
Buddhist	499	344 (68.9%)	88 (17.6%)	67 (13.4%)			
Other	57	46 (80.7%)	3 (5.3%)	8 (14.0%)			
Group of Tribal						22.603	.001
Chakma	331	212 (64.0%)	72 (21.8%)	47 (14.2%)			
Marma	138	107 (77.5%)	13 (9.4%)	18 (13.0%)			
Tripura	37	28 (75.7%)	2 (5.4%)	7 (18.9%)			
Other	50	43 (86.0%)	4 (8.0%)	3 (6.0%)			
Family Planning (using a modern method of contraception)						26.144	.001
Yes	253	150(59.3%)	56(22.1%)	47(18.6%)			
No	303	240(79.2%)	35(11.6%)	28(9.2%)			
Total	556	390(70.1%)	91(16.4%)	75(13.5%)			

Table 2 describes the associations between socioeconomic factors, cultural and behavioral factors with the time to start ANC. Each factor of

socioeconomic characteristics and cultural and behavioral factors were positively associated with the time to start ANC.

**Table 3** Multinomial Logistic Regression Results

Variables	B	<=3 months visit not received ANC			B	>= 3 months visit vs not received ANC		
		Exp(B)	95% C.I			Exp (B)	95% C.I. for	
			Lower	Upper		Lower	Upper	
Wealth index								
(Poor)		1.00				1.00		
Middle	1.426	4.161**	1.485	11.664	1.601	4.960***	2.201	12.174
Rich	1.742	5.708***	2.065	15.774	2.008	7.446***	2.951	18.787
Distance to health facility (km)								
10>=	-1.824	.161***	.072	.364	-1.444	.236***	.113	.491
5-9	-1.211	.298***	1.32	.671	-1.337	.263***	.114	.606
(<5)		1.00				1.00		
Women's education								
(0-5 <sup>th</sup> )		1.00				1.00		
Secondary	.474	1.606(ns)	.641	4.026	-.090	.914(ns)	.394	2.120
Higher	1.793	6.008***	2.034	17.746	1.057	2.879**	1.022	8.112
Husbands' education								
(0-5 <sup>th</sup> )		1.00				1.00		
Secondary	.722	2.059(ns)	.642	6.600	-.068	.934(ns)	.389	2.243
Higher	1.605	4.976**	1.364	18.150	.806	2.240(ns)	.797	6.292
Residence								
(Rural)		1.00				1.00		
Urban	.872	2.391**	1.182	4.837	.239	1.27(ns)	.600	2.686
Family Planning								
(No)		1.00				1.00		
Yes	.455	1.576(ns)	.853	2.909	.558	1.747*	.962	3.172

Notes: Level of significance: \*\*\* = p<0.01, \*\* = p<0.05, \* = p<0.10, ns = not significant. The reference category is not received ANC at all.

Table 3 shows that women's education, family planning, distances from the health care center, wealth index, place of residence, husband's education were a statistically important determinant for receiving early ANC services.

The variables place of residence ( $p < 0.05$ ) and husbands' education ( $p < 0.05$ ) being significance to receive ANC within 3 months, but was insignificant for receiving ANC after 3 months. On the other hand, family planning method being significance ( $p < 0.05$ ) to receive ANC after 3 months.

## DISCUSSION

This study was run to explore variables that influence the delayed antenatal check-up among indigenous women of Bangladesh. Generally, the results from this study indicate that there are several variables to delay ANC check-up in CHT.

The study showed that only 29.9% of the tribal women received antenatal care of which only 16.4% of the women had started to receive ANC in the early stage of pregnancy ( $\leq 3$  months) and 13.5% of women received delayed ( $> 3$  months) ANC of their pregnancies. The BDHS showed that 64% of women sought at least one ANC services from a professional doctor.<sup>18</sup> From this comparison; we can infer that the level of attending ANC by tribal women of CHT was almost half of the national level.

A study carried out by Silwal exposed that the majority of the mothers among indigenous people of Nepal did not accept ANC even a dose of tetanus injection.<sup>19</sup> The most discouraging situations were found among Khairwar tribal women of Madhya Pradesh, India; they do not feel the need for the ANC. They did not receive any suggestion or contact with anyone during their pregnancy.<sup>20</sup> They did not accept PHC (primary health care) service due to wrong ideas. About two-thirds of the Bhil tribal women of Madhya Pradesh, India (64 %) also did not receive any IFA tablets or syrup as reported by Sharma.<sup>21</sup>

The study showed that more educated women were much interested in using ANC services than those who were illiterate. The same results were found in other studies. A study found that highly educated women were involved in the initial ANC investigation.<sup>22</sup> A study in rural areas of Bangladesh ensured that there was an association of higher education with the increased use of ANC.<sup>23</sup> It can be explained that girls who go to school and colleges to study have the opportunity to share and exchange their ideas and views with their classmates. They can participate in exchanging information with their colleagues about their problems and effects on maternity. Knowledge of health science indeed enables pregnant women to have proper understanding about maternal health care services. Education not

only promotes wellness awareness, it also points to a way to manage the cost of medical services. The gulf between educated and illiterate women is abundant in the case that educated women do their best to achieve the full range of modern maternal health facilities, where illiterate women are unconscious and unwilling to use them.

It has been revealed that the distance from the health center was inversely related to the use of ANC among tribal women of Bangladesh. The results are accordant with the studies in Kenya and rural Haiti, where it has been found that with the increase in distance from the health center, the ANC inspection decreased.<sup>24</sup> Another study found that due to long distances, most pregnant women joined their first ANC after twelve weeks of pregnancy.<sup>25,26</sup> Long-distance causes significant obstacles to reaching a health facility during pregnancy. Despite the willingness of the tribal women of CHT to attend ANC, they cannot consult a doctor or go to the hospital because of the barrier of distance. The lack of good roads and inadequate transportation severely hamper tribal women's ANC attendance. The clear inference is that the farther the people live in, the worse the ANCS is affected.

Regarding socioeconomic status, the study revealed that women having affluence and belonging to the privileged class preferably remained in MHCS. Similar findings demonstrated a positive relationship between economic status and attending ANC.<sup>27</sup> Another study showed that financial constraints influenced for late booking of pregnancy.<sup>28</sup> It is reasonable to assume that mothers from the rich wealth index are generally more educated, aware of existing modern health care services and can afford the cost very easily. Women's high socioeconomic status is the gateway to attending ANC. Women having great wealth see no impediment to take MHCS.

Concerning the use of family planning, the study found that those who are aware of family planning wanted to show the possibility of participating in the ANC. Previous studies have ensured that women involved in family planning were more aware of the use of ANC. There is evidence that women who did not practice family planning were less likely to use ANC services.<sup>29</sup> This is in line with our research that women who wanted to be pregnant were very less interested in using ANC services. It is generally accepted that the awareness of women and the adoption of family planning result in their further utilization of MHCS. When women consult the health workers, doctors, etc. about family planning, they can simultaneously know many things about maternity health care services from them; this ultimately leads them to receive ANC. This study showed that husbands' education is the utmost significance to attend an ANC early period within the first 3

months of pregnancy. Similar findings showed that the husband's educational level is significantly associated with the ANC booking period.<sup>30</sup>

### CONCLUSION

Antenatal care (ANC) is the first flight of stairs to reach the peak of success for safe-motherhood. The study concludes that most pregnant women attend their first ANC after the first trimester for various reasons such as lack of knowledge, poor socioeconomic status, low qualifications in the education of spouse, distance to the health center, lack of family planning, distant place of residence, etc.

Based on the findings of the study, we recommend that the economic conditions of the indigenous people should be improved by establishing 'eco-friendly' industries such as soil industry or weaving industry in the hills of Chittagong so that tribal women can attend early ANC check-up in the prenatal period. More opportunities should be created for the people of the mountains to enter into institutional education. To do this, it is essential to consider the possibility of starting good schools and colleges at the marginal level. This will ensure not only institutional education, but also the future of a healthy citizen with safe motherhood. It is difficult for pregnant indigenous women to use the early ANC service because of the distance to the health centers. Therefore, applying mobile healthcare to pregnant women at home can improve the maternal health status of CHT. The knowledge gained from this research can be used by all healthcare professionals to develop appropriate programs to prevent delayed ANC.

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