



Antenatal and Postnatal Care Practices among Indigenous People in Bangladesh: A Case Study in Dinajpur

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Authors' contributions

This work was carried out in collaboration among all authors. Author MSA collected and analyzed data, wrote the draft of the manuscript. Author UKM designed this research and interview schedule. He also helped in statistical analysis of data and guided the scientific writing. Author MSK edited the manuscript and managed literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Antenatal (ANC) and postnatal care (PNC) contact have long been considered a critical component of the continuum of care for a pregnant mother along with the newborn child. The study aims to determine the influential factors related to the practice of antenatal and postnatal care amongst indigenous mothers of newborns and identifier associated with the ANC and PNC contacts for women in indigenous communities. This study was purposefully selected six upazilas of Dinajpur district where most of the indigenous people live and respondents were 223 married women having at least one under-five children. Results found that the respondents had very poor knowledge about their maternal status and literacy. During the pregnancy period, 39.5% and 6.7% mothers had one and two-time miscarriage respectively. Only 43.9% indigenous pregnant mothers appointed to the health center during pregnancy, 27.8% appointed within three months, 13% went at the last stages of pregnancy and 10.3% felt no need to go there. In 69.1% cases delivery occurred at home by inexperienced birth attendance. About 10.3% of deliveries, the placenta was

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removed manually during delivery. About 33% mothers and their husbands (34%) were found illiterate. The likelihood of mothers who received either antenatal care or postnatal care depended on husband's education level. It was significantly lower for illiterate (OR=0.247, 95% CI = 0.063-0.969) husband's compared to a secondary and above level of educated husbands. Distant health service center (More than 2 km from home) was the lower chances (OR=0.384, 95% CI = 0.152-0.970) for mothers being access to health care service centers compared to low distant centers (\leq 2 km from home). Also, the age of the mother (30+) was another factor that influenced the mothers for taking the service from hospitals or health centers during pregnancy. This study concludes that about one-third of the respondents of the community has access to health care services, which can be one of the most important factors in their poor health. Counseling and proper education can influence people to take antenatal care and visits to the health center to take postnatal care service further.

Keywords: Indigenous people; ANC; PNC; logistic regression model; Bangladesh.

1. INTRODUCTION

Indigenous people are found all over the world. The United Nations (UN) roughly calculated that approximately 300 million indigenous people live in more than 70 countries. Most indigenous groups share the demographic profile of developing countries where youth, defined as those aged 10 to 24 years, comprise the largest segment of the population [1]. The different studies reveal that the indigenous population has low experience about health-related problems and inequalities than conventional population [2-7]. Indigenous minority's people were harmfully affected by reproductive health problems where maternal mortality and infant mortality rates are expressively higher. For instance, only a small percentage (4%) of all maternal deaths occurred in Latin America and the Caribbean, but these deaths suspiciously occurred among indigenous peoples [8] and 70% higher hospitalization rates for pregnancy-related complications than white women [9] in the USA. The study [10] demonstrated neonatal that death rates among indigenous peoples were uppermost than non-indigenous peoples in Canada, New Zealand, Australia, Brazil, India, Uganda and Peru, and these differences were significantly greater in the latter four less developed countries.

Antenatal care (ANC) and postnatal care (PNC) are essential key factors in maternal health and, especially, sound childbirth. ANC care is an important indicator of ensuring delivery and offers health knowledge and services that can strengthen the health of women and infants [11, 12]. Furthermore, the ANC has a favorable influence on the application of postnatal health care services while PNC significantly reduce maternal mortality, since most maternal deaths take place in the first week subsequent to

delivery [13-15]. In presence, ANC and PNC attend increased significantly in Bangladesh from 1999 because of taking appropriate engagement of government of Bangladesh and United Nations Population fund (UNFPA) and UNICEF commerce support [13,16-17]. In spite of amelioration, pregnancy-related intricacies remain the steering cause of death and disablement among women of childbearing age [17,18], inordinately among various indigenous, non-indigenous and cultural groups. A study of inter-ethnic bunch in the Chittagong Hill Tracts exposed that admittance to health care facilities, prevalence of contraception and ANC trips were lower among indigenous groups, compared with non-indigenous people [6].

The United Nations (UN) Sustainable Development Goals (SDGs) outline for a global markdown of maternal mortality to 70 or less per 100,000 live births and securing global enhance for generative health care services by 2030 [19]. Based on a methodical analysis by the UN Maternal Mortality Estimation Inter-Agency Groups, in 2015, approximately 830 women die every day worldwide owing to complications throughout pregnancy or childbirth; around 99% of these deaths occur in developing countries [20-22]. Globally, it is noted a constant progress of the ANC application throughout the past decades, and now a significant portion of women (86%) is attending at least one ANC contact and from conception to birth, 62% receiving at least four ANC contacts [23]. However, over the last two decades, the ANC utilization has increased remarkably but the quality of such ANC services has remained poor to some extent that demand rigorous scrutiny as these poor quality services to compromise the potential benefits of getting such cars [24]. Thus, the World Health Organization (WHO) [25] has recently

suggested eight ANC contacts rather than earlier four contacts to assure positive pregnancy for foreseen mothers.

Bangladesh is a developing country, and the health condition of the country is now more desirable compared to the past decades. This country has accomplished a notable advancement in attaining the Millennium Development Goals, contributing to the reduction of maternal deaths, and at the moment working to just agreed SDGs to be fulfilled by 2030 [26]. However, the full potential of maternal health services has never been met [23,27] in the whole country in parallel with indigenous people. The recent Bangladesh maternal mortality study suggests that breakthrough in reducing maternal mortality has held up, and only 37% of pregnant women attend as a minimum four ANC contact [28]. Although the government of Bangladesh together with non-governmental and international organizations are working together to increase the number of ANC contacts, the accomplishment is not impressive [29].

Although indigenous people generally have a poorer health situation than the overall population, very few studies also show that the health of indigenous community was better than non-indigenous [2-3,30]. The indigenous people of Chittagong Hill Tracts (CHT), particularly in the Bandarban area, were marginalized in terms of 'ultra-poor' households, literacy, livelihood, childhood immunization, contraception, pregnancy, and professional delivery care, and admittance to fixed institutionalized government health facilities as equated to plain land areas [30,31]. Rakibul Islam [32-33] showed a survey in Bangladesh, the maternal mortality ratio (MMR) has decayed from approximately 574 per 100,000 live births in 1990 to between 320 to 400 in 2004, regardless of this development, around 16,000 women died in the year 2000 from maternal health-related difficulties. The most striking information was that 80% of such deaths occur at home, where delivery was attempted under unhygienic conditions and assisted by trained or untrained traditional birth attendants (TBAs), close relatives or neighbors. Although maternal deaths occurred at any time during pregnancy, most deaths occur in the last trimester and the first week following the end of pregnancy [31-33]. It also found [32] that the antenatal care reportage 86.1% higher than the national average 60.3% due to their high literacy rate and they're easily accessed to provide and public health care services in the Garu

indigenous community. A systematic research has been conducted on maternal morbidity and mortality among the indigenous people in Bangladesh that found indigenous people have a poorer health condition and also found that 66.4% people didn't attend the school, and only 28.7% had the highest level of schooling [33, 34]. Ahmed el al. showed [2-3,35] that inter-ethnic communities about 85% of Bengali people had any type of institutionalized health care facilities within 5 km distance, while the corresponding value of the indigenous people was only about 25%. Rakibul et al. [32] showed maternal morbidity still postures serious danger to rural indigenous women in Bangladesh due to the lack of skilled health personnel, particularly a lower percentage of deliveries [36] were assisted by trained birth attendance and severe lack of adequate facilities for pregnancy-related complications as well as ante-partum, and postpartum sepsis. In indigenous society, If someone didn't recover from an illness within a normal period, they assumed that sacrifice was necessary [20,21] since it was associated with illness in the society. Brauns and Loffler [37] demonstrated that vitamin A capsule intake was very low among the children, 24% as compared to Bengali's 86%, as well as the percentage of immunization intake, was very low in Mrus, only 10.7% relative to other ethnic communities (Bangali 53.8%, Marma 34.9%, Tripura 19.5%, and Chakma 17.4%) in Bangladesh [38].

Thus, the study has been designed to comprehend the maternal health status of the indigenous people and to examine the factors associated with ANC and PNC visits among the indigenous community in Dinajpur, Bangladesh and also identify determinants, so that policy-makers can take strategies to improve this aspect of community health.

2. MATERIALS AND METHODS

2.1 Study Area

The primary data for this study were used. The study was conducted at Dinajpur district, the north-west part of Bangladesh. It is located about 414 km north from the capital, Dhaka and in between 25°10' and 26°04' northern latitudes and in between 88°23' and 89°18' east longitudes. It conducted based on six different upazilas in Dinajpur which were Birgang, Nowabganj, Fulbari, Biral, Chirirbandar, where most indigenous people of Bangladesh live. These areas were selected purposefully because of

availability of indigenous people; approximately one third of indigenous people of Bangladesh are living there.

2.2 Study Design

The aim of the study is to explore the status among indigenous women on antenatal and postnatal care practices. This was a cross-sectional descriptive study that involved 223 mothers who were currently married indigenous women having at least one child aged under-five years and study conducted it over two months from March to April 2017.

2.3 Sample Size Determination

A total of 223 mothers who were currently married women having at least one child aged up to five years or less during the period of study, using the formula:

$$n = \frac{Z_{\alpha/2}^2 p(1-p)}{d^2} \quad (1)$$

Where,

n = desired sample size, considered, $Z_{\alpha/2} = Z_{0.10/2} = Z_{0.05} = 1.645$ (for 90% CI) standard normal value corresponding to the 90% confidence level (CI) ; $P(= 0.62)$ = the prevalence rate of mothers with maternal knowledge (ANC & PNC) which was found from BDHS (2014). Considering non-response 30%, the estimated sample size was: $n = 177 \times 0.30 = 230.1 \approx 230$ with accepted margin of error $d = 0.06$ in the study. Substituting these in the above formula in equation (1) gives 177. Finally, 223 respondents had due to some non-response indigenous families in the study.

2.4 Data Collection

Since, there was no systematic, research-based information on maternal morbidity and mortality in the community, a direct household survey was employed using a structured interview questionnaire. A pre-tested semi-structured questionnaire was used to collect a sample of five respondents by authors and trained research assistants, after appropriate explanation of the purpose of the study was made, and verbal consent obtained from the respondents. The few respondents who had no formal education were assisted by the trained assistants in the use of

local dialect. As a non-indigenous Bengali as well as English speaking researchers from mainstream society as well as the issue of this study was gender sensitive, the author found a few women as field enumerators who had experienced doing such types of collecting data involved in different NGO and about 10 years of schooling. The interview schedule covered the following issues such as socio-demographic, cultural and religious variables; access to health care services, complications and health care seeking behavior during pregnancy, during and after delivery, knowledge and use of fertility protection (FP).

2.5 Variables

2.5.1 Dependent variables

In this study, the authors used as response variable who have knowledge about antenatal (ANC) and postnatal (PNC) care. This response variable was considered as two categories 'yes', (when she contacts the service center) or 'no' (when she don't go to the service center) and defined as:

$$Y = \begin{cases} 1; & \text{Yes} \\ 0; & \text{No} \end{cases} \quad (2)$$

2.5.2 Independent variables

The authors considered explanatory variables as age, places of residence, indigenous types, school attendance, occupation and educational status of respondents, educational status and occupation of respondent's husband, family size, monthly family income and expenditure, monthly family expenditure on food sources of drinking water, types of toilet, maternal health care services in the local area, distance of the health service center from home, ever appointment to the service center, types of vehicles for going to take service, and accompany to go to there:

2.6 Data Analysis Tools

Data from the study were analyzed with SPSS version 20.0 (SPSS Inc., Chicago, IL). The percentage of independent and dependent variables were determined. Level of statistical significance was set at $P < 0.10$. Tables were used to display data distribution as appropriate.

2.7 Statistical Methods

Descriptive statistics, chi-square test, and Binary logistic regression model were used to analyze

the data. A chi-squared test was performed for measuring association among antenatal care (ANC) and postnatal care (PNC) with different types of selected independent variables. A binary logistic regression model was applied to analyze to determinant the significant explanatory variables with various response variables among indigenous women. The general logistic regression model [39] is defined by:

$$\Pr(Y_i = 1) = \frac{\exp(X_i\beta)}{1 + \exp(X_i\beta)} \quad (3)$$

Where: Y_i is a binary variable that takes a value of '1' if the respondent's answered 'Yes' and '0' otherwise; X_i is a vector of independent variables and β is a vector of unknown parameters. The estimated form of regression is as:

$$\ln \left[\frac{p_i}{1-p_i} \right] = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k \quad (4)$$

The odds ratio (OR) in favor of $Y_i = 1$ together with its 90% confidence interval (CI) were computed for X_1, X_2, \dots, X_k to indicate how many times the group of interest is likely to be visited health treatment facilities area compared to the reference group.

3. RESULTS

3.1 Frequency Distribution and Their Percentage Distribution

Table 1 showed that response and explanatory variables' frequencies and their corresponding percentages. There were 54.7%, 24.2%, 14.3% and 6.7% were Santal, Oraon, Mahali and Pagan respectively of indigenous people in Dinajpur. The majority, almost 33.6% respondents belonged 25 to 29 years, 19.7% were less than 20 years, 17.9% were in 20 to 24 years, and rests on them were above 30 years. The literacy rate among indigenous mother was very poor; about 33.6% didn't attend the school, whereas most of attended school 66.4% completed primary and only 28.7% completed higher education. Almost 93.3% women did the work in the forms and houses and only 6.7% women were service holder. The occupant and educational status of the respondent's husband was almost similar. The family size of the respondents indicated not so large family. Their family members were 3 to 4 almost 59.6% and 31.8% were medium family size. Regarding the monthly family income of the respondents, it

revealed that almost 46.6% was belonged to the group BDT 4001 to 6000, and the monthly family expenditure was 49.3% belonged to the grouped BDT4000 to 5999 and monthly family expenditure on food of the respondents was 51.6% belonged to the grouped up-to 3500 BDT.

The respondents' main sources of drinking water were deep tube-well, approximately 98.2%, and followed by well as very small portion 1.8% of the respondents. Toilet facilities were extremely unhygienic, where 27.8% had no facilities and 19.7% used the open latrine followed by 6.3% hanging, pit or other latrine, and 46.2% used water sealed latrine. The 30.5% reported that service was provided in the locality by upazila health complex (UHC), while 59.2% were facilitated by family welfare center (FWC), only 8.5% facilitated from satellite clinic (SC) and very few just 1.8% facilitated from others. More than 55.2% women lived 2 km distance from the health service centers, among them 11.2% stayed more than 6 km distance. This research found that 86.1% of women ever appointed to the service center, while 13.9% of them were not. More than 55% reported that the causes of not appointment it was not needed and 22.6% of the respondent's family did not allow go there. This research demonstrates that respondents who ever appointed to the service center on foot approximately 47.1% as compared to those other vehicles such as bus, boat, rickshaw e.g. about 52.9%. More than 55.2% women lived 2 km distance from the health service centers, among them 11.2% stayed more than 6 km distance. This research found that 86.1% of women ever appointed to the service center, while 13.9% of them were not. More than 55% reported that the causes of not appointment it was not needed and 22.6% of the respondent's family did not allow go there. This research demonstrates that respondents who ever appointed to the service center on foot approximately 47.1% as compared to those other vehicles such as bus, boat, rickshaw e.g. about 52.9%. More than 56.5% ever appointed to the service center alone, while the corresponding 19.7% and 16.1% were with husband and others respectively.

3.2 Antenatal and Postnatal Care

Table 2 showed that most of the indigenous women about 37.2% took pregnancy two times and very few mothers, not more than 5% took pregnancies just five or more times. About 18.8%

women took only one time pregnant and 23.8% and 15.2% women took pregnant three and four times respectively. Approximately 53.8% of women didn't have any number of miscarriages, while one and two-times miscarriages during the pregnancy period were 39.5% and 6.7%

correspondingly. The respondents who had no experience of abortion were 57.4% were more than 42% mothers faced with abortions in their life. The respondents who had experienced stillbirths forced abortion about 10.8% and absence from abortion almost 89.2%.

Table 1. Frequency distribution of socioeconomic and demographic characteristics

Characteristics	Frequency (N)	Percentages (%)
Places of residence		
Dinajpur sadar	29	13.0
Birgang	40	17.9
Nowabgang	74	33.2
Fulbari	30	13.5
Biral	25	11.2
Chirirbandar	25	11.2
Indigenous types		
Santal	122	54.7
Oraon	54	24.2
Mahali	32	14.3
Pahan	15	6.7
Age (Years)		
< 20	44	19.7
20-24	40	17.9
25-29	75	33.6
30-34	34	15.2
35 <	30	13.5
School attendance of respondents		
Yes	148	66.4
No	75	33.6
Educational status of respondents		
Illiterate	74	33.2
Primary	85	38.1
Secondary & above	64	28.7
Occupation		
Farmer	76	34.1
Housewife	132	59.2
Service and others	15	6.7
School attendance of husband		
Yes	146	65.5
No	77	34.5
Educational status of husband		
Illiterate	75	33.6
Primary	64	28.7
Secondary & above	84	37.7
Occupation of husband		
Farmer	159	71.3
Labor/Driver	37	16.6
Service	17	7.6
Business/Others	10	4.5
Family size		
Small (3-4)	133	59.6
Medium (5-6)	71	31.8
Large (7+)	19	8.5
Monthly family income (BDT)		
2000-4000	94	42.2

Characteristics	Frequency (N)	Percentages (%)
4001-6000	104	46.6
6001 & above	25	11.2
Monthly family expenditure (BDT)		
< 4000	72	32.3
4000-5999	110	49.3
6000 & above	41	18.4
Monthly family expenditure on food (BDT)		
≤ 3500	115	51.6
3501- 4999	64	28.7
5000≤	44	19.7
Drinking water source		
Deep tube well	219	98.2
Well	4	1.8
Types of toilet facility		
No facility	62	27.8
Open latrine	44	19.7
Water sealed	103	46.2
Hanging, pit or other latrine	14	6.3
Maternal health care services in your local area		
Upazila health complex	68	30.5
Family welfare center	132	59.2
Satellite clinic (SC)	19	8.5
Others	4	1.8
Distance of the health service center from home (km)		
≤ 2	123	55.2
2-5	75	33.6
6+	25	11.2
Ever appointment to the service center		
Yes	192	86.1
No	31	13.9
Causes of not appointment to the service center		
Not needed	17	54.8
Expensive	5	16.1
Family did not allow	7	22.6
Better care at home	2	6.5
Type of vehicles for going service center from home		
On foot	105	47.1
Others	118	52.9
Accompany to go to the service center		
Alone	126	56.5
Husband	44	19.7
Others	36	16.1

This research found that the pregnant mothers appointed in a health center during pregnancy period almost 43.9%, 43.9% were with family welfare centers (FWC), 33.2% were with upazila health complex (UHC) and 13.0% others health centers. Less than half, about 48.9% women first appointed to the health service center between four to six months of pregnancy period. Among pregnant women in the indigenous community in Dinajpur 27.8% and 13.0% first appointed to the health service centers within three months pregnancy period and at the last stages of pregnancy periods respectively as well as

10.3% off them felt no need to go there. Among the not appointed pregnant women to the health service centers (HSC), among them almost 90% reported that the service center was too far and the study also found that the causes of not appointed during pregnancy were transportation problem, family did not allow, and expensive. The very important issue was that the suffering from any complications during last pregnancy that almost 55% women faced problems and 45% were not faced problem during last pregnancy. The very interesting matters were not so harmful to these indigenous people in

Bangladesh such types of matter were morning sickness or dizziness, cough, headache or high blood pressure, hemorrhage, abdominal pain, and excessive vomiting. There were lots of problems among the indigenous people but some of crucial matters were not so harmful.

Table 3 represented the maternal health services provided by different service centers as mentioned by the respondents. It was found that only 37.2% pregnant mothers took nursing where most of them 62.8% were not interested to go the clinic. But most of pregnant women took vaccine from different health centers likewise 83% mothers mentioned folic acid or iron tablet was taken from these centers as well as about 46.6% pregnant mothers took weight and height from there in the indigenous community in Dinajpur. There was very little knowledge to take service like treatment of general diseases, advice on breastfeeding, nursing of lactating and babies, vaccination of children, preparation of ORS, health education, nutritional education and others, very few portions of the mothers went to service centers for taking advices.

Table 4 showed that 100% of respondents who lived in Dinajpur *Sadar* received antenatal and postnatal care during pregnancy, while the corresponding 87.5%, 91.9%, 80.0%, 96.0%, and 76.0% in Birgonj, Nowabgang, Fulbari, Biral, and Chirirbandar respectively were not received. The study revealed that antenatal and postnatal care were significantly associated with locations, school attendance of respondents and accompany to go to service centers. The study also found that the antenatal care was associated with the way of transportation, whereas types of indigenous, occupation of respondents both were significant with postnatal care.

Table 5 represented that the respondents whose age above 30 years was 0.338 times lower chance being taken antenatal care visited than age less than 25 years (reference category). It indicated that who was lower age, they were more concern about their health along with their pregnancy. They had experienced about pregnancy; didn't want to go for antenatal care. The husband's education levels were very important for taking service for mothers to go to the service centers; findings illustrated that 0.247 times lower chances being access to the mother's at health care services for illiterate husband's compared to husband's had secondary and above level education.

That's means the educated people had more knowledge about antenatal care and complications of pregnancy period. So, they didn't want to take any risk. The distances of the health service center for more than 2 km. were 0.384 times lower chances being access to health care services than the distance of the health service center up to 2 km. Most of them reported that they didn't have enough facility of transport systems to visit access to health care services. The roads were muddy and also some of them reported the health service centers were too far to take pregnant women there.

3.3 Delivery Care

Table 6 showed the distribution of live births in the five years from the survey date by different characteristics. It demonstrated about 36.3% last child's age less than 24 months, 37.7% child's age had 24 to 47 months and 26% had 48 to 59 months. Authors found that only 30.9% babies were delivered within health facilities like hospital or clinic among surveyed women, while almost all others almost 69.1% delivery occurred at home that delivered at the respondent's house. The study reported that 20.6% birth children were underweight and most of the children approximately 79.4% were normal weight. The study reported that most of the deliveries almost 44.8% were assisted by traditional midwives such as day or unskilled persons, while 20.2% of deliveries were assisted by relatives or neighbors and just only 9.9% was assisted by trained attendants, for instance, nurses and trained persons. Almost major babies were born under delivered normally almost 87.4%, while 12.6% births delivered by caesarean. This study also found more than 66.4% of the blades were used as instrument to cut the umbilical cord, while only 28.7% of deliveries, scissors were used to cut it. The respondents about 87% were did not problem faced to remove the placenta, while about 13% were faced problem. About 89.7% of deliveries, the placenta was removed spontaneously, while only 10.3% of placentas were removed manually during delivery.

The Fig. 1 showed that most of the respondents were not interested to take service from the service centers because of distance, transportation problems, both times before and after pregnancy. Some of the respondents were not interested to there because of expensive, family permission and some of them were confused with having services.

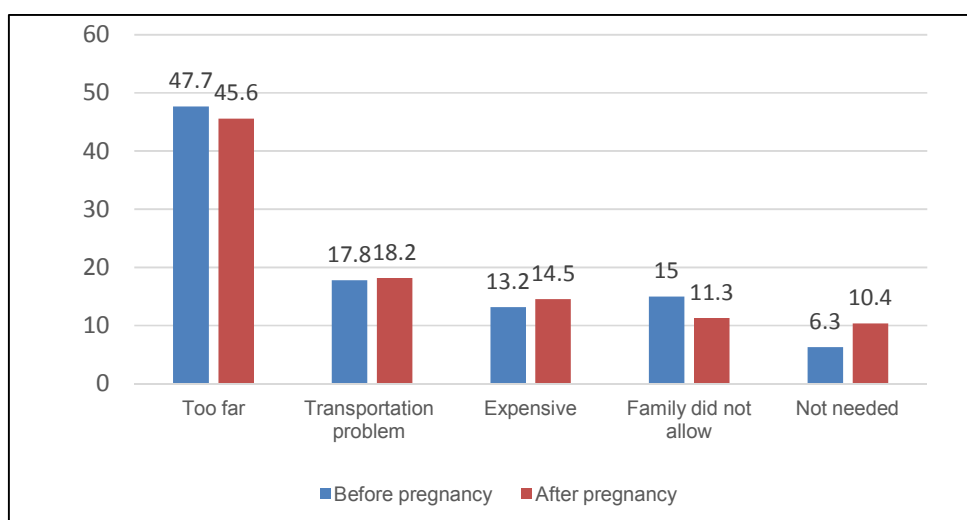
Table 2. Percentage distributions related to pregnancy status by the respondents

Variables	Categories	Frequencies (N)	Percentages (%)
Number of pregnancies	One	42	18.8
	Two	83	37.2
	Three	53	23.8
	Four	34	15.2
	Five & above	11	4.9
Number of miscarriages	No miscarriage	120	53.8
	One miscarriage	88	39.5
	Two miscarriages	15	6.7
Experience of abortions	Yes	95	42.6
	No	128	57.4
Experience of still-births	Yes	24	10.8
	No	199	89.2
Appointment in a health center during last pregnancy	Yes	199	89.2
	No	24	10.8
Types of appointing health center during pregnancy	Upazila health complex (UHC)	74	33.2
	Family welfare center(FWC)	98	43.9
	Satellite clinic (SC)	23	10.3
	Others	6	2.7
	Not applicable	22	9.9
First appointment to the health service center	Within 3 months of pregnancy	62	27.8
	From 4-6 months of pregnancy	109	48.9
	From 7-9 months of pregnancy	29	13.0
	Not needed	23	10.3
Causes of not appointed to the health service	Too far	201	90.1
	Expensive	1	0.44
	Transportation problem	1	0.44
	Family did not allow	6	2.7
	Not needed	14	6.3
Suffer from any complication during last pregnancy	Yes	124	55.6

Variables	Categories	Frequencies (N)	Percentages (%)
Morning sickness/dizziness faced during the last pregnancy	No	99	44.4
	Yes	48	21.5
Cough/Fever faced during the last pregnancy	No	175	78.5
	Yes	10	4.5
Headache/blurry vision/H. Blood pressure faced during the last pregnancy	No	213	95.5
	Yes	38	17.0
Hemorrhage faced during the last pregnancy	No	185	83.0
	Yes	17	7.6
Abdominal pain faced during the last pregnancy	No	206	92.4
	Yes	50	22.4
Excessive vomiting faced during the last pregnancy	No	173	77.6
	Yes	27	12.1
	No	196	87.9
	Yes		

Table 3. Percentage distribution of maternal health services in the selected area

Pregnant mothers were taken	Percentages of respondents	
	Yes %	No %
Nursing from health service centers	37.2	62.8
Vaccine from service centers	59.6	40.4
Weight and height from service centers	46.6	53.4
Folic acid/iron tablet supply	83.0	17.0
Treatment of general diseases	6.3	93.7
Advice for breast feeding for mothers	4.0	96.0
Nursing of lactating mothers	1.8	98.2
Nursing of babies from service centers	3.6	96.4
Vaccination of children from service centers	12.6	87.4
Preparation of ORS from service centers	9.9	90.1
Health education from service centers	7.6	92.4
Nutrition education from health services	13.9	86.1
Others services from service centers	10.3	89.7

**Fig. 1. Percentage distribution of causes not to visit to the service centers during pregnancy and after delivery by the respondents**

4. DISCUSSION

Antenatal, delivery and postnatal care are very essential for reducing the harm for both mother and newborn child. Home deliveries are common in general as well as rural people in Bangladesh, especially indigenous people in Dinajpur. Developing countries like Bangladesh indigenous women have not received the proper antenatal care, as well as a postnatal check-up. The study results documented that 37.2% mothers received nursing and also 59.6% received vaccine from health service centers during pregnant or ANC period. The general people in Bangladesh received just 18% mothers PNC within 42 days of delivery while 62.5% of the mothers received ANC from different service centers in the country [40] and its result indicated

that the users of ANC services from healthcare facilities as well as the use of the PNC were very poor in rural Bangladesh. It needs to be mentioned that high maternal and neonatal mortality still remains a big challenge in developing countries, including Bangladesh [41], that's why the research emphasized the necessity of increasing PNC services among indigenous mothers in the south-west corner of Bangladesh. The output of the research again showed that maternal school attendance is strongly associated with the ANC and PNC ($p < 0.05$), which is comparable to a similar study conducted in Nepal and Bangladesh [41,42], where the education status of mothers was significantly associated with ANC visits and place of delivery.

Table 4. Association between antenatal and postnatal care visited with different demographic and socio-economic characteristics

Variables	Categories	Appointment in a health center during last pregnancy		P-value for	
		Yes (%)	No (%)	antenatal care	postnatal care
Location of respondents	Dinajpursadar	100.0	0.0	0.028	0.024
	Birgang	87.5	12.5		
	Nowabgang	91.9	8.1		
	Fulbari	80.0	20.0		
	Biral	96.0	4.0		
	Chirirbandar	76.0	24.0		
Indigenous type	Santal	88.5	11.5	0.825	0.044
	Oraon	92.6	7.4		
	Mahali	87.5	12.5		
	Pahan	86.7	13.3		
Age of respondent (in years)	Less than 20	95.5	4.5	0.152	0.064
	20-24	92.5	7.5		
	25-29	90.7	9.3		
	30-34	82.4	17.6		
	35 and above	80.0	20.0		
School attendance of respondent	Yes	94.6	4.5	0.000	0.007
	No	78.7	21.3		
Occupation of respondents	Farmer	88.1	11.9	0.660	0.045
	Labor/Driver	89.2	10.8		
	Service	100.0	0.0		
	Business/Others	90.0	10.0		
First birth order	1 st birth	100.0	.0	0.860	0.393
	2 nd birth	85.0	15.0		
	3 rd birth	91.1	8.9		
	4 th birth	84.2	15.8		
	5 th & above birth	85.7	14.3		
Maternal health care services in your local area	Upazila health complex(UHC)	91.2	8.8	0.762	0.416
	Family welfare center(FWC)	88.6	11.4		

Variables	Categories	Appointment in a health center during last pregnancy		P-value for	
		Yes (%)	No (%)	antenatal care	postnatal care
	Satellite clinic(SC)	89.5	10.5	0.157	0.153
	Others	75.0	25.0		
Distance of the health service center from home (km)	up-to 2	92.7	7.3	0.157	0.153
	2 – 5	84.0	16.0		
	6 +	88.0	12.0		
Means of transportation	On foot	95.2	4.8	**0.006	0.319
	Others	83.9	16.1		
Accompany to go to the service center	Alone	95.2	4.8	**0.000	**0.000
	Husband	100.0	0.0		
	Others	86.1	13.9		
	Not applicable	23.5	76.5		
Mass media exposure	Access to any media	88.5	11.5	0.833	0.448
	No access to any media	89.5	10.5		

* $p < 0.05$; ** $p < 0.01$ **Table 5. Binary logistic regression analysis for antenatal care visited with significant socio-economic variables**

Characteristics	Categories	β	S.E.	p-value	Odds ratio (OR)	95% CI for OR	
						Lower	Upper
Age of respondent (years)	< 25 (RC)	-	-	-	1.00	-	-
	25-29	-0.365	0.633	0.564	0.694	0.201	2.401
	30 to above	-1.085	0.618	0.049	0.338	0.101	1.133
Husbands education levels	Illiterate	-1.399	0.697	0.045	0.247*	0.063	0.969
	Primary	-0.050	0.776	0.949	0.951	0.208	4.353
	Secondary & above (RC)	-	-	-	1.00	-	-
Distance of the health service center	≤ 2 km.(RC)	-	-	-	1.00	-	-
	>2 km.	-0.956	0.472	0.043	0.384*	0.152	0.970
Constant	-	3.821	0.753	0.000	45.668**	-	-

RC = Reference category; * $p < 0.05$; ** $p < 0.01$

Table 6. Percentage distributions related to delivery care of the respondents

Characteristics	Categories	Frequency (N)	Percentage (%)
Age of last child (months)	< 24	81	36.3
	24 – 47	84	37.7
	48 – 59	58	26.0
Place of last childbirth	Own/Father's house	154	69.1
	Hospital/Clinic	69	30.9
Weight of last child at the time in born (kg.)	Underweight	33	20.6
	Normal	127	79.4
Assist to last child born	Dai/Unskilled birth attendant	100	44.8
	Relatives/Neighbors	45	20.2
	Trained birth attendant/Nurse/Village doctor	22	9.9
	Passed (MBBS) doctor	56	25.1
Type of last child delivery	Normal	195	87.4
	Caesarean section	28	12.6
Type of instrument to cut the umbilical cord	Blade	148	66.4
	Scissors	64	28.7
	Bamboo/Others	11	4.9
Problem faced to remove placenta	Yes	28	12.6
	No	195	87.4
Type of remove placenta	Manually	23	10.3
	Spontaneously	200	89.7

The study results also revealed that 90.1% of respondents were not appointed to the health service center because of the distance of the centers as well as expensive. Also the transportation was a major constraint that prevented women from accessing the health facilities. The highest proportion of home births were consistent with the findings of previous studies conducted in Nepal, e.g. the rate of home delivery was 90% in Makawanpur district, 81% in the Uganda community in Nepal as well as 80% births occurred in Bangladeshi general people 81% [40-44]. Similarly, in rural Tanzania, 84% of women who gave birth at home proposed to deliver at a health facility, but did not due to distance and lack of transportation [45]. The accessibility and location of health care facilities and the type of transport play a major role in the utilization of services.

The study results showed that accompany to go to the service center to the health care facility ($p < 0.001$) was associated with the ANC and/or PNC from a health care facility center. The scarcity of vehicles, especially in remote areas and dilapidated road conditions can make it extremely difficult for women to reach even relatively nearby facilities [46]. The movement of mother and baby is culturally restricted for about 40 days after delivery [47] as well as postnatal complications can be detected and treated by health workers through proper follow-up visits of mothers. In the present study, 55.6% of the newborns were suffering from different health problems, and 4.9% developed an umbilical cord infection. In rural India, it was demonstrated that infection may account up to 40% of neonatal mortality [48] and 31% of the newborns had suffered different health problems in the general people in Bangladesh [40]. In this research, 66.4% blades were used for cutting the umbilical cords, 28.7% used scissors and 4.9% used a bamboo/other instruments. Our study reported that 19% of umbilical cords were cut by a trained TBA and 44.8% newborns, babies were occurred by unskilled birth attendants and only 9.9% delivery completed by trained birth attendants or doctors [40].

Lack of education was another important determining factor of their low interested to go to health care services. Regarding the education of respondents, about 34% didn't attend school and 66% that attended the school. About 29% respondents attended in high school, 38% had completed primary education and about 33% were found to be illiterate. In case of education of

husbands, about 35% did not attend school, of the 65% that attended the school. This information clearly showed that most of the respondents were illiterate and their educational qualifications were lower than their husbands, as well as the general people in Bangladesh. These same results were found in different researches in the previous [40-48].

5. CONCLUSIONS

In light of the study discussed, our study obtained important community-level information about delivery and newborn care practices among indigenous people in Dinajpur, Bangladesh. This study comes up with the conclusion that maternal health status and consciousness maternity of plain land indigenous people in north-west part of Bangladesh is poor as national level of the country compared to desired level. This study showed that about thirty-seven percent of women have access to health care services, which can be one of the most important factors in their poor health. In most cases, indigenous women (mothers') faced common problems during pregnancies and major complications along with membrane are also seen as their delivery period because most midwives who had not any formal training or education. Maternal mortality situations are also not in desired level due to the practice of preservation by traditional midwives. The mothers cannot afford expensive health care and medical facilities due to their poor financial condition and for own cultural heritage. On the other hand, the indigenous society is still passing through adverse situations regarding their socioeconomic condition and standard obstetric care facilities.

In order to improve indigenous women's access to antenatal and postnatal care services, it is necessary to improve the literacy of women, mitigate the cost of services, increase the number of facility-based care centers and improve transport systems. Women along with her husbands' education level should be increased. All medical care should be delivered to the door to door. Child marriage and early pregnancy must be stopped. Most women suffer from confusion about any pregnancy or childbirth talk and do not want to express different types of complications by going to the doctor. It's meant that they have considered lack of knowledge about reproductive health. In this regard, social and religious leader should take this matter with given the priority in the village

areas. Since health centers in different rural areas/villages/places are far away and doctors didn't stay always. So, community health centers/ health care in public and private enterprise will have to increase. Government, NGOs, United Nations Population Fund (UNFPA) and other development partners will have to implement various programs and projects likewise childcare for prenatal mothers, maternal health check developments for poor women, community-based Skilled Birth Attendants (SBA) recruitment and midwifery programs.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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