Original article

Factors associated with antenatal and health facility delivery care in selected areas of Subornocho upazila, Noakhali, Bangladesh

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ABSTRACT

Improving maternal health and reducing maternal mortality rate (MMR) are major challenges for Bangladesh. Utilization of antenatal care (ANC) services from skilled professionals and deliveries in health facilities are therefore important to tackle MMR and socioeconomic differences play a major part for these service utilization. The purpose of the current study was to identify the level and determinants of ANC and health facility delivery care utilization in Subornocho upazila (a rural sub-district), Noakhali, Bangladesh. The study was a community based cross sectional study. A total of 360 women (15–49 years) who had a child in the last five years preceding the survey were interviewed and studied. The results of overall analysis showed that only 34.6% women received ANC from health professionals, whereas mere 5.3% deliveries were taken place at health facilities. Mother's education, partner's occupation, family income and area of residence were significant predictors of these services utilization. Place of receiving ANC was an influencing factor of health facility delivery. Women who didn't receive ANC in health facilities were almost three times (OR: 2.95, 95% CI: 1.06–7.9) less likely to deliver in health facilities compared to the women who received ANC. The study underscores the urgent need of addressing socioeconomic differences and targeted interventions might help the women who need to utilize these services more often. The study also pointed out huge differences of these services utilization with national average. Though further investigation is necessary but emphasis should be given more to address the barriers of maternal health service.

1. Introduction

Maternal mortality is a global concern, has been for a long while and the World Health Organization (WHO) recognizes maternal health services as an effective means for reducing the risk of maternal morbidity and mortality, especially in places where the maternal and child services are poor. WHO estimates that more than half a million women lose their lives in the process of reproduction worldwide every year; of these deaths, about 99% are from developing countries.¹ The World Bank estimates that 74% of maternal deaths could be averted if all women had access to interventions that address complications of pregnancy and childbirth, especially emergency obstetric care.² Similarly, studies that focused on maternal morbidity and mortality in developing countries have repeatedly recommended the need for antenatal care and availability of trained personnel to attend women during labor and delivery.³

Antenatal care is one of the key strategies for reducing maternal morbidity and mortality directly through detection and treatment of pregnancy related illness, or indirectly through detection of women at risk of complications of delivery and ensuring that they deliver in a suitably equipped facility.⁴ The effectiveness of ANC mostly depends on the continuation of the receiving care from first trimester to throughout pregnancy according to the standards of periodicity.^{5,6} WHO recommends at least 4 ANC visits to health professionals during pregnancy period as it increases the likelihood of receiving effective maternal health interventions.⁶

After ANC, delivery care is one of the most important indicators to reduce the maternal mortality and morbidity and as well as for the infant. One critical strategy for reducing maternal morbidity and mortality is ensuring that every baby is delivered with the assistance of a skilled birth attendant which generally includes a medical doctor, nurse or midwife. Experts agree that the risk of stillbirth or death due to

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intrapartum related complication can be reduced by about 20% with the presence of a skilled birth attendant.^{6,7} According to 2014 Bangladesh Demographic and Health Survey (BDHS) report which entailed that ANC from a medically trained provider is important to monitor the status of a pregnancy, identify the complications associated with the pregnancy, and prevent adverse pregnancy outcomes. Furthermore, proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that can cause death or serious illness for the mother or the newborn. Hence, it is important to increase the proportion of births delivered in a safe, clean environment and under the supervision of health professionals.⁸

Between 1990 and 2015, the global maternal mortality ratio (MMR) decreased to a great extent, however, despite this progress; the world still fell far short of the Millennium Development Goals target of a 75% reduction in the global MMR by 2015. In addition, geographic and socioeconomic differences and inequalities still persists and solution to these still difficult to find.⁹ Bangladesh is experiencing one of the highest MMR in the world, 196 per 100,000 according to Bangladesh Maternal Mortality and Health Care Survey 2016,¹⁰ amidst all the development activities. Around 64% women received ANC from skilled professionals at least once and thirty seven percent deliveries were happened in health facilities.⁸ However, these statistics vary according to area to area and the rural coastal impoverished regions are more affected¹¹ as healthcare access is scarce for people living in remote areas as well as various other socio-economic factors aggravate the low utilization according to key facts reports of WHO published in 2018.¹² Subornochar upazila (a sub-district) in Noakhali district is one of the regions where healthcare facilities are very poor (only one hospital for the whole sub-district) and the literacy rate is one of the lowest in the country (only 32.4%). This area is also frequently affected by various natural calamities because of its coastal exposure.¹³

Therefore, the present community based cross sectional study was aimed to identify the associated factors responsible for maternal health care utilization in Subornochar upazila (sub-district) which includes examining the current antenatal care practice and health facility delivery care utilization in the study area.

2. Method and materials

2.1. Study setting

The study was a community based explorative study and it was conducted in Subornochar upazila Noakhali District, located in Chattogram division, Bangladesh. This district has 9 upazilas, each considered as a cluster, Subornochar upazila was selected randomly among all the upazilas as a cluster and one of the remote and coastal areas of Noakhali district. This upazila has 8 unions and among the unions Chor Bata and Chor Jabbar were selected randomly. Among the areas, Chor Mohiuddin, Chor Mojid, Chor Jiauddin and Chor kocchopia were selected randomly as well. There were two communities in the study area: Local (who live there for a long time) and Barrack (Government army made destitute people housing). Barrack people are mostly destitute people who have lost their home due to river bank erosion or some other natural disasters and govt made them adjunct houses so that they can have a place to live.

The study covered both the local and barrack to compare the status of healthcare facilities utilization during pregnancy and child birth. The health service system of this upazila obviously is not so satisfactory. Only one hospital (50 beds) and twelve satellite clinics are situated there though the population is about 290, 000 and its total area is around 575 km square which shows the poor conditions of the health care availabilities.¹⁴ The study was conducted during April–May 2018.

2.2. Selection of area

The area specific data on maternal and child health nutrition is still

scarce of this area; therefore there were no available sampling frame to know the actual number of women who had under five children. The households and study participants were chosen conveniently who agreed to participate to this research.

2.3. Sample size

The study collected data conveniently from 360 household's according to their availability and response and from women who had at least one child under five years of age. Women and child were anthropometrically measured, antenatal, delivery and post natal care behavior and health care service utilization data were collected as well as their socio economic and demographic data.

The sample size calculation was determined by using the formula of Cochran, $n = Z^2PQ/d$.²¹⁵

So, $n = (1.96^2 \times 0.64 \times 0.36 / 0.05^2) = 355$. Here, Z = Standard normal variate (at 5% type I error it is 1.96).

p = Expected proportion in population based on previous studies or pilot studies (0.64) = 64% women made ANC visits to health providers according to BDHS 2014⁸

d = Desired level of precision (5%)

2.4. Data collection

Data were collected by using a pretested and structured questionnaire administered by interviewers through face to face interviews. The women were interviewed to know the pattern of antenatal and delivery care services in their last deliveries. The questionnaire consists of socio-demographic characteristics (age, religion, educational status and occupational status and obstetric history including women's place of delivery for their last child birth, women's past obstetrical history, women autonomy on own health) and others. Questionnaire was also consisting of child anthropometric and diet related questions.

Data were collected by 4th year Bachelor students (9th Batch of NSTU) of Food Technology & Nutrition Science Department after two weeks of rigorous training on data collection, field work and pilot study. 42 Students took part in all the extensive training sessions conducted by the authors and other experts.

2.5. Dependent and independent variables

Two dependent variables were categorized by the following ways: place of receiving ANC in health facilities (yes, no) and place of delivery (health facility, home). Categories of important explanatory variables are as follows: area of residence (local, barrack), religion (Islam, Hindu/Sanatan), Family size (4 or less, 5 or more), husband's occupation (day labourer, farmer/small business, professional/businessman, others), mother's occupation (not working, working), family income in taka (BDT) [$< 10,000$ BDT (\$120), 10,000–20,000 BDT (\$ 120–\$240), $> 20,000$ BDT ($> \$ 240$)], mother's age at last conception (< 18 years, 18–30 years, > 30 years), number of pregnancy (1st or 2nd time, 3rd or more), educational status of mothers (Illiterate/can sign, Primary (1–5 grade), Secondary or higher), Woman decision making abilities regarding her own health (Can take her own decision alone, has to take permission from husband/elderly, cant' take her own decision alone).

2.6. Data processing and analysis

Data is cleaned, edited, re-coded and analysed in SPSS Version 23.0 Software.

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 and delivery services.

Table 1
Background characteristics.

Background Characteristics	Number (%)	Background Characteristics	Number (%)
Name of the villages	269 (74.7)	Educational status of husband	114 (31.7)
Chor Mohiuddin	78 (21.7)	Illiterate/Can Sign	174 (48.3)
Chor Mojid	13 (3.6)	Primary (1–5 Grade)	71 (19.7)
Chor Jiauddin & Kocchopia		Secondary or higher	
Residence Type	207 (57.5)	Women's age at marriage	149 (41.4)
Local	153 (42.5)	< 15 years	168 (46.7)
Barrack		15–18 years	43 (11.9)
		> 18 years	
Religion	341 (94.7)	Occupation of the women	339 (94.2)
Islam	19 (5.3)	Not working (Housewives)	21 (5.8)
Hindu/Sanatan		Working	
Family Size	111 (30.8)	Occupation of the husband	185 (51.4)
4 or less 5 or more	249 (69.2)	Day Laborer	101 (28.1)
		Farmer/small business	19 (5.3)
		Professional/business	54 (15)
		Others	
Educational status of women	93 (25.8)	Family income	152 (42.2)
Illiterate/Can Sign	179 (49.7)	< 10,000 BDT (\$120)	164 (45.6)
Primary (1–5 Grade)	88 (24.4)	10,000–20,000 BDT (\$ 120- \$240)	44 (12.2)
Secondary or higher		> 20,000 BDT (> \$ 240)	

Bivariate logistic regression is employed to estimate the effect of unadjusted and crude effect of explanatory variables on outcome variable. Multivariate Logistic Regression (MLR) was also used to estimate the adjusted effect of the variables had on outcome.

2.7. Ethical consideration

The present study was approved by the ethical committee of Noakhali Science & Technology University and the observational study was conducted in accordance with the standards of ethics (in accordance with The Code of Ethics of the World Medical Association). Participants consent was taken as per rules and the study objectives, pros and cons of the study were discussed with the participants.

3. Results

3.1. Socio-demographic profile

The overall socio-demographic parameters of the sample population are given in (Table-1). Most of the study participants were from Char Mohiduddin and Char Mojid (74.7% & 21.7% respectively) and only 5.3% had religion other than Islam. Almost 70% families had 5 or more members in their families. The literacy rate of interviewed women were quite low as 25.8% were illiterate and only one in four woman completed secondary or higher education and the figures were more or less same for their partners as well. More than 88% women got married

before 18 years of age and almost 95% women were not involved in any income generating activities and more than half of their partners were day laborer. And as it can assume only 12.2% families had more than \$ 240 monthly income and the rest of the families earn less than that.

3.2. Background characteristics of women regarding utilization of health facilities

The Background characteristics of women regarding utilization of health facility are given in (Table-2). Women decision making abilities regarding her own health depend on her husband or elderly more than 82.2%. More than one-third women did not have opportunity to opine about selecting delivery place and only 34.7% women received antenatal care from health facilities. Only 5.3% women delivered in health facilities and most of the deliveries were attended by TBA, local Dai's or relatives.

3.3. Background characteristics and distribution of women regarding use of antenatal care and delivery care

Table-3 provides background characteristics and distribution of women according to antenatal care service utilization and delivery place. From the table and chi-square statistics it can be stated that type of residence, mother's education, partner's occupation and family income had significant effect on receiving antenatal care as well as delivery care in health facilities. Barrack people had lower percentages for

Table 2
Background characteristics of women regarding health facility and knowledge.

Background Characteristics	Number (%)	Background Characteristics	Number (%)
Woman decision making abilities regarding her own health	49 (13.6)	Delivery place	19 (5.3)
Can take her own decision,	296 (82.2)	Health facility	341 (94.7)
Has to take permission from husband/elderly	14 (3.9)	Home delivery	
Can't take her own decision			
Were your opinion taken before selecting delivery place	114 (31.7)	Delivery attendant	22 (6.1)
Yes	245 (68.1)	Health professional	279 (77.5)
No		TBA/Dai	59 (16.4)
		Neighbors/relatives/no one	
Received ANC^a in health facilities	125 (34.7)		
Yes	235 (65.3)		
No			

^a ANC (antenatal care) defined as the care provided by skilled health-care professionals to pregnant women and adolescent girls in order to ensure the best health conditions for both mother and baby during pregnancy.⁷

Table 3

Background characteristics of women regarding use of antenatal care and delivery care 2: Distribution of background variables according to antenatal care and deliver care.

Background characteristics	Received ANC Care Number (%)		p-value	Delivery care Number (%)		p-value
	Yes	No		Home delivery	Health facilities	
Type of residence	86 (41.5)	121 (58.5)	0.020*	195 (94.2)	12 (5.8)	0.643
Local	39 (25.5)	114 (74.5)		146 (95.4)	7 (4.6)	
Barrack						
Religion	116 (34)	225 (66)	0.324	324 (95)	17 (5)	0.265
Islam	9 (47.4)	10 (52.6)		17 (89.5)	2 (10.5)	
Hindu/Sanatan						
Family size	45 (40.5)	66 (59.5)	0.150	106 (95.5)	5 (4.5)	0.802
4 or less	80 (32.1)	169 (67.9)		235 (94.4)	14 (5.6)	
5 or more						
Husband's occupation	51 (27.6)	134 (72.4)	0.020*	117 (95.7)	8 (4.3)	0.012*
Day laborer	43 (42.6)	58 (57.4)		95 (94.1)	6 (5.9)	
Farmer/small business	10 (52.6)	9 (47.4)		15 (78.9)	4 (21.1)	
Professional/business	20 (37)	34 (63)		53 (98.1)	1 (1.9)	
Others						
Mother's occupation	116 (34.2)	223 (65.8)	0.121	332 (95)	17 (5)	0.305
Not working (Housewives)	9 (42.9)	12 (57.1)		19 (90.5)	2 (9.5)	
Working						
Family income	48 (31.6)	104 (68.4)	0.070	148 (97.4)	4 (2.6)	0.002*
< 10,000 BDT (\$120)	55 (33.5)	109 (66.5)		156 (95.1)	8 (4.9)	
10,000–20,000 BDT (\$ 120– \$240)	22 (50.0)	22 (50)		37 (84.1)	7 (15.9)	
> 20,000 BDT (> \$ 240)						
Mother's age at last conception	30 (39)	47 (61)	0.250	70 (90.9)	7 (9.1)	0.235
< 18 years	81 (35.5)	147 (64.5)		218 (95.6)	10 (4.4)	
18–30 years	14 (25.5)	41 (74.5)		53 (96.4)	2 (3.6)	
> 30 years						
Number of pregnancy	75 (40.3)	111 (59.7)	0.275	175 (94.1)	11 (5.9)	0.645
1st or 2nd time	50 (28.7)	124 (71.3)		166 (95.4)	8 (4.6)	
3rd or more						
Educational status of mothers	30 (32.2)	63 (67.7)	0.050*	89 (95.7)	4 (4.3)	0.050*
Illiterate/can sign	55 (30.7)	124 (69.3)		173 (96.6)	6 (3.4)	
Primary (1–5 grade)	40 (45.5)	48 (54.5)		79 (89.8)	9 (10.2)	
Secondary or higher						
Woman decision making abilities regarding her own health	12 (24.5)	37 (75.5)	0.140	48 (98)	1 (2)	0.535
Can take her own decision	109 (36.8)	187 (63.2)		279 (94.3)	17 (5.7)	
Has to take permission from husband/elderly	3 (21.4)	11 (78.6)		13 (92.9)	1 (7.1)	
Cant' take her own decision						
Place of receiving ANC				113 (90.4)	12 (9.6)	0.012*
Received ANC in health facilities				228 (97)	7 (3.0)	
Didn't receive ANC (in health facilities)						

*significant at < 0.05 level (P-value derived from chi-square test).

ANC and delivery care in contrast to local people. Women with secondary or higher education showed better tendency towards ANC and delivery care utilization and partners with business profession had also showed better percentage of ANC and delivery care service utilization. If family income was more than \$240 had then the tendency of receiving ANC and delivery care increases. Receiving antenatal care was also an important factor for having delivery in health facilities, result showed. Mother's age at conception, decision making abilities towards own healthcare, number of pregnancies, family size and mother's occupation did not have much effect on ANC and delivery place.

3.4. Factors associated with antenatal and delivery care

Table-4 describes important significant factors which affect antenatal and delivery care utilization. From the result it can be stated that, women who lives in barrack had almost two times [OR: 1.8, 95% CI (1.1–2.9)] less chance of receiving antenatal care from health facilities in contrast to local people. Bivariate analysis showed that women whose husband were day labourer had around 3 times [OR: 2.9, 95% CI (1.1–7.5)] and 6 times [OR: 5.9, 95% CI (1.5–21.8)] less chance of receiving ANC and delivery care in health facilities respectively in comparison with women whose husband was professional or businessman. Family income found to be an important significant factor for

receiving health facility delivery. Multivariate analysis revealed that when family income is less than \$120 then women had more than four times [OR: 4.3, 95% CI (1.1–18.9)] less likely to have their child delivery taken place in health facilities compared with the women whose family income is more than \$240. In addition, if women received ANC in health facilities then their chances of having health facility delivery increases to a great extent. Women who didn't receive ANC in health facilities were 2.95 times [OR: 2.95, 95% CI (1.06–7.9)] less likely to have their babies delivered in health facilities compared to the women who received ANC care.

4. Discussion

The study was aimed at demonstrating the coverage of ANC and delivery care, and also examines the key factors affecting the utilization behavior of health services in the study area. The utilization of ANC services may lead to the use of safe delivery care in appropriate health facility and can ensure the presence of skilled health professional during labor, delivery and post-delivery periods.^{16–18} The study has revealed that ANC and delivery care are lowered compared to the national data. In Bangladesh, just like most developing countries, a number of women still prefer to deliver at home than to deliver in the health facilities and this study area is no exception of that. Only 5.3%

Table 4
Factors associated with antenatal and delivery care (bivariate and multivariate logistic regression).

Socio demographic characteristics	Received ANC Care		Delivery place	
	Bivariate analysis OR (95% CI)	Multivariate analysis OR (95% CI)	Bivariate analysis OR (95% CI)	Multivariate analysis OR (95% CI)
Type of residence	1	1		
Local	2.078 (1.3–3.2)*	1.8 (1.1–2.9)*		
Barrack				
Husband's occupation	2.9 (1.1–7.5)*	1.9 (0.7–5.3)	5.9 (1.5–21.8)*	1.8 (0.3–8.6)
Day laborer	1.5 (0.5–4.0)	1.2 (0.4–3.2)	4.2 (1.06–16.6)*	2.0 (0.4–9.4)
Farmer/small business	1.9 (0.6–5.4)	1.4 (0.4–4.3)	5.5 (1.8–12.5)*	3.3 (0.5–14.2)
Others	1	1	1	1
Professional/business				
Family income			7.0 (1.9–25.1)*	4.3 (1.1–18.9)*
< 10,000 BDT (\$120)			3.6 (1.2–10.8)*	2.4 (0.7–8.0)
10,000–20,000 BDT (\$ 120– \$240)			1	1
> 20,000 BDT (> \$ 240)				
Educational status of mothers	1.8 (0.9–3.2)	1.2 (0.6–2.3)	2.5 (0.7–8.5)	1.2 (0.3–4.8)
Illiterate/can sign	1.8 (1.1–3.1)*	1.4 (0.8–2.5)	3.2 (1.1–9.5)*	2.04 (0.6–6.4)
Primary (1–5 grade)	1	1	1	1
Secondary or higher				
Place of receiving ANC			1	1
Received ANC in health facilities			3.4 (1.3–9.0)*	2.95 (1.06–7.9)*
Didn't receive ANC (in health facilities)				

*significant at < 0.05 level; 1 = reference category within group.

Women delivered in health facilities compared to the national data which is 37%.⁸

The proportion of delivery assisted by a professionally trained provider was 6.1% and a big chunk of delivery still assisted by semi-skilled TBAs and local dai's (77.5%). These statistics even so worse in relation to national data which shows 64% of the delivery are assisted by skilled professionals (8). A study which was conducted in rural area of Kenya also showed lower proportion of delivery in health facilities by professionally trained persons compared to delivery by TBAs and unskilled persons.¹⁹

Several socioeconomic and demographic factors such as mother's education, economic condition of the family, partner's occupation showed significant influence (in varying degrees) to the tendency of not visiting skilled professional for ANC and to not go for health facility delivery.

Having secondary or higher education and being of higher socioeconomic status of the family were the most important factors associated with ANC attendance; these findings are similar to those from an evaluation of antenatal care attendance in developing countries.²⁰ The result of this study showed that mothers with education had the highest percentage of adequate ANC use compared to those who have no education. This finding is also supported by that of studies conducted in India & Ethiopia 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.^{21,22} Similar results about the association between educational status of women and the utilization of ANC was also found in many studies which were conducted in developing countries like the study country.^{23,24} Kabir & Mokbul (2016) in their study based on recent Demographic Health Survey data also revealed that mothers who had higher education tend to have better chance of getting assisted delivery by healthcare professionals.²⁵ Another study by Kabir & Islam (2019) found out education of the mother's and their partners significantly affect their decision making toward healthcare especially antenatal care utilization.²⁶ All the studies showed statistically significant outcome that women's education play an important role in ANC visits and the present study also found the similar and statistically significant result ($p = 0.05$).

Logistic regression revealed that the types of residence, family income, husband's occupation and place of receiving ANC were significant predictors for antenatal care and delivery care utilization. Place

of residence of the study population is an important indicator to measure the health seeking behavior.^{25–27} As the study was conducted in a two different areas (Local and Barrack), most of the women from Barrack did not receive enough health facilities as these women had poor status in all the indicators compared to the local women. This is also another area which should be in contention as the govt funded project to make these people a place to live might be just not enough for a decent living. The present study showed a statistically significant association between the place of residence and the ANC and Delivery care. Some other studies also showed the identical result about the place of residence and the ANC and Delivery care.^{28,29}

Household income and wealth found to be important determinant of the outcome variables mentioned by several studies and this study also found this factors contributing largely. The study found that high family income of mothers had the highest percentage of use of ANC services compared to those with a lower family-income. Studies in Bangladesh & Indonesia also reported that there was a significant association between family income with the ANC service utilization and specially post natal check-ups.³⁰

Husband occupation also affects the utilization of institutional arrangements of health facilities. The present study found that husband's occupation is one of the key factors to utilize ANC and delivery care by the study population and analogous result was found some studies which were conducted also in Bangladesh.^{25,26,31} Due to the socioeconomic and demographic situation of Bangladesh, people cannot afford to go to the hospitals especially when the women are pregnant.⁸ Pregnancy is a crucial moment for them and the ANC and the delivery care should be maintained properly for a safe delivery and give birth a healthy child. But most of the women in the present study area did not utilize the ANC services and who did not do that, they prefer home delivery by the TBAs or Dai rather than go to the professional trained person for safe delivery.

The area specific statistics that's why needed so that interventions or policies can be directed towards that area based on context analysis. National statistics might not do justice everywhere, localities or population should be treated or underlying factors should be addressed as per the situation not just basic allocations. The difference of maternal healthcare utilization status between the local and barrack women is significant; therefore, proper steps should be taken so that barrack people can do better with their lives. There are other factors such as access to media, quality of care, information gap regarding healthcare,

healthcare provider-mother relationship and engagement, cultural barriers etc might have effect on this association which this study failed to cover. Proper sampling was also a limitation since the study was an explorative study and previous study or proper sampling frame was not available, therefore the result can't be generalized. More detailed study will be real handful which might find more associative factors of low utilization of these important healthcare services.

5. Conclusion

This study pointed out the low tendency of seeking antenatal care from skilled providers as well as health facility delivery by the women which shows a huge discrepancy between the national data and the study area. Even in study area the local and barrack people shows difference in their health seeking behaviors. Further studies are needed to pinpoint the other influencing underlying and basic causes of this underutilization of these services. However, this study findings underscore the need for targeted intervention to this area so that mothers can reach, access and afford more frequently to these life saving services. Government and non-government organizations should focus on improving living conditions of barrack people and how they can make their living not just only putting them in a conjugated place and no means of subsistence for most of the times of the year.

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The authors declare that the paper is not under consideration for publication elsewhere.

Declaration of competing interest

The authors declare no conflict of interest.

Abbreviations

ANC	Antenatal care.
BDHS	Bangladesh Demographic and Health Survey.
MMR	Maternal mortality rate.
WHO	World Health Organization.
SDG	Sustainable development goals.
FTNS	Food Technology & Nutrition Science.
NSTU	Noakhali Science & Technology University.
TBA	Traditional Birth Attendant.

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