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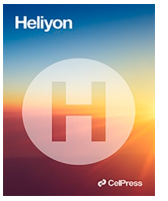

Research article

A multilevel analysis to determine the factors affecting WHO recommended quantity antenatal care utilizations of pregnant women in Bangladesh

Sarmistha Paul Setu, U.K. Majumder *

Statistics Discipline, Khulna University, Khulna 9208, Bangladesh

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ABSTRACT

Antenatal Care utilizations have become an essential phenomenon to all pregnant women as a means of disease preclusion during pregnancy and safe live birth. To lessen maternal death and disease, proper (minimum eight) antenatal care (ANC) contacts are necessary according to World Health Organization (WHO) new guideline. The aim of this study is to assess the factors affecting proper antenatal care utilization of pregnant Bangladeshi women. The study used data from the most recent Bangladesh Demographic and Health Survey 2017–18 for conducting a two-level binary logistic regression model. A weighted sample of 4866 women and 675 clusters were considered as individual and community level respectively. The results exhibited only 11.6% women took proper antenatal care during pregnancy. The study found 23.9% variability in utilizations of Antenatal care belongs to community-level factors. At individual-level, mother's occupation, body mass index, birth-order, pregnancy intention, education, delivery place, and media access and at community-level, rural communities (AOR = 0.70, 95% C.I = 0.542–0.920), and communities having media access (AOR = 1.38, 95% C.I = 0.979–1.96) had significant relationship with proper antenatal care utilizations of pregnant women. After testing random slopes of individual-level variables, only education of women covariate was found to be varied from community to community. This study suggests that uptake of proper antenatal care depend on both individual and community level covariates and there lies extensive variation among them. Future studies on wider aspect are therefore suggested to determine obstacles in making proper Antenatal care utilizations.

1. Introduction

The universal rate of women mortality and morbidity remain very high. Worldwide around 810 women face a death daily from preventable obstacles interrelated to gestation or delivery and a number of, 7000 children in the first month of birth each day. Also a miscarriage occurs in every 16 s anywhere in the earth. More than 40% of the stillbirths happened at the time of delivery can be prevented by ensuring the availability of emergency delivery-care when needed and advanced observation [1–3].

According to the result of the latest Maternal Mortality Survey in Bangladesh (BMMS 2016), the estimated ratio of maternal death was found to be 196 per 100,000 live births. That is, there is no change in the ratio of 194 per 100,000 live births in BMMS 2010.

* Corresponding author.
E-mail address: majumderuk@ku.ac.bd (U.K. Majumder).

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Besides the total death of females (18–49 years) was 1.175/1000 in BMMS 2016, pretty much analogous to the year 2010 (1.201/1000) [4]. The goal of Sustainable Development Goals (SDG-3.1) aim for reducing the ratio of maternal death globally to below 70 per 100,000 live births by 2030 [5]. Moreover maternal death can be reduced by providing proper ANC contacts to the expecting women [6]. And Antenatal care (ANC) contact has become very important to lessen the complication during pregnancy, ensure women a positive experience in that period of time and to reduce maternal death during delivery [4,7].

A goal of receiving minimum 4 ANC visits was made by Health, Population and Nutrition Sector Development Program (HPNSDP) in 2011–2016 and 50% of women having minimum one child received that suggested quantity of ANC visits (minimum four) [8]. In 2014, about 31% of women having a child in three years earlier the survey received ANC minimum 4 times at the period of pregnancy. In 2017, 47% of female who had a child in three years before the study took minimum 4 ANC visits during the period of their pregnancy [9]. Results of some previous studies suggest that there is a correlation among the covariates: women's highest education, occupation, BMI, pregnancy intention, order of birth, delivery place, media access, wealth-index, types of place of residence, distance from healthcare with receiving ANC visits [10–19].

There are several previous studies which have found the effect of using minimum 4 ANC visits on several covariates only for individual-level, not for community-level. To reduce high mortality rate and improve the care of women's experience, in 2016 WHO recommended an ANC model with minimum 8 contacts instead of 4 ANC visits [9]. And probably there is no such study in Bangladesh which determines the factors affecting WHO newly recommended ANC utilization (at least eight visits) of Bangladeshi pregnant women along with the identification of 2nd level (community-level) variation among these factors.

The primary goal of this study was to determine the predictors affecting the utilization of (WHO new guideline) proper ANC contacts of pregnant Bangladeshi women and identify if there is any community-level variation among these covariates. The findings of this present study will provide a contribution to the pregnant women and the policymaker of Bangladesh in taking necessary steps to receive proper ANC recommended by WHO.

2. Material and methods

2.1. Sources of data and experimental design

The analysis of this research was executed by considering a secondary source of data, Bangladesh Demographic and Health Survey (BDHS) 2017–18 that represent the entire nation [20]. National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare (MOHFW) organized the dataset. In addition, the survey was conducted by a Research Organization of Bangladesh known as Mitra and Associates. United States Agency for International Development (USAID) supplied the necessary monetary funding for carrying out this survey. This team considered an enumeration area (EA) with average of 120 houses for preparing primary sampling unit (PSU). And in order to select sample, a two-stage stratified sampling technique was used. The data collection technique used this two-stage stratified sampling technique because samples were stratified by topographical section and by place of residence (urban or rural areas) within each section. At the very beginning, the least units from administration were regarded as Enumeration areas (EAs), which were selected with probability proportional to their size (PPS). And then, houses were carefully chosen from each EAs [9].

Complete information from 4866 female respondents having minimum one baby in the three years earlier the survey were collected for the study. Besides we considered the first birth for the respondents having more than one birth. And 675 weighted clusters were taken as second level (community-level) features.

2.2. Outcome variable

We considered the number of ANC contacts as the outcome variable of this study. And it's a binary variable with two outcome value, 1 if women in community take minimum 8 ANC contacts (according to WHO new guideline) [7] during their initial pregnancy within the 3 years earlier to the study, and otherwise it 0.

2.3. Independent variables

Predictor variables for the analysis of this study were chosen from some previous studies which affect greatly on proper utilization ANC contacts. Two categories of independent variables were considered here for the analysis resolution i.e. individual-level eight independent variables and community-level three independent variables.

Several studies identified mother's occupation as a momentous factor of proper ANC utilization [13,15]. We took exposure to media, pregnancy intention and order of birth as individual-level independent variables. Exposure to media [12], pregnancy intention [11], and order of birth [10] were proven connected greatly with the uptake of minimum ANC contacts. We took another several individual-level predictors had a significant association with the utilization of proper ANC contacts of pregnant women on the basis of some previous studies [11,13,18,19]. Here we took three community-level independent covariates named place of residence [10], exposure to media [21] and distance [16] which had a significant relationship with the utilization of proper ANC contacts. We considered whether or not above 50% women of the community were exposed to media and whether or not above 50% women of the community had a difficulty to go healthcare for distance as community exposure to media variable and community distance to take healthcare respectively [22].

2.4. Analysis of data

We considered here the individual and community level for carrying out the analysis of a two-level binary logistic regression model. Necessary analyses of data by constructing four models were carrying out through STATA version 16.0. Here we followed the following steps:

Step 1: Initially, we created the intercept only model, Model 1 which encompasses merely the random intercept to find out the intra class correlation (ICC) and to observe the disparity among communities.

Step 2: Then Model 2 was created by considering the predictor variables into Model 1 that measure the impact of individual-level features.

Step 3: After that we built Model 3 by considering only the community-level predictors to assess the impact of community-level features.

Step 4: Model 4 was fitted that considered individual-level and community-level predictors together. And the impact of individual and community-level predictors were measured which were related to the uptake of minimum eight times antenatal care visits. Then their respective odds ratios (OR), Probability values (*P*-value) and 95% confidence interval (C.I) were measured and compared.

We used Intra-Class Correlation (ICC) to express the impact of random effects. And to check the model adequacy we considered Akaike Information Criterion (AIC). We then fitted the data into the model using a multilevel binary logistic regression model [23].

Consider a binary outcome variable Y_{pq} is the number of ANC visit.

Here, $Y_{pq} = \begin{cases} 1, \text{if respondents p in community q takes minimum eight ANC visits} \\ 0, otherwise \end{cases}$.

Then consider, respondents are belonging to 1st level and clusters are belonging to 2nd level. Then we can write the two-level binary logistic regression model as:

$$logit(\pi_{pq}) = log(\pi_{pq} / 1 - \pi_{pq}) = \beta_{0q} + \sum_{r=1}^{s} \beta_r X_{pqr} \;\; ; p = 1, 2, \ldots, n_q, q = 1, 2, \ldots, d$$

$$\text{With } \beta_{0q} = \beta_0 + \mu_{0q};\ \mu_{0q} \sim iidN\left(0, \sigma^2_{\mu 0}\right) \tag{1}$$

here in Equation (1), $\pi_{pq} = Pr\,(Y_{pq} = 1)$ is the likelihood of respondent p belonging community q receives at minimum eight ANC visits,

Table 1
Bivariate analysis of utilization of proper ANC contacts by individual-level predictors.

Individual level characteristics	Minimum eight times visits of ANC		X^2	*P*-value
	No (%)	Yes (%)		
Current age of mother				
15–24 Years	2270 (88.7%)	290 (11.3%)	2.815	0.245
25–34 Years	1758 (87.6%)	248 (12.4%)		
35–49 Years	272 (90.7%)	28 (9.3%)		
Access of media				
No	1650 (94.8%)	91 (5.2%)	108.193	0.001
Yes	2650 (84.8%)	475 (15.2%)		
Working status of mother				
Not Working	2579 (87.9%)	355 (12.1%)	1.573	0.217
Working	1721 (89.1%)	211 (10.9%)		
Pregnancy intention				
Later and Then	951 (91.7%)	86 (8.3%)	14.291	0.001
Wanted	3349 (87.5%)	480 (12.5%)		
Mother's BMI				
Normal	2686 (89.7%)	309 (10.3%)	36.772	0.001
Underweight or Overweight	907 (82.7%)	190 (17.3%)		
Order of Birth				
1st Birth	1575 (85.7%)	263 (14.3%)	45.853	0.001
2nd and 3rd Birth	2158 (88.6%)	279 (11.4%)		
≥4th Birth	567 (95.9%)	24 (4.1%)		
Household affluence status				
Poor	1904 (93.3%)	137 (6.7%)	99.568	0.001
Middle	783 (88.5%)	102 (11.5%)		
Rich	1613 (83.1%)	327 (16.9%)		
Place of delivery				
Home	2268 (94.1%)	143 (5.9%)	151.083	0.001
Healthcare	2032 (82.8%)	423 (17.2%)		
Education of mother				
Illiterate	291 (97.3%)	8 (2.7%)	139.572	0.001
Primary	1258 (92.8%)	97 (7.2%)		
Secondary	2066 (88.5%)	269 (11.5%)		
Higher	685 (78.1%)	192 (21.9%)		

X_{pqr} is the values of s autonomous variables for respondent p belonging community q, β_r is a vector of regression factors to be measured and β_0 is the fixed part. μ_{0j} is the error at community-level occurring by chance.

2.5. Ethics approval

This study did not require any ethical approval as the analysis used only de-identified existing unit record data from the BDHS.

3. Results

3.1. Background features of study contributors

The results of this study among 4866 women exhibited a significant association in receiving proper ANC (minimum eight) contacts between different categories of variables: exposure to media, pregnancy intention, mother's BMI, order of birth, household affluence status, place of delivery and highest level education of mother at individual-level. Also place of residence, community distance to go healthcare and community media exposure covariates exhibited a momentous relationship with the acceptance of proper ANC contacts.

Table 1 shows bivariate analysis of utilization of proper ANC (minimum eight) contacts by individual-level factors. Of 4866 mothers, only 566 (11.6%) took proper ANC contacts. About 4300 (88.4%) mothers received less than 8 ANC contacts.

About 475 (15.2%) mothers who received the proper ANC had access of media. Higher proportion (17.3%) of mothers who had minimum ANC contacts had underweight or overweight BMI level. In the same way 12.5% mothers reported their intended pregnancy, 14.3% reported their first order pregnancy. Larger proportion (16.9%) of mothers received proper ANC contacts were from rich household. Similarly, 17.2% mothers delivered their child at healthcare and 21.9% were higher educated participants.

Table 2 represents the bivariate analysis of utilization of proper ANC contacts by community-level predictors. It can be seen in community-level that, 17.1% mothers having minimum 8 ANC contacts are belonging to urban area, 12.7% mothers had no distance related problem to go healthcare and 14.3% mothers had the access of media.

3.2. Measures of variation (random-effect)

In the beginning, we established a model with the intercept merely to check the variation through random-effect at hierarchies. As represented in the first column of Table 3, Model 1 (intercept only model) indicated that 23.91% of the total disparities in receiving proper ANC contacts were responsible due to the differences across communities to communities. After establishing the intercept only model (Model 1), we then separately established Model 2 and Model 3 by taking all individual-level and community-level predictors respectively. And finally we got Model 4 by including the individual and community level predictors together in Model 1.

3.3. Measures of association (fixed-effects)

3.3.1. Effect of individual-level predictors

The result obtained in Model 4 (final model) in Table 3 represents the effect of individual-level covariates on receiving WHO recommended proper ANC contacts. Mothers having the access of media had 1.6 times [Adjusted odd ratio (AOR) = 1.58, 95% C.I = 1.18–2.12] elevated odds of receiving proper ANC contacts than the mothers haven't the access of media. The odds of receiving proper ANC contacts were 1.35 times higher (AOR = 1.35, 95% C.I = 1.08–1.69) among the occupied mothers compared to the non-working mothers. Mothers having intentional pregnancy had 1.44 times higher (AOR = 1.44, 95% C.I = 1.08–1.94) probability of receiving proper ANC contacts than the mothers wanted their child later and then. Mothers having underweight or overweight BMI had 30% greater (AOR = 1.30, 95% C.I = 1.04–1.63) likelihood of receiving proper ANC contacts as compared to mothers having normal BMI. Mothers having 2nd, 3rd and more than 3rd birth were decrease the likelihood of receiving proper ANC contacts by 5% and 48% (AOR = 0.95, 95% C.I = 0.759–1.19) and (AOR = 0.52, 95% C.I = 0.309–0.862) respectively as compared to mothers having 1st birth.

Table 2
Bivariate analysis of utilization of proper ANC contacts by community-level predictors.

Community level characteristics	Minimum eight times visits of ANC		X^2	*P*-value
	No (%)	Yes (%)		
Types of place of residence				
Urban	1375 (82.9%)	283 (17.1%)	72.328	0.001
Rural	2925 (91.2%)	283 (8.8%)		
Community Distance from healthcare				
No problem	2818 (87.3%)	410 (12.7%)	10.674	0.001
Problem	1482 (90.5%)	156 (9.5%)		
Community Exposure to Media				
No	1388 (94.5%)	81 (5.5%)	76.620	0.001
Yes	2912 (85.7%)	485 (14.3%)		

Table 3
Multilevel logistic regression analysis of individual and community level predictors related with receiving of proper ANC contacts.

Characteristics Fixed effects	Model 1[a]	Model 2[b]		Model 3[c]		Model 4[d]	
		AOR (95% CI)	*P*-value	AOR (95% CI)	*P*-value	AOR (95% CI)	*P*-value
Access of media							
No		1				1	
Yes		1.68** (1.26–2.25)	0.001			1.58* (1.18–2.12)	0.002
Working status of mother							
Not working		1				1	
Working		1.34** (1.07–1.68)	0.010			1.35* (1.08–1.69)	0.008
Pregnancy intention							
Later and then		1				1	
Wanted		1.42* (1.05–1.90)	0.020			1.44** (1.08–1.94)	0.014
Mother's BMI							
Normal weight		1				1	
Underweight or Overweight		1.32* (1.05–1.66)	0.016			1.30* (1.04–1.63)	0.023
Order of Birth							
1st Birth		1				1	
2nd and 3rd Birth		0.958 (.801–1.22)	0.711			0.95 (0.76–1.19)	0.648
≥4th Birth		0.512** (.345-.898)	0.011			0.52** (.309-.862)	0.011
Household affluence status							
Poor		1				1	
Middle		1.30 (0.93–1.83)	0.123			–	–
Rich		1.35* (.990–1.84)	0.051			–	–
Place of delivery							
Home		1				1	
Healthcare		2.24** (1.74–2.88)	0.001			2.18** (1.69–2.80)	0.001
Education of mother							
Illiterate		1				1	
Primary		2.00 (0.88–4.55)	0.094			2.06 (.908–4.66)	0.084
Secondary		2.48* (1.11–5.54)	0.027			2.64* (1.18–5.89)	0.018
Higher		4.02** (1.76–9.19)	0.001			4.31** (1.90–9.79)	0.001
Community Level Factors							
Place of residence							
Urban				1		1	
Rural				0.538** (.417-.695)	0.001	0.70** (.542-.920)	0.001
Community Exposure to Media							
Low				1		1	
High				2.63** (1.90–3.63)	0.001	1.38* (.979–1.96)	0.034
Community Distance from healthcare							
No Problem				1		1	
Problem				0.92 (0.70–1.20)	0.113	–	–
Measures of difference due to chance							
Variance at community-level (SE)	1.034 (0.174)			0.543 (0.142)		0.722 (0.144)	0.520 (0.141)
Explained Variation[i] (PCV)	Reference			47.49		30.17	49.71
ρ = ICC (%)	23.91			14.16		17.99	13.66
Log-Likelihood	−1702.08			−1375.29		−1661.48	−1370.143
AIC	3408.16			2778.58		3332.97	2768.286

Ref = Reference, OR = Odds Ratio, CI = Confidence Interval.
*P < 0.05, **P < 0.01.
[a] Intercept or null model.
[b] Model includes only individual-level covariates.
[c] Includes only Community-level covariates.
[d] Full model includes only significant individual and community-level covariates.
[i] Compared with the intercept or null model.

Women giving birth at healthcare had 2.18 times higher odds (AOR = 2.18, 95% C.I = 1.69–2.80) of taking proper ANC contacts than the women giving birth at home. Mothers having primary, secondary and higher degree had higher odds respectively (AOR = 2.06, 95% C.I = 0.908–4.66), (AOR = 2.64, 95% C.I = 1.18–5.89) and (AOR = 4.31, 95% C.I = 1.90–9.79) of receiving proper ANC contacts as compare to illiterate mothers.

3.3.2. Effect of community-level predictors

Model 4 in Table 3, determined the community features where the respondents belonging to share an impact on receiving proper ANC contacts. We found that mothers living in rural community decreased the odds of receiving proper ANC contacts by 30% (AOR = 0.71, 95% C.I = 0.542–0.920) as compared to mothers living in urban community. Mothers belonging to communities where they had media access (AOR = 1.36, 95% C.I = 0.958–1.93) had a significant association with utilization of proper ANC contacts. Mothers having distance related problem in going healthcare showed insignificant relationship with utilization of proper ANC contacts.

The ICC value of the final model suggested that 13.66% disparities in mother's proper ANC contacts out of total were accountable

for the dissimilarities among communities. In Model 4, the value that measures explained variation (PCV) recommended that 49.71% of the dissimilarities in receiving proper ANC contacts through communities were explained by the individual and community level predictors.

3.4. Testing randomness of individual-level predictors

Then we used likelihood ratio test for testing the random effect of individual-level factors on the utilization of proper ANC (Table 4). The likelihood ratio (LR) test was significant for only one individual-level predictor i.e. education of women (Table 4), because $LR = 2 (M_2 - M_1)$ value for primary level education was found to be 8.12 which is less than the chi-square value of 7.82 with 3° of freedom and 5% level of significance. That is the influence of women's education (primary education) differs across communities at random.

4. Discussion

The main objective of this study was to determine the determinants affecting the utilization of proper ANC contacts of pregnant Bangladeshi women. We found that community level predictors had also significant impact on receiving proper ANC contacts besides individual level predictors during the pregnancy period of Bangladeshi women. It supports the findings of some previous studies [11,13,16,24–26].

We found that, mothers having access of media had greater possibility of receiving WHO recommended proper ANC contacts. Results of the previous study [8,16,27,28] also support the results of this study. Media access helps in encouraging pregnant women to take ANC by providing necessary health knowledge and awareness programs [29]. Our findings revealed a significant positive relation between mother's occupation status and uptake of proper ANC contacts. This result follows the findings of the previous study [30]. That may be related to the fact of earning by working outside of home and that increases the social values of women [31]. Another covariates order of birth was found as a significant impact factor of receiving proper ANC contacts. Birth order of mothers showed a negative association with utilization of proper ANC contacts. Here we found that the upper order the birth (more than 1st birth) the lesser the ANC contacts make. That means pregnant women had less chance of taking proper ANC at the time of 2nd and 3rd, and more than 3rd order birth as compared to the time of 1st birth. This finding is parallel to the previous researches [13,30,32]. Delivery place of women exhibited a significant positive association with WHO recommended proper ANC contacts during their pregnancy period. We observed that respondents having minimum 8 ANC contacts had higher odds of delivering their child at healthcare instead of home. Another previous study also found ANC as a path to receive healthcare delivery [17,33]. In the present study, we found a momentous relationship between highest level of maternal education and acceptance of proper ANC contacts. This indicates a positive association between mother's highest education and ANC visits. Besides mother's having primary, secondary and higher education had elevated

Table 4
Outputs of Random Slope Model of individual level's significant variables on receiving proper ANC contacts.

Individual-level variables	Categories	AOR (95% CI)	*P*-value	Model Without Random slope (M_1)	Model With Random slope (M_2)	Likelihood Ratio (LR) Test 2 (M_2-M_1)	Chi-square value (5%)
Access of media	No	1		−1377.36			3.84
	Yes	2.39 (1.53–3.72)	0.001		−1375.67	3.38	
Working status of mother	Not Working	1					3.84
	Working	1.28 (1.03–1.61)	0.087		−1377.3466	0.0268	
Pregnancy intention	Later and Then	1					3.84
	Wanted	1.80 (1.08–2.99)	0.024		−1376.44	1.84	
Mother's BMI	Normal	1					3.84
	Underweight or Overweight	1.57 (1.21–2.05)	0.001		−1375.51	3.7	
Order of Birth	1st Birth	1					5.99
	2nd and 3rd Birth	1.06 (0.80–1.42)	0.680		−1376.80	1.12	
	≥4th Birth	0.96 (0.77–1.21)	0.748		−1376.90	0.92	
Place of delivery	Home	1					3.84
	Healthcare	2.44 (1.72–3.47)	0.001		−1377.27	0.18	
Education of mother	Illiterate	1					7.82
	Primary	1.08 (0.39–3.03)	0.083		−1373.3	8.12	
	Secondary	2.99 (1.29–6.94)	0.011		−1376.53	1.66	
	Higher	4.18 (1.80–9.70)	0.001		−1377.25	0.22	

likelihood of taking proper ANC contacts than the illiterate mothers, which is similar with the previous researches [13,26,34]. That means maternal education encourages women to receive the required number of ANC contacts during their pregnancy period with maternal healthcare utilization and educated mothers are able to easily realize the advantage of taking proper ANC contacts.

At community-level, we reflected three covariates: place of residence, community exposure to media and community distance from healthcare. And we found that out of three predictors in community level, two predictors showed a significant association with receiving of proper ANC contacts. Women residing in rural areas had a lower chance of receiving proper ANC contacts as compared with the women belonging to urban, which is analogous to the findings of previous analysis [13]. Communities, where women had the media access (consume newspaper or magazine, radio, and television) were more likely to take proper ANC contacts than the non-exposure. This findings is parallel to the findings of the preceding study [21]. This might be the reason that one can easily acquire various news and information related to wellbeing and health of mother over different programs over television and radio. And one can easily know the news around her by reading newspaper or magazine [35,36].

5. Strengths and limitations

The analysis was conducted based on 2017-18 BDHS dataset, which covers the whole nation with comparatively large sample size and the analysis of this research included many vital factors that exhibited a significant relationship with the uptake of proper ANC contacts. The techniques as well as analyzing equipment applied in this study are notorious and its applications are used most frequently. Associated factors of second level (community-level) in multilevel modeling will help the policymaker to make policy about the local community. Due to the deficiency of some data of ANC contacts related variables, we couldn't consider some other predictors. Therefore, further study is required by considering higher level (level-3), or the missing variables that we failed to include in the study which may widen the scope of measuring the variation of community-levels.

6. Conclusion

The study determined some individual and hierarchical level covariates affecting the WHO recommended minimum ANC contacts. According to the findings of this study, it is essential to upgrading the highest educational level of women, ensure access of media to the community, emphasis on women empowerment, prevent unintentional pregnancy, and ensure necessary equipment of healthcare in rural hierarchies. Government and other stakeholders should take proper steps toward these. This may be possible by providing information about maternal healthcare and advantage of minimum ANC contacts.

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Author's contribution

Sarmistha Paul Setu: Conceived and designed the experiment; performed the experiments; Analyzed and interpreted the data; Contributed materials and methods, analysis tools or data; Wrote the paper.

UK Majumder: Conceived and designed the experiment; Analyzed and interpreted the data; Contributed materials and methods, analysis tools or data; wrote the paper.

Data availability statement

Data associated with this study has been deposited at https://dhsprogram.com/data/available-datasets.cfm.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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