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RESEARCH

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The Impact of Caesarean Section and Place of Delivery on Utilization of Postpartum Care in Bangladesh

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Abstract

Postpartum care is a critical component of maternal health, as it helps prevent complications and ensures the well-being of both mother and newborn. Despite global improvements in maternal healthcare, disparities in postpartum care utilization remain a significant public health concern, particularly in low- and middle-income countries such as Bangladesh. This study aimed to examine the impact of caesarean section and place of delivery on the utilization of postpartum care among women in Bangladesh. A cross-sectional study was conducted using nationally representative survey data, analyzing women who had delivered at health facilities. Univariate analysis described the distribution of sociodemographic characteristics and delivery-related factors, while bivariate analysis employed Chi-square tests to examine associations between independent variables and postpartum care utilization. Multivariate analysis using binary logistic regression assessed the adjusted impact of caesarean section, place of delivery, prenatal care, and household wealth on postpartum care uptake. The results revealed that women who delivered by non-caesarean section were 55% less likely to utilize postpartum care compared to those delivered via caesarean section. Women who delivered at private health facilities were 1.22 times more likely to utilize postpartum care than those at public facilities. Not receiving prenatal care decreased the probability of postpartum care by 55%, while women from the fourth wealth quintile and richest households were 1.58 and 2.60 times more likely, respectively, to access postpartum services compared to the poorest households. These findings underscore the importance of promoting equitable access to postpartum care, particularly for women delivering vaginally, at public facilities, or from lower-income households. Targeted policies that train providers in standardized postpartum care, strengthen follow-up through digital reminders and community health workers, and expand access in underserved areas can reduce disparities and improve maternal health outcomes in Bangladesh.

Keywords: Bangladesh, Caesarean Section, Postpartum Care, Place of Delivery, Prenatal Care.

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1. INTRODUCTION

Maternal health remains a major public health concern globally, particularly in low- and middle-income countries, where maternal morbidity and mortality rates are still high (Souza et al., 2024). Ensuring proper postpartum care is crucial, as it significantly contributes to the early detection and management of maternal complications, promoting the overall health of both mother and newborn (Zhang et al., 2025). Despite global efforts to improve maternal health, many women do not receive adequate postpartum care, which can increase the risk of preventable maternal and neonatal complications (Jacobsson et al., 2025; Ramson et al., 2024).

In Bangladesh, maternal health indicators have improved over the past decades; however, disparities in access to maternal health services, especially postpartum care, remain significant (Alam et al., 2025; Priyanka et al., 2024). According to recent surveys, a considerable proportion of women fail to utilize postpartum care services, often due to socioeconomic, geographic, or cultural barriers. These disparities highlight the need to identify factors influencing postpartum care utilization to design effective interventions (Khan et al., 2025). Mode of delivery is considered an important determinant of postpartum care utilization (Sumon et al., 2024). Women who undergo caesarean sections often have longer hospital stays and scheduled follow-up visits, which may increase the likelihood of receiving postpartum care (Shabuz et al., 2025). Conversely, women who deliver vaginally, especially at home or in resource-limited settings, may be less likely to access postpartum services, leaving them at higher risk of complications (Hirani et al., 2025).

Place of delivery is another critical factor affecting postpartum care utilization. Women delivering in private health facilities may have better access to information, counseling, and follow-up services, while those delivering in public facilities or at home may encounter barriers such as limited resources, understaffed facilities, or lack of systematic follow-up mechanisms (Hossain et al., 2020). Studies in South Asia have shown that place of delivery strongly influences postpartum care uptake. Prenatal care utilization also plays a significant role in determining postpartum care (Rahman et al., 2021). Women who attend regular antenatal visits are more likely to be informed about the importance of postpartum care, recognize warning signs, and plan follow-up visits (Islam & Masud, 2018). Previous research indicates that receiving prenatal care positively correlates with postnatal service utilization and improves maternal health outcomes (Anis et al., 2022).

Socioeconomic factors, including household wealth and maternal education, have consistently been associated with postpartum care utilization (Bintabara & Mwampagatwa, 2023). Wealthier households can better afford transportation and healthcare costs, while educated women are generally more aware of the benefits of postpartum services (Mukonka et al., 2018). These factors often intersect with cultural norms and geographic accessibility, creating complex patterns of healthcare utilization.

Despite existing studies, limited research in Bangladesh has simultaneously examined the combined impact of caesarean section, place of delivery, and socioeconomic factors on postpartum care utilization. Although previous studies have examined these factors separately, few have analyzed their combined effect, highlighting the need for integrated research. Understanding these determinants in an integrated manner is essential for developing policies that ensure equitable access to maternal health services. Addressing these gaps, this study aims to investigate the impact of caesarean section and place of delivery on postpartum care utilization among women in Bangladesh, while also considering the influence of prenatal care and household socioeconomic status.

2. RESEARCH METHOD

This study utilized the secondary data of Multiple Indicators Cluster Survey (MICS) which developed by UNICEF (United Nations Children's Fund). The Bangladesh Multiple Indicator Cluster Survey (MICS) 2019 was conducted by the Bangladesh Bureau of Statistics

(BBS) with technical and financial support from UNICEF to provide nationally representative data on the situation of women and children. The survey used a stratified, two-stage cluster sampling design, covering all divisions of Bangladesh, with households as the primary unit of analysis. Standardized questionnaires were administered to collect information on health, education, nutrition, child protection, and water and sanitation indicators, ensuring comparability with global MICS surveys. Further details are available from UNICEF MICS website: <https://mics.unicef.org/>.

This study included women aged 15–49 years from the Bangladesh MICS 2019 who had given birth and had complete information on postpartum service utilization, delivery type, place of delivery, and relevant sociodemographic variables. After applying these inclusion criteria, the final analytic sample consisted of 4,812 women. Women with missing data on key variables were excluded from the analysis to ensure accuracy and consistency of the results.

This current study used women dataset as the sample. The dependent variable is postpartum service, which derived from question: Mother's health checked after leaving health facility? (No / Yes). The main independent variables are delivery by caesarean section (Yes / No) and place of delivery which government or public delivery service (public hospital, government clinic, community clinic) or private delivery service (private hospital, private clinic, private maternity care). The other sociodemographic variables of women are included. Women's age group are including 5 years age interval with ordinal scale. Education level consisted of pre-primary or none, primary, secondary, and higher secondary plus. Women also asked the experience of received prenatal care. Additionally, place of residence (urban/rural), ethnicity (Bengali/others), and wealth index (poorest, second, middle, fourth, and richest). The data has analyzed by univariate, bivariate, and multivariate. The univariate analysis shows the frequency and percentage of each variables. The bivariate analysis using Chi-square was done to test the correlation between each predictor and postpartum service utilization. The multivariate analysis was done using binary logistic regression to explore the impact of independent variables on postpartum service.

The analysis were conducted using STATA Version 17. Weighted analyses were applied for univariate, bivariate (Chi-square), and multivariate (binary logistic regression) analyses, with the cut off of significance is p-value <0.05 or confidence interval 95%. The secondary data is anonymous so ethical clearance is not required. However, the original survey of MICS is under UNICEF standardized research tools.

3. RESULTS AND DISCUSSION

This section presents the univariate analysis describing the distribution of women's characteristics, delivery-related factors, and utilization of postpartum care. The analysis provides an overview of the sample profile in terms of sociodemographic background, health service utilization, and delivery outcomes.

Table 1. The univariate analysis of variables related to postpartum care

Variables (n = 4.812)	Frequency	Percentage
Received postpartum care		
No	3806	79.09
Yes	1006	20.91
Delivery by caesarean section		
Yes	3254	67.62
No	1558	32.38
Place of delivery		

Variables (n = 4.812)	Frequency	Percentage
Government delivery service	1451	30.15
Private delivery service	3361	69.85
Women age group		
15-19	659	13.69
20-24	1648	34.25
25-29	1347	27.99
30-34	815	16.94
35-39	286	5.94
40-44	48	1.00
45-49	9	0.19
Educational level		
Pre-primary or none	192	3.99
Primary	721	14.98
Secondary	2636	54.78
Higher secondary+	1263	26.25
Received prenatal care		
Yes	4498	93.47
No	314	6.53
Place of residence		
Urban	1178	24.48
Rural	3634	75.52
Ethnicity		
Bengali	4777	99.27
Other	35	0.73
Wealth Index		
Poorest	574	11.93
Second	799	16.60
Middle	980	20.37
Fourth	1187	24.67
Richest	1272	26.43

The results of this study (table 1) have visualized into univariate, bivariate, and multivariate. For univariate, this study describes the rawdata into frequency and percentage. Based on the information in Table 1 below, 20.91% of women did not received postpartum care after delivery at health facility. In terms of delivery, more than half of them delivered by caesarean section which 67.62%. Then, delivery at private health service shows much higher than public health service, which was 69.85%. The women characteristics revealed that women in age 20 to 24 years old are predominantly compared to others age group. Women education level revealed that more than half of women finished secondary school, which was 54.78%. Almost all women received prenatal care (93.47%) and from ethnic Bangali (99.27%). The wealth index revealed the higher proportion for richest women (26.43%).

Table 2. Bivariate results of association between predictors and postpartum services

Predictors (n = 4.812)	Received postpartum care		Total	Chi-square	p-value
	No (%)	Yes (%)			
Delivery by caesarean section				125.2516	0.000
Yes	74.55	25.45	3.254		
No	88.58	11.42	1.558		
Place of delivery				61.291	0.000
Government delivery service	86.08	13.92	1.451		

Predictors (n = 4.812)	Received postpartum care		Total	Chi-square	p-value
	No (%)	Yes (%)			
Private delivery service	76.08	23.92	3.361		
Women age group				9.2893	0.518
15-19	80.58	19.42	659		
20-24	80.7	19.3	1.648		
25-29	77.21	22.79	1.347		
30-34	77.18	22.82	815		
35-39	80.77	19.23	286		
40-44	77.08	22.92	48		
45-49	88.89	11.11	9		
Educational level				21.2488	0.000
Pre-primary or none	86.46	13.54	192		
Primary	81.28	18.72	721		
Secondary	79.86	20.14	2.636		
Higher secondary+	75.14	24.86	1.263		
Received prenatal care				34.039	0.000
Yes	78.19	21.81	4.498		
No	92.04	7.96	314		
Place of residence				42.133	0.000
Urban	72.41	27.59	1.178		
Rural	81.26	18.74	3.634		
Ethnicity				3.244	0.072
Bengali	79	21	4.777		
Other	91.43	8.57	35		
Wealth Index				151.5128	0.000
Poorest	88.15	11.85	574		
Second	85.73	14.27	799		
Middle	82.55	17.45	980		
Fourth	79.28	20.72	1.187		
Richest	68	32	1.272		

Table 2 above presents the bivariate analysis of the study of impact of caesarean section and place of delivery on postpartum utilization care. According to Table 2 below, the results of Chi-square test revealed that caesarean section, place of delivery, educational level, received prenatal care, place of residence, and wealth index are significantly associated with postpartum care utilization among women after delivery at health facility. Meanwhile, women age group and ethnicity was found insignificantly associated with postpartum care utilization.

Table 3. Binary logistic regression of the impact of caesarean section and place of delivery on postpartum care

Postpartum care (n = 4,812)	Adjusted Odds ratio	[95% conf. interval]		p-value
Delivery by caesarean section				
Yes	ref			
No	0.45	0.37	0.55	0.000
Place of delivery				
Government delivery service	ref			
Private delivery service	1.22	1.01	1.48	0.042

Postpartum care (n = 4,812)	Adjusted Odds ratio	[95% conf.	interval]	p-value
Women age group				
15-19	ref			
20-24	0.91	0.72	1.15	0.420
25-29	1.05	0.83	1.34	0.678
30-34	1.02	0.78	1.32	0.906
35-39	0.88	0.61	1.27	0.491
40-44	1.25	0.60	2.61	0.558
45-49	0.38	0.05	3.15	0.368
Educational level				
Pre-primary or none	ref			
Primary	1.26	0.78	2.02	0.343
Secondary	1.09	0.70	1.71	0.702
Higher secondary+	1.04	0.65	1.66	0.868
Received prenatal care				
Yes	ref			
No	0.45	0.29	0.69	0.000
Place of residence				
Urban	ref			
Rural	0.85	0.71	1.01	0.059
Ethnicity				
Bengali	ref			
Other	0.67	0.20	2.25	0.518
Wealth Index				
Poorest	ref			
Second	1.10	0.79	1.53	0.571
Middle	1.32	0.96	1.80	0.086
Fourth	1.58	1.16	2.13	0.003
Richest	2.60	1.90	3.54	0.000
cons	0.19	0.11	0.33	0.000

LR $\chi^2(18)$ = 287.52

Prob > χ^2 = 0.0000

Log likelihood = -2323.3966

Pseudo R² = 0.0583

Table 3 above describes the results of multivariate analysis using binary logistic regression. It shows that after adjusted to all independent variables, delivery by caesarean section, place of delivery, experience of received prenatal care, and wealth index was found significantly associated with utilization of postpartum care. In detail, women delivered by non-caesarean section was significantly decreased 55% the probability of utilize postpartum care, compared to those deliver by per vaginal. In terms of place of delivery, women who delivered at private health services are 1.22 times more likely to utilize the postpartum care compare to women delivered at public health services. Additionally, compared to women received prenatal care, women did not received prenatal care are decreased 55% probability to receive postpartum care. Wealth index in the households revealed that compared to poorest women, women in fourth level and richest are 1.58 and 2.60 times more likely to utilize the postparum services after adjusted to all independent variables The other variables including women age group, educational level, place of residence, and ethnicity was found insignificantly associated with postpartum care. The model in Table 3 reflected 5.83% of the model, since the rest of predictors are not included into the model.

The findings of this study indicate that delivery by non-caesarean section significantly decreases the likelihood of utilizing postpartum care compared to vaginal delivery. Women who underwent non-caesarean section were less likely to receive postpartum care, which could be related to the perceived medical risk and need for follow-up after surgical delivery. This aligns with previous studies in South Asia, where women with caesarean deliveries were reported to have higher utilization of postnatal services due to increased contact with healthcare providers and scheduled follow-up visits (Rahman et al., 2021; Rana et al., 2024; Verma et al., 2020). This association may reflect both clinical and behavioral factors. Clinically, caesarean delivery is a major surgical procedure that inherently requires postoperative monitoring, wound care, and assessment for potential complications, which naturally increases interactions with healthcare services (Childs et al., 2020). Behaviorally, women who undergo caesarean sections may perceive themselves as being at higher risk of postpartum complications, motivating them to seek timely and frequent postnatal care (Muhandule et al., 2024). Furthermore, healthcare systems often implement structured follow-up schedules for caesarean deliveries.

Place of delivery was also found to be a significant determinant of postpartum care utilization, with women delivering at private health facilities being more likely to access postpartum services than those delivering at public facilities. This may reflect differences in service quality, patient education, and follow-up mechanisms between private and public sectors. Similar trends have been reported in Bangladesh and neighboring countries, where private facilities often provide more personalized care and actively promote postpartum check-ups (Biswas et al., 2021; Islam & Masud, 2018; Lee et al., 2023). The role of health system factors in shaping postpartum care utilization, indicating that accessibility, provider-patient interactions, and perceived quality of care can strongly influence maternal health-seeking behavior (Montano-Campos et al., 2025; Sacks et al., 2022). Policy measures could include integrating postpartum visits with routine infant immunization services, training community midwives to conduct home-based postpartum visits, and enhancing follow-up protocols in public health facilities to ensure equitable access and increase service utilization among all mothers.

The analysis also revealed that women who did not receive prenatal care were 55% less likely to utilize postpartum care, suggesting an association between prenatal care and postpartum service use and emphasizing the continuum of maternal healthcare. Prenatal care visits often provide crucial information on the importance of postpartum check-ups and prepare women for complications that may arise after delivery. Previous research has consistently shown that prenatal care attendance is a strong predictor of postpartum service utilization, as it fosters health-seeking behavior and awareness of maternal health needs (Gomora Tesfaye et al., 2022; Jiao et al., 2024). Women who attend prenatal care regularly are more likely to be informed about the importance of postnatal follow-up, including recognizing warning signs and understanding recommended postpartum check-ups (Arntzen et al., 2023). This continuity of care can strengthen trust and communication between mothers and healthcare providers, increasing the likelihood of timely utilization of postpartum services (D'haenens et al., 2020). This underscores the need to strengthen prenatal care programs and counseling to improve subsequent postpartum care uptake.

The household wealth index was significantly associated with postpartum care utilization. Women from wealthier households were more likely to access postpartum services, which may reflect greater financial capacity, autonomy in decision-making, and access to health information. Similar patterns have been documented in Bangladesh and other low- and middle-income countries, indicating that economic status remains a critical factor in maternal healthcare utilization (Khan et al., 2020; Shanto et al., 2023). Economic capacity not only influences the ability to afford healthcare services but also affects health-seeking behaviors and

prioritization of maternal well-being within the household (Ansong, 2015). Furthermore, disparities in wealth may intersect with other social determinants, such as education and geographic access, compounding barriers to postpartum service utilization (Abbani et al., 2023; Ware et al., 2024). That is targeted interventions and community outreach could help ensure equitable access to postpartum care across all wealth quintiles.

This study has several limitations. The cross-sectional design prevents causal inferences, and the model explains only a small portion of postpartum care utilization, suggesting that other important factors, such as maternal health conditions, cultural beliefs, or provider-level influences, were not captured. The analysis relied on secondary data, and the use of self-reported information for postpartum care may introduce recall bias. Additionally, the measure of postpartum care was simplified, based on a single yes/no question, which may not fully reflect the complexity of service utilization. Despite applying survey weights and accounting for the survey design, some residual confounding may still remain.

4. CONCLUSION

In summary, this study demonstrates that delivery by caesarean section, place of delivery, receipt of prenatal care, and household wealth significantly influence the utilization of postpartum care among women in Bangladesh. Women who underwent caesarean section, delivered at private health facilities, received prenatal care, or belonged to wealthier households were more likely to access postpartum services, highlighting disparities in maternal healthcare utilization. These findings highlight the need for targeted interventions to promote postpartum care, particularly among women delivering vaginally, at public facilities, or from lower-income households. Policies should focus on training healthcare providers in standardized postpartum care, strengthening follow-up through digital reminders and community health workers, and expanding access in underserved areas to reduce disparities and improve maternal health outcomes in Bangladesh. Future research should explore additional individual, cultural, and health system factors that may influence postpartum care utilization to guide more comprehensive maternal health strategies.

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