

Socioeconomic Inequality and Postpartum Depression in Bangladesh: Evidence from BDHS 2022

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Abstract

Background

Postpartum depression (PPD) is a common maternal mental health disorder with significant implications for mothers and children, particularly in low- and middle-income countries (LMICs). Nationally representative evidence on postpartum depressive symptoms in Bangladesh has been limited. This study aimed to estimate the national prevalence of postpartum depressive symptoms and examine individual- and community-level determinants using data from the 2022 Bangladesh Demographic and Health Survey (BDHS).

Methods

We used data from the 2022 Bangladesh Demographic and Health Survey (BDHS), including 3,117 women aged 15–49 years who had a live birth within the 12 months preceding the survey. Postpartum depressive symptoms were measured using the Patient Health Questionnaire-9 (PHQ-9), with a score of ≥ 5 indicating the presence of depressive symptoms. Weighted descriptive analyses were conducted, and multilevel mixed-effects logistic regression models with random intercepts for clusters were applied to examine associated factors. Results are presented as adjusted odds ratios (AORs) with 95% confidence intervals (CIs).

Results

The weighted prevalence of postpartum depressive symptoms was 16.17%. Prevalence varied across administrative divisions, ranging from 13.4% in Mymensingh to 18.1% in Rajshahi. In the fully adjusted multilevel model, household wealth index was significantly associated with postpartum depressive symptoms. Compared with women in the poorest quintile, those in the poorer (AOR 0.59; 95% CI 0.39–0.88), middle (AOR 0.62; 95% CI 0.41–0.95), richer (AOR 0.56; 95% CI 0.34–0.90), and richest (AOR 0.48; 95% CI 0.27–0.86) quintiles had progressively lower odds of depressive symptoms. Community education was associated with lower odds in the community-level model but was not statistically significant in the fully adjusted model. No significant associations were observed for maternal age, education, parity, pregnancy intention, antenatal care visits, delivery characteristics, media exposure, place of residence, or community wealth.

Conclusions

PPD affects about one in six postpartum women in Bangladesh and is strongly patterned by socioeconomic disadvantage, geographic and community context. Integrating mental health screening into routine maternal health services and addressing socioeconomic disparities may help reduce the burden of postpartum depressive symptoms in Bangladesh.

Introduction

The transition to motherhood is widely recognized as a critical period in a woman's life course, marked by profound biological, psychological, and social changes. While this transition is often celebrated, it also carries a considerable risk of mental health disorders (1). Among these, postpartum depression (PPD) stands out as one

of the most prevalent global maternal health challenges, characterized by non-psychotic depressive episodes occurring within the first twelve months after childbirth (2–4). According to the World Health Organization (WHO), approximately 10% of pregnant women and 13% of women who have just given birth experience a mental disorder, primarily depression, contributing significantly to the global burden of disease. (5). Common symptoms of PPD, such as persistent low mood, fatigue, sleep disturbance, and feelings of guilt or worthlessness can severely impair maternal functioning (6).

Global prevalence estimates of postpartum depression vary widely, ranging from 0.5% to 60.8%, largely depending on the measurement tools, timing of assessment, and sociocultural context (7). Evidence consistently shows higher prevalence in low- and middle-income countries (LMICs), which collectively possess less than 20% of global mental health resources despite hosting the majority of the world's population (8, 9). A comprehensive meta-analysis of more than 80 LMIC studies estimated a pooled prevalence of 17.7%, with South Asia reporting some of the highest burdens—often exceeding 25% (6). Country-specific findings indicate prevalence rates of 33.7% in Nepal, 20–23% in India, and over 30% in parts of Myanmar (10–12). In Bangladesh, subnational and community-based studies have documented rates from 18% in rural settings to as high as 39–46% among women in urban slums and socioeconomically disadvantaged environments (12, 13). While these studies underscore the severity of postpartum depressive symptoms, their limited geographic scope restricts their generalizability and leaves national prevalence unknown.

The consequences of postpartum depression extend beyond maternal wellbeing. PPD is associated with heightened risks of child undernutrition, reduced exclusive breastfeeding, incomplete immunization, impaired mother–infant bonding, and delayed cognitive development (12, 14). Longitudinal research indicates that 25–50% of women with untreated PPD continue to experience symptoms beyond six months postpartum (15). Globally, suicide accounts for 7–10% of maternal deaths, underscoring the serious consequences of untreated perinatal mental health conditions (5). Addressing postpartum mental health thus aligns directly with Sustainable Development Goal (SDG) 3; promoting good health and well-being and SDG 5; advancing gender equality (16, 17).

Bangladesh has made significant progress in maternal health over the past two decades. The maternal mortality ratio dropped from 322 deaths per 100,000 live births in 2001 to 173 in 2017 (18). The 2022 Bangladesh Demographic and Health Survey (BDHS) further reports that 67.5% of births occurred in health facilities and 61.5% of women received at least four antenatal care visits (19). However, mental health screening remains largely absent from routine maternal health services. National mental health expenditure is less than 0.5% of total health spending, and the country has fewer than 0.2 psychiatrists per 100,000 population—far below the global median (~ 1.3 per 100,000) (20). These structural gaps highlight the urgency of integrating maternal mental health into national health strategies.

Socioeconomic inequality is a well-established determinant of depressive disorders. Individuals from the lowest income groups are 1.5–2 times more likely to experience depression than those from higher-income groups (21). In South Asia, poverty, unemployment, unintended pregnancy, and limited social support are repeatedly identified as key predictors of postpartum depressive symptoms (10, 13). Bangladesh continues to experience substantial income inequality, with a recent Gini coefficient above 0.48 (22). Whether such macro-level disparities translate into measurable socioeconomic gradients in postpartum depressive symptoms at the national level remains unclear.

The 2022 Bangladesh Demographic and Health Survey (BDHS) represent a significant advancement in the study of maternal mental health in Bangladesh, as it incorporated, for the first time, the validated Patient Health Questionnaire-9 (PHQ-9) to assess depressive symptoms among women with a recent live birth (23). Leveraging a weighted sample of 3,173 women who had delivered within the preceding 12 months, this study fills a critical gap in the national evidence base by estimating the prevalence of postpartum depressive symptoms across the country and its administrative regions, assessing socioeconomic disparities with a focus on household wealth, and examining community-level contextual influences using multilevel mixed-effects logistic regression models.

By integrating both individual and structural determinants, this study conceptualizes postpartum depressive symptoms as socially patterned outcomes embedded within broader socioeconomic and community environments, rather than isolated psychological experiences. Producing nationally representative evidence is therefore an essential step toward ensuring that maternal mental health is recognized, prioritized, and integrated into Bangladesh's evolving health system and its broader commitments to achieving the Sustainable Development Goals.

Methods

Study design and data source

This study was a secondary analysis of data from the 2022 Bangladesh Demographic and Health Survey (BDHS 2022), a nationally representative cross-sectional household survey (24). The BDHS employed a two-stage stratified cluster sampling design. In the first stage, primary sampling units (clusters) were selected from the national sampling frame using probability proportional to size. In the second stage, a fixed number of households were selected systematically within each cluster. All women aged 15–49 years residing in selected households were eligible for interview.

Among the 30,078 women interviewed in BDHS 2022, those who had a live birth within the 12 months preceding the survey were identified using the reported age of the most recent child (≤ 12 months). A total of 3,117 women met this criterion and constituted the final analytic sample. No additional exclusions were required, as complete PHQ-9 data were available for all eligible women. The sample selection process is presented in Figure 1.

Outcome measure

The outcome of interest was postpartum depressive symptoms, assessed using the Patient Health Questionnaire-9 (PHQ-9) included in BDHS 2022. The PHQ-9 comprises nine items assessing the frequency of depressive symptoms over the preceding two weeks, each scored from 0 (“not at all”) to 3 (“nearly every day”). A total score ranging from 0 to 27 was calculated by summing responses across the nine items. In accordance with established practice, postpartum depressive symptoms were defined as a PHQ-9 score ≥ 5 , indicating at least mild depressive symptomatology. The outcome variable was dichotomized as 0 (no depressive symptoms; score 0–4) and 1 (postpartum depressive symptoms; score ≥ 5) (25).

Independent variables

Individual-level factors

We included socio-demographic and reproductive characteristics identified in prior literature as potential determinants of maternal mental health. These variables were categorized as follows: maternal age (15–19, 20–24, 25–29, 30–34, 35–39, 40–49 years); educational attainment (no education, primary, secondary, higher); marital status (currently married; formerly married [divorced, widowed, or separated]); employment status (working; not working); parity (≤ 1 child, 2–3 children, ≥ 4 children); pregnancy intention (wanted at the time; unintended); number of antenatal care (ANC) visits (< 4 ; ≥ 4 visits); place of delivery (home; health facility); mode of delivery (vaginal; caesarean section); wealth quintile (poorest, poorer, middle, richer, richest); and place of residence (urban; rural). Media exposure was defined as exposure to at least one of the following: newspaper, radio, or television (yes; no). All covariates were treated as categorical variables.

Community-level factors

To account for contextual influences, two community-level variables were constructed at the cluster level. Community education was defined as the proportion of women within a cluster who had attained at least secondary education. Community wealth was defined as the proportion of women within a cluster belonging to the middle, richer, or richest wealth quintiles (wealth quintile ≥ 3). Clusters were classified as having “high” or “low” community education and wealth based on the median values of these proportions. These measures captured broader socio-economic context beyond individual characteristics.

Statistical analysis

All analyses accounted for the complex survey design of BDHS 2022. Sampling weights were applied in descriptive analyses to obtain nationally representative estimates.

To examine factors associated with postpartum depressive symptoms, multilevel mixed-effects logistic regression models with a random intercept for clusters were fitted to account for intra-cluster correlation. For multilevel modelling, sampling weights were rescaled by dividing each weight by its mean to stabilize model estimation. Four sequential models were estimated: (1) a null model without explanatory variables; (2) a model including individual-level covariates; (3) a model including community-level variables; and (4) a full model incorporating both individual- and community-level factors. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were reported.

Model fit was evaluated using log-likelihood, deviance, Akaike’s Information Criterion (AIC), and Bayesian Information Criterion (BIC). Cluster-level variation was quantified using the intra-class correlation coefficient (ICC) and the median odds ratio (MOR). Statistical significance was defined as $p < 0.05$. Statistical analyses were performed using Stata version 18 (StataCorp LLC, College Station, TX, USA), while the flow diagram and geographical distribution map were created using R (version 4.5.2).

Results

Descriptive characteristics of respondents

A total of 3,117 women who had a live birth within the 12 months preceding the BDHS 2022 survey were included in the analysis. The largest age group was 20–24 years (34.2%), followed by 25–29 years (24.4%) and 15–19 years (19.7%). More than half of the respondents (55.4%) completed secondary education, whereas 20.7% had primary education, 19.2% had higher education, and 4.6% had no education. Nearly all participants were currently

married (99.5%), and 81.8% were not engaged in paid employment. Regarding reproductive characteristics, 51.6% of women had two to three children, while 41.8% had one or fewer children. Most pregnancies were wanted at the time (80.1%), and 61.5% of women attended at least four antenatal care visits. A majority of deliveries occurred in health facilities (67.5%), and 47% were by caesarean section. Most women lived in rural areas (73.4%), and the wealth distribution across quintiles was relatively even, ranging from 17.8% in the richest to 21.0% in the poorest households. Community characteristics were also balanced, with 51.8% of respondents residing in areas of high community education and 50.5% in areas of high community wealth (Table 1).

Table 1: Descriptive characteristics of the study participants from the Bangladesh DHS data of 2022

Variable	Category	Weighted frequency (n = 3173)	Percentage (%)
Age group	15–19	626	19.7
	20–24	1086	34.2
	25–29	773	24.4
	30–34	482	15.2
	35–39	173	5.4
	40–49	34	1.1
Mother's education	No education	147	4.6
	Primary	657	20.7
	Secondary	1758	55.4
	Higher	610	19.2
Marital status	Married	3158	99.5
	Formerly married	15	0.5
Employment status	Not working	2596	81.8
	Working	577	18.2
Parity	≤1 child	1326	41.8
	2–3 children	1639	51.6
	4+ children	209	6.6
Pregnancy intention	Wanted then	2542	80.1
	Unintended pregnancy	632	19.9
Antenatal care visits	<4 ANC visits	1222	38.5
	≥4 ANC visits	1951	61.5
Place of delivery	Home	1030	32.5
	Health facility	2143	67.5
Mode of delivery	Vaginal delivery	1682	53
	Cesarean section	1491	47
Media exposure	No media exposure	1404	44.2
	Any media exposure	1769	55.8
Wealth index	Poorest	667	21
	Poorer	627	19.8
	Middle	690	21.7

	Richer	625	19.7
	Richest	565	17.8
Place of residence	Urban	844	26.6
	Rural	2330	73.4
Community education	Low community education	1529	48.2
	High community education	1645	51.8
Community wealth	Low community wealth	1571	49.5
	High community wealth	1602	50.5

Prevalence of postpartum depressive symptoms

A total of 512 women reported postpartum depressive symptoms (PHQ-9 ≥ 5), representing a weighted prevalence of 16.17% nationally. As shown in Figure 2, Geographic variation was observed across administrative divisions: prevalence ranged from 13.42% in Mymensingh to 18.10% in Rajshahi. Higher levels of depressive symptoms were found in Rajshahi (18.1%) and Chattogram (17.9%), whereas Rangpur (13.9%) and Mymensingh (13.4%) exhibited lower prevalence.

Model fitness

Table 2 summarizes the model fit statistics for the multilevel logistic regression models. In the null model, the intra-class correlation coefficient (ICC) was 0.157, indicating that 15.7% of the total variation in postpartum depressive symptoms was attributable to differences between clusters. The median odds ratio (MOR) was 2.11, demonstrating substantial between-cluster heterogeneity. This indicates that, for two otherwise similar women selected from two randomly chosen clusters, the woman in the higher-risk cluster had 2.11 times higher odds of experiencing postpartum depressive symptoms compared with a woman in a lower-risk cluster.

Model fit improved progressively with the addition of individual-level and community-level variables. The deviance decreased from 2747.54 in the null model to 2163.47 in the full model, and the Akaike Information Criterion (AIC) similarly declined from 2751.54 to 2215.47, reflecting better model performance. Based on these improvements, the full model was identified as the best-fitting model and was retained for interpretation.

Table 2: Model fitness and statistical analysis of the postpartum depression in Bangladesh.

Statistical summary	Model 0	Model 1	Model 2	Model 3
Likelihood ratio	-1373.768	-1083.521	-1341.223	-1081.735
ICC	0.1572286	0.226861		
Deviance	2747.537	2167.042	2682.446	2163.47
AIC	2751.537	2215.042	2690.446	2215.47
BIC	2763.626	2349.998	2714.624	2361.672
MOR	2.1112994			

*ICC: Intra-class correlation; MOR: Median odds ratio; AIC: Akaike information criterion; BIC: Bayesian information criterion

Factors associated with postpartum depressive symptoms

The results from the multilevel logistic regression models are shown in Table 3. One of the clearest patterns was the role of household wealth. Compared with women in the poorest wealth group, women in the poorer group had lower odds of postpartum depressive symptoms (AOR = 0.59; 95% CI: 0.39–0.88). The same trend continued across the other groups: the middle (AOR = 0.62; 95% CI: 0.41–0.95), richer (AOR = 0.56; 95% CI: 0.34–0.90), and richest (AOR = 0.48; 95% CI: 0.27–0.86) quintiles all showed significantly lower odds. In simple terms, the wealthier the household, the less likely women were to experience postpartum depressive symptoms.

Community-level education also showed an interesting pattern. In the community-only model, women living in areas with higher education levels had lower odds of postpartum depression (AOR = 0.74; 95% CI: 0.57–0.97). But once individual-level factors were added into the full model, this effect weakened and was no longer statistically significant (AOR = 0.79; 95% CI: 0.57–1.09).

For the other variables—such as age, education, marital status, employment, number of children, whether the pregnancy was intended, antenatal care visits, where or how the baby was delivered, media exposure, place of residence, and community wealth—the fully adjusted model did not show any significant associations. Since the confidence intervals for these variables all crossed 1, we could not conclude that they were genuinely associated with postpartum depressive symptoms.

Table 3: Multilevel multivariable logistic regression analysis from Bangladesh's recent DHS data.

Variable	Model I/Null model	Model II	Model III	Model IV
Age (years)				
15–19		1.00		1.00
20–24		1.03 [0.67,1.58]		1.03 [0.67,1.57]
25–29		1.19 [0.72,1.98]		1.18 [0.71,1.97]
30–34		1.41 [0.79,2.51]		1.41 [0.79,2.51]
35–39		1.55 [0.75,3.20]		1.58 [0.76,3.27]
40–49		1.86 [0.54,6.34]		1.94 [0.57,6.65]
Maternal education				
No education		1.00		1.00
Primary		1.00 [0.54,1.87]		1.02 [0.54,1.91]
Secondary		0.85 [0.45,1.63]		0.94 [0.48,1.83]
Higher		0.57 [0.27,1.19]		0.64 [0.30,1.34]
Marital status				
Married		1.00		1.00
Formerly married		2.47 [0.39,15.71]		2.60 [0.42,16.23]
Employment status				
Not working		1.00		1.00
Working		1.02 [0.73,1.43]		1.03 [0.73,1.45]
Parity				
≤1 child		1.00		1.00
2–3 children		0.92 [0.64,1.33]		0.92 [0.64,1.32]
4+ children		0.94 [0.51,1.76]		0.95 [0.51,1.77]
Pregnancy intention				
Wanted then		1.00		1.00
Unintended pregnancy		1.20 [0.86,1.68]		1.20 [0.86,1.67]
ANC visits				
<4 ANC visits		1.00		1.00
≥4 ANC visits		0.92 [0.68,1.24]		0.92 [0.68,1.25]
Place of delivery				
Home		1.00		1.00

Health facility	1.03 [0.70,1.51]	1.04 [0.71,1.52]
Mode of delivery		
Vaginal delivery	1.00	1.00
Cesarean section	0.93 [0.66,1.31]	0.93 [0.66,1.32]
Wealth index		
Poorest	1.00	1.00
Poorer	0.59* [0.39,0.89]	0.59* [0.39,0.88]
Middle	0.68 [0.45,1.02]	0.62* [0.41,0.95]
Richer	0.62* [0.39,0.97]	0.56* [0.34,0.90]
Richest	0.54* [0.32,0.93]	0.48* [0.27,0.86]
Media exposure		
No media exposure	1.00	1.00
Any media exposure	1.21 [0.92,1.59]	1.21 [0.92,1.59]
Place of residence		
Urban	1.00	1.00
Rural	0.75 [0.53,1.04]	0.79 [0.57,1.10]
Community education		
Low community education	1.00	1.00
High community education	0.74* [0.57,0.97]	0.79 [0.57,1.09]
Community wealth		
Low community wealth	1.00	1.00
High community wealth	1.13 [0.86,1.47]	1.29 [0.90,1.84]

Exponentiated coefficients; 95% confidence intervals in brackets * p<0.05, ** p<0.01, *** p<0.001

Discussion

This study offers the first nationwide picture of postpartum depressive symptoms in Bangladesh using data from the 2022 BDHS. We found that 16.17% of women who had given birth in the previous year showed signs of depression. In simple terms, one in six new mothers may be struggling with their mental well-being. This level is similar to what has been reported in many LMICs, where about 17–20% of women experience these symptoms (26, 27). However, it is lower than earlier findings from smaller studies in very poor or overcrowded areas of Bangladesh, where rates have been more than 30% (28, 29). Because the BDHS survey includes women from many backgrounds, it provides a more complete nationwide estimate.

One of the most important findings of this study is the strong link between household wealth and postpartum mental health. Women from wealthier families were consistently less likely to experience depressive symptoms than those from the poorest families. This pattern remained even after considering other factors such as age, education, number of children, pregnancy intention, and use of antenatal care. Similar relationships between financial hardship and depression have been found in studies from many other countries (30, 31). In Bangladesh, where income inequality remains high, this means that economic circumstances continue to shape women's mental health during the postpartum period.

Beyond individual characteristics, the findings show that the community context also matters for postpartum depressive symptoms. A significant portion of the variation was attributable to community-level differences, underscoring the influence of local context on women's mental health. In the community-only model, women in areas with higher community education had lower odds of depressive symptoms, but this association became non-significant after individual factors were included (AOR = 0.79; 95% CI: 0.57–1.09). Even so, the cluster-level variation remained in the fully adjusted model, showing that community differences continued to contribute to the pattern of depressive symptoms. This aligns with evidence from other LMIC settings suggesting that broader community environments—including social norms and local support networks—can influence maternal wellbeing (21).

Importantly, this study reveals clear geographic variation in postpartum depressive symptoms. Prevalence ranged from 13% to 18%, with higher levels in Rajshahi and Chattogram and lower levels in Mymensingh and Rangpur. Although the difference is only about 5%, it still represents thousands of women at the population level. The multilevel results further support this pattern: 15.7% of the variation in symptoms stemmed from differences between communities, and a median odds ratio above 2.0 showed that two similar women could face more than double the risk simply based on where they live. These findings show that where a woman lives plays an important role in her postpartum mental health, aligning with earlier evidence linking maternal wellbeing to geographic inequality (32, 33). In simple terms, women living in poorer areas may have fewer services and less support available to them, which can increase their risk of experiencing postpartum depressive symptoms.

Notably, several factors often highlighted in smaller or facility-based studies, such as maternal age, parity, pregnancy intention, and mode of delivery were not independently associated with postpartum depressive symptoms in this nationally representative analysis. Previous research has reported mixed findings for these variables (34, 35). In our study, the strong and consistent association with household wealth suggests that broader socioeconomic conditions may play a more central role at the population level. Although Bangladesh has achieved substantial improvements in maternal health service utilization, these gains have not translated into lower levels of postpartum depressive symptoms. This indicates that expansion of physical maternal health services alone is insufficient and that mental health screening and support have not yet been systematically integrated into routine maternal care.

Strengths and limitations

This study has several notable strengths. It draws on nationally representative data from the 2022 Bangladesh Demographic and Health Survey, allowing the findings to reflect postpartum women across the country. The use of sampling weights ensured that estimates accurately represented the national population. Additionally, the multilevel mixed-effects modeling approach made it possible to examine both individual and community influences while accounting for cluster-level differences, strengthening the robustness of the results. The

inclusion of the PHQ-9, a widely validated screening tool, also enhances comparability with studies from other settings and contributes to alignment with global maternal mental health research.

At the same time, a few limitations should be noted. Because the study is based on cross-sectional data, it cannot determine causal relationships or the direction of the associations observed. Depressive symptoms were measured using a screening instrument rather than a clinical diagnostic assessment, and a cutoff of ≥ 5 primarily identifies mild symptoms rather than clinically confirmed depression. The dataset also lacks important psychosocial variables, such as intimate partner violence, past mental health conditions, and detailed measures of social support, which may influence postpartum depressive symptoms but could not be examined here. Finally, as with all self-reported survey data, responses may be affected by recall or social desirability bias, potentially leading to underreporting of symptoms.

Policy recommendations

The findings point to several practical steps for strengthening maternal mental health care in Bangladesh. Because PPD symptoms were patterned by socioeconomic status and varied across communities, routine mental health screening should be incorporated into antenatal and postnatal visits. Using brief tools such as the PHQ-9 within existing maternal health services would allow providers to identify women who may need additional support without creating new parallel systems.

Given the clear socioeconomic gradient observed in this study, targeted support for women from economically disadvantaged households is especially important. This could include counselling, follow-up through community health workers, or connection to existing social protection programs.

At the community level, simple measures can also help. Awareness activities may reduce stigma and encourage women to seek help when needed, while strengthening referral pathways between primary facilities and mental health professionals can improve access to care, particularly in low-resource settings where specialist services are limited.

Overall, the results suggest that improving postpartum mental health will require a combination of strengthened screening, timely referral, and focused attention to women facing socioeconomic disadvantage. These actions would support progress toward Bangladesh's broader maternal health and development goals.

Conclusion

This study provides the first nationally representative estimate of postpartum depressive symptoms in Bangladesh and shows that about one in six women experience symptoms within the first year after childbirth. Household wealth was the only factor consistently associated with postpartum depressive symptoms, while other maternal and service-related variables showed no independent effects. A clear socioeconomic gradient was observed, with women from poorer households facing a substantially higher burden. We also identified meaningful geographic and community-level variation, indicating that residing area contributes to women's risk of experiencing postpartum depressive symptoms. All these results underscore the influence of broader socioeconomic conditions and highlight a gap in current maternal healthcare, where mental health support is still largely missing. Practical steps, such as adding routine mental health screening to antenatal and postnatal care and prioritizing support for women facing economic disadvantage, will be essential to reduce the burden of postpartum depressive symptoms in Bangladesh.

Declarations

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Ethics approval and consent to participate

This study used publicly available, anonymized secondary data from the Bangladesh Demographic and Health Surveys (BDHS). Ethical approval for the original surveys was obtained by the National Research Ethics Committee of Bangladesh and the relevant international institutional review boards. Written informed consent was obtained from all participants during the original data collection. No additional ethical approval was required for this secondary analysis.

Clinical trial number: not applicable.

Data availability statement

The data used in this study are publicly available from the Demographic and Health Surveys (DHS) Program upon reasonable request and approval. Access to the data can be obtained from <https://dhsprogram.com>

Replication materials, including Stata code and supporting files, are available at:
https://drive.google.com/file/d/1_4Uda1Emz9x1lyJNfT7S2u1CpJCILMui/view?usp=sharing

Due to DHS data use restrictions, the raw dataset cannot be shared publicly.

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Competing interests

The authors declare that they have no competing interests.

Patient and public involvement

Patients and the public were not involved in the design, conduct, reporting, or dissemination plans of this research.

Author Contribution

TI came up with the original idea of this study. She led the overall research. She oversaw the study design and coordinated the work over the project. TI and ARR prepared and handled the dataset. The statistical analysis and multilevel modelling approach were undertaken by ARR. The methodology refinement and result interpretation were done by TI, ARR, and KSAN. The manuscript was drafted by TI, ARR and KSAN helped to revise and

strengthen the analytical interpretation. The manuscript was critically reviewed and provided intellectual inputs by ASA, AH and MGH to improve the final version. All contributors examined the manuscript and approved it.

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Figures

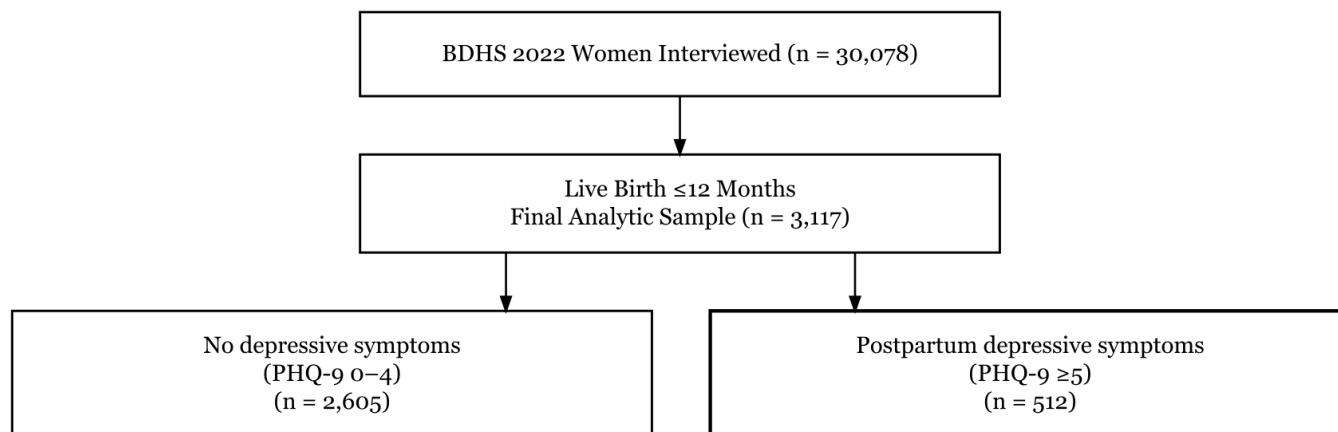
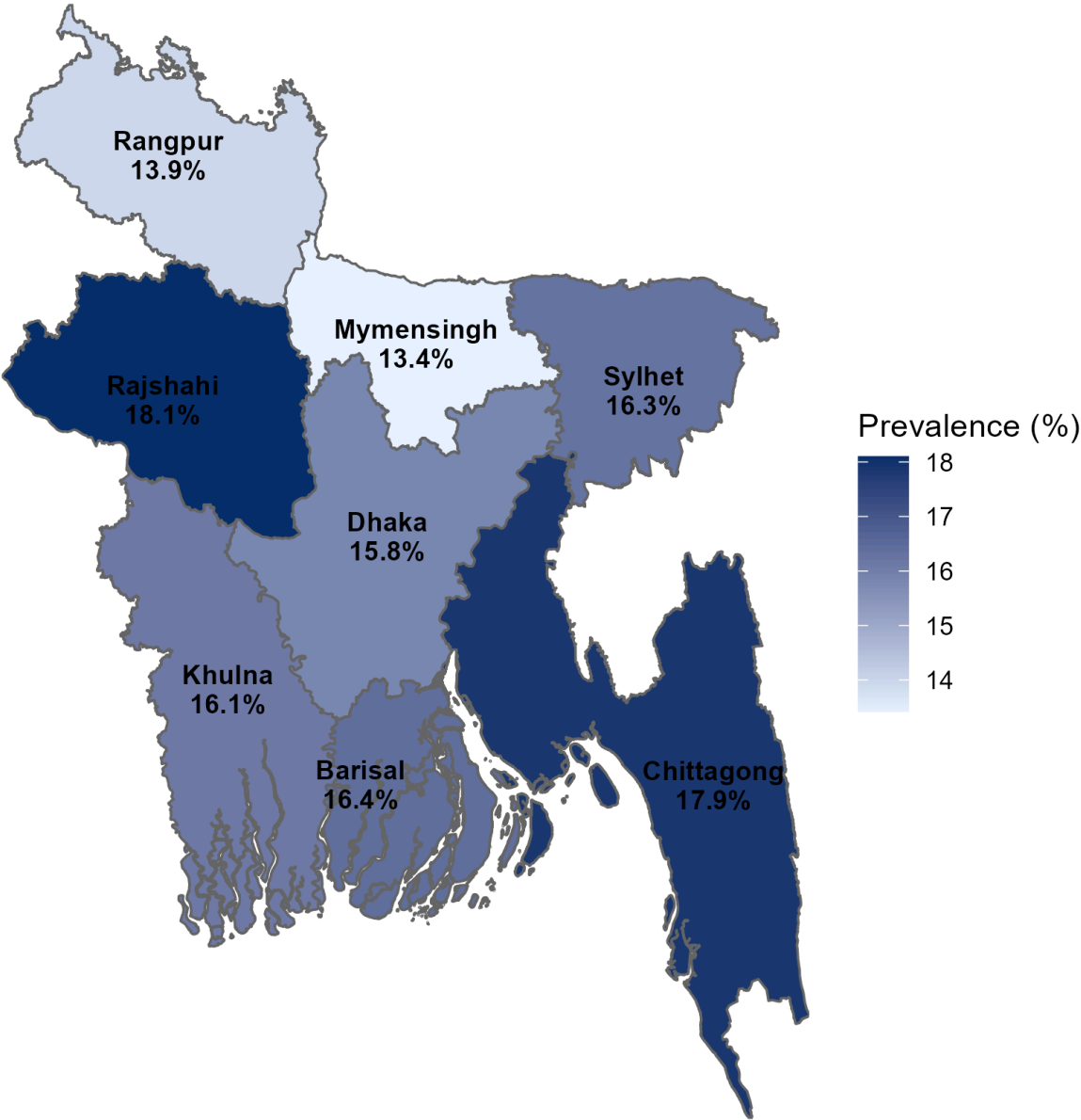


Figure 1

Flow diagram of participant selection for the analysis of postpartum depressive symptoms, BDHS 2022

Geographical distribution of postpartum depressive symptoms in Bangladesh

Weighted prevalence (%) by administrative division, BDHS 2022



Source: Bangladesh Demographic and Health Survey (BDHS) 2022

Figure 2

Geographical distribution of postpartum depressive symptoms in Bangladesh, BDHS 2022