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Socio-Demographic and Economic Determinants of Fertility in Bangladesh: Evidence from the Bangladesh Demographic and Health Survey (BDHS) 2022

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ABSTRACT

Background: *Bangladesh has achieved a remarkable decline in its Total Fertility Rate (TFR) over recent decades; however, understanding the remaining drivers of elevated fertility is essential for achieving national population stabilisation and the Sustainable Development Goals. This study examines the contemporary socio-demographic and economic determinants influencing reproductive outcomes among Bangladeshi women.*

Methodology: *Using nationally representative, cross-sectional secondary data from the 2022 Bangladesh Demographic and Health Survey (BDHS), this study analysed a refined sample of 15,685 ever-married women aged 15–49 who had experienced at least one live birth. Fertility status was dichotomised into low fertility (0–2 children) and high fertility (>2 children) based on the replacement-level threshold of 2.1. Descriptive statistics, Pearson's chi-square (χ^2) tests, and binary logistic regression were employed to identify significant predictors and estimate adjusted odds ratios (aOR) with 95% confidence intervals (CI).*

Results: *The baseline distribution revealed that 63.8% of respondents exhibited low fertility, while 36.2% fell into the high fertility category. The multivariate model identified 13 statistically significant predictors. Educational attainment and household wealth emerged as the most powerful protective factors: women with higher education ($aOR = 0.31$, $p < .001$) and those in the richest wealth quintile ($aOR = 0.80$, $p < .001$) were substantially less likely to experience high fertility. Delaying age at first birth to ≥20 years reduced the odds of high fertility by 65% ($aOR = 0.35$, $p < .001$). Residents of Chattogram ($aOR = 1.88$) and Sylhet ($aOR = 1.86$) faced nearly double the odds of exceeding replacement-level fertility. A positive association between contraceptive use and high fertility ($aOR = 2.04$, $p < .001$) indicates predominantly post-hoc adoption of family planning methods.*

Conclusion: *Fertility determinants in Bangladesh are multifaceted and increasingly driven by regional cultural variations, educational attainment, and reproductive timing. Policymakers must pivot from generic national initiatives toward targeted, regionally differentiated strategies—particularly for Sylhet and Chattogram—while continuing to prioritise female education and programmes that promote delayed entry into childbearing.*

Keywords: *fertility transition; Bangladesh Demographic and Health Survey; binary logistic regression; socioeconomic determinants; post-hoc contraception; reproductive timing; Bangladesh*

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I. Introduction

Human fertility is shaped by a complex interplay of biological, social, and behavioural factors. In the context of Bangladesh, the timing of marriage and first birth remain pivotal demographic determinants (Sobhan et al., 2024).Research consistently indicates that a younger age at marriage is significantly associated with a higher number of births due to the resultant extension of the reproductive window (Ahmed et al., 2007). Child marriage (defined as marriage before age 18) is particularly consequential; studies utilising earlier BDHS data have found that women married as minors were more than four times more likely to have three or more children compared to those married in adulthood (Kamal, 2012). This relationship is frequently compounded by the immediate onset of childbearing following marriage, especially in contexts where reproduction is considered the primary objective of the marital union (Alemayehu et al., 2010).

Socioeconomic status, specifically educational attainment and household wealth, exerts a powerful inverse influence on reproductive outcomes(Huber et al., 2010). Higher education, particularly at the secondary level and above, is associated with a marked decline in fertility by enhancing women's autonomy, improving

reproductive health literacy, and increasing the opportunity cost of childbearing (Adugna, 2018). Similarly, a well-documented inverse relationship exists between household wealth and fertility: lower socioeconomic groups may perceive larger families as a form of old-age security, while wealthier households increasingly adopt smaller family size norms (Sarkar et al., 2025).

Beyond individual-level characteristics, geographic location and information access are critical drivers of fertility differentials (Ezeh et al., 2009). Persistent regional disparities are observed across Bangladesh's administrative divisions, with areas such as Sylhet and Chattogram historically exhibiting higher fertility rates attributable to localised cultural norms and differential access to reproductive healthcare (Adugna, 2018). Furthermore, mass media exposure—including television, radio, and digital platforms—serves as a significant protective factor against high fertility by disseminating family planning information and reshaping fertility aspirations across diverse demographic strata (Adhikari, 2010). Moreover, contemporary analysis suggests that despite this national progress, fertility rates have plateaued at 2.3 since 2011, highlighting a critical stagnation in reproductive behavior that necessitates closer examination of community-level influences (Rabbi, 2025). In addition, the role of spousal dynamics and the influence of patriarchal norms remain under-researched, as husband's education and occupation frequently correlate with household decision-making regarding the desired number of children (Tomal et al., 2022).

Despite substantial progress over the past three decades, Bangladesh has not yet achieved replacement-level fertility uniformly across all sociodemographic groups (Bora et al., 2022). The 2022 BDHS provides a timely, nationally representative dataset to re-examine contemporary fertility determinants. Addressing the observed stagnation in Bangladesh's fertility transition, this study systematically identifies key socio-demographic and economic predictors of high fertility. By employing binary logistic regression, this analysis quantifies the direction and magnitude of these associations, providing a comprehensive framework to inform targeted, evidence-based population policies. Furthermore, this research specifically evaluates the contribution of proximate determinants, such as contraceptive efficacy and postpartum infecundability to elucidate why specific subpopulations continue to exceed fertility thresholds (Uddin et al., 2024). Additionally, it is imperative to investigate how religious affiliations and empowerment indicators, such as participation in household decision-making, interact with these demographic variables to influence unmet fertility desires (Akram et al., 2020). This study aims to: (i) identify socio-demographic and economic predictors of high fertility; (ii) quantify the direction and magnitude of their association using binary logistic regression; and (iii) provide evidence-based recommendations to sustain the fertility transition and inform targeted population policy. By synthesising current trends in reproductive health and socio-economic indicators, this analysis offers a comprehensive framework for addressing the persistent stagnation in fertility decline. Additionally, this research specifically evaluates the contribution of proximate determinants, such as contraceptive efficacy and postpartum infecundability, to elucidate why specific subpopulations continue to exceed fertility thresholds (Sarker et al., 2021). Furthermore, it is imperative to investigate how religious affiliations and empowerment indicators, such as participation in household decision-making, interact with these demographic variables to influence unmet fertility desires (Afreen et al., 2024).

II. Methodology

Research Design and Data Source

This study employed a cross-sectional research design based on secondary data from the 2022 Bangladesh Demographic and Health Survey (BDHS). The survey was conducted under the supervision of the National Institute of Population Research and Training (NIPORT) and provides nationally representative data on reproductive health and demographic indicators. Ethical approval for the original BDHS was obtained by NIPORT; this secondary analysis used anonymised public-use data and did not require additional ethical clearance.

Sampling and Study Population

The 2022 BDHS employed a two-stage stratified cluster sampling strategy. In the first stage, 675 enumeration areas (EAs) were selected with probability proportional to size (PPS). In the second stage, a systematic sample of households was drawn from each selected EA. The full survey interviewed 30,078 ever-married women aged 15–49. For the present analysis, the sample was restricted to women who had experienced at least one live birth. After exclusion of cases with missing values on key variables, the final analytical sample comprised 15,685 women. Sampling weights were applied throughout to ensure nationally representative estimates.

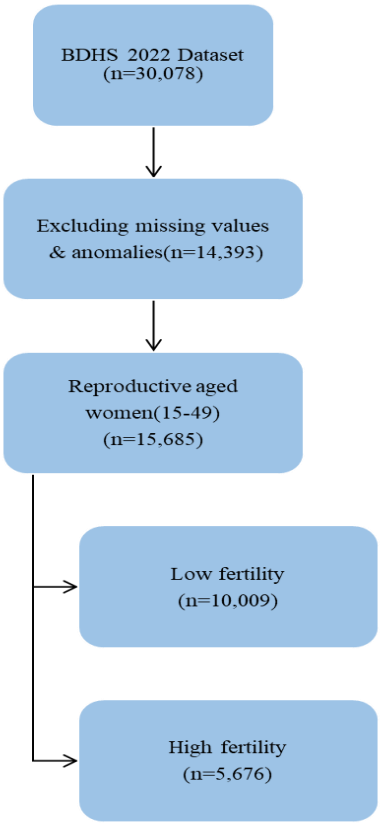

Figure 1 : Flowchart of Sample Selection Process Based on Inclusion and Exclusion Criteria
Note: EA = enumeration area. Flowchart depicts the stepwise sample selection from the 2022 BDHS.

Measurement of Variables
Dependent variable: Fertility status was operationalised as a binary outcome, dichotomised into *low fertility* (0–2 children ever born) and *high fertility* (>2 children ever born), based on the standard replacement-level threshold of 2.1.
Independent variables: Predictors were organised into two broad domains. Socioeconomic factors included respondent's educational attainment (no education; primary; secondary; higher), husband's educational attainment, household wealth index (poor; middle; rich), place of residence (urban; rural), administrative division (eight divisions), religion (Muslim; non-Muslim), and mass media exposure. Demographic factors included respondent's current age, age at first marriage (early: <18 years; late: ≥18 years), age at first birth (10–19 years; 20–49 years), current contraceptive use, husband's current age, husband's desire for additional children, and respondent's working status.

Statistical Analysis
Data analysis was performed using SPSS version 25 in three stages. Weighted frequencies and percentages were computed to describe the sociodemographic profile of the study population. Pearson's chi-square (χ^2) tests of independence were conducted to assess bivariate associations between each independent variable and fertility status. A binary logistic regression model was then fitted using the logit link function to estimate adjusted odds ratios (aOR) and 95% CI for high fertility, incorporating all predictors significant at $p < .05$ in bivariate analysis. Statistical significance was set at $\alpha = .05$ throughout.

III. Results

Sociodemographic Profile
Of the 15,685 women in the analytical sample, 40.6% were aged 35–49 years and 38.3% were aged 25–34 years. The majority resided in rural areas (71.8%), and 66.3% had been married before age 18. The Dhaka division accounted for the largest share (25.1%), followed by Chattogram (19.1%). Nearly 70.8% reported no regular mass media exposure. Full sociodemographic characteristics are presented in Table 1.

Table 1: Sociodemographic and Economic Characteristics of Ever-Married Women in Bangladesh (BDHS 2022)

Variable	Category	n	%
Age (years)	15–24	3,309	21.1
	25–34	6,009	38.3
	35–49	6,367	40.6
Division	Barishal	974	6.2
	Chattogram	2,996	19.1
	Dhaka	3,933	25.1
	Khulna	1,878	12.0
	Mymensingh	1,223	7.8
	Rajshahi	2,018	12.9
	Rangpur	1,818	11.6
	Sylhet	847	5.4
Place of Residence	Urban	4,427	28.2
	Rural	11,259	71.8
Mass Media Exposure	No	11,098	70.8
	Yes	4,588	29.2
Working Status	No	10,542	67.2
	Yes	5,144	32.8
Age at First Marriage	Early (<18 years)	10,398	66.3
	Late (≥18 years)	5,288	33.7
Husband's Education	No education	3,492	22.3
	Primary	4,571	29.1
	Secondary	5,032	32.1
	Higher	2,591	16.5
Husband's Age (years)	15–34	4,608	29.4
	35–54	9,347	59.6
	>54	1,731	11.0
Husband's Desire for Children	Both want same	14,041	89.5
	Husband wants more	1,075	6.9
	Husband wants fewer	570	3.6

Note: n = 15,685 ever-married women with at least one live birth. Estimates are weighted to the national population. BDHS = Bangladesh Demographic and Health Survey.

Bivariate Analysis

The baseline distribution showed that 63.8% of respondents were categorised as low fertility (0–2 children) and 36.2% as high fertility (>2 children). Pearson's χ^2 tests confirmed statistically significant associations ($p < .05$) between fertility status and all selected predictors, except respondent's working status, which was non-significant in the multivariate stage. The strongest associations were observed for respondent's current age ($\chi^2 = 3026.1$), respondent's education ($\chi^2 = 1995.1$), husband's age ($\chi^2 = 2462.8$), and husband's education ($\chi^2 = 1240.6$). Bivariate results are presented in Table 2.

Table 2: Bivariate Association Between Predictors and Fertility Status Among Ever-Married Women in Bangladesh (BDHS 2022)

Variable	Category	Low Fertility n (%)	High Fertility n (%)	χ^2	p-value
Age (years)	15–24	3,178 (96.0)	132 (4.0)	3026.1	<.001
	25–34	4,220 (70.2)	1,789 (29.8)		
	35–49	2,612 (41.0)	3,756 (59.0)		
Division	Barishal	580 (59.6)	394 (40.5)	364.1	<.001

	Chattogram	1,632 (54.5)	1,364 (45.5)		
	Dhaka	2,715 (69.0)	1,218 (31.0)		
	Khulna	1,369 (72.9)	508 (27.1)		
	Mymensingh	676 (55.3)	547 (44.7)		
	Rajshahi	1,426 (70.7)	591 (29.3)		
	Rangpur	1,169 (64.3)	649 (35.7)		
	Sylhet	442 (52.3)	404 (47.8)		
Place of Residence	Urban	3,097 (70.0)	1,330 (30.0)	100.8	<.001
	Rural	6,912 (61.4)	4,346 (38.6)		
Respondent's Education	No education	691 (33.8)	1,356 (66.2)	1995.1	<.001
	Primary	2,109 (49.9)	2,114 (50.1)		
	Secondary	5,375 (73.1)	1,981 (26.9)		
	Higher	1,835 (89.1)	225 (10.9)		
Religion	Muslim	8,865 (62.7)	5,283 (37.3)	82.8	<.001
	Non-Muslim	1,145 (74.4)	394 (25.6)		
Husband's Age (years)	15–34	4,205 (91.3)	402 (8.7)	2462.8	<.001
	35–54	5,232 (56.0)	4,115 (44.0)		
	>54	572 (33.0)	1,159 (67.0)		
Age at First Marriage	Early (<18 years)	6,824 (65.6)	3,574 (34.4)	43.9	<.001
	Late (≥18 years)	3,186 (60.3)	2,102 (39.8)		
Working Status	No	6,923 (65.7)	3,619 (34.3)	48.1	<.001
	Yes	3,086 (60.0)	2,057 (40.0)		
Mass Media Exposure	No	6,482 (58.4)	4,616 (41.6)	480.6	<.001
	Yes	3,528 (76.9)	1,060 (23.1)		
Wealth Index	Poor	3,413 (57.1)	2,569 (42.9)	237.3	<.001
	Middle	2,047 (63.3)	1,187 (36.7)		
	Rich	4,549 (70.3)	1,920 (29.7)		
Age at First Birth	10–19 years	5,921 (57.7)	4,335 (42.3)	474.4	<.001
	20–49 years	4,088 (75.3)	1,341 (24.7)		
Contraceptive Use	No	1,278 (66.8)	635 (33.2)	8.5	.004
	Yes	8,732 (63.4)	5,042 (36.6)		
Husband's Desire	Both want same	9,014 (64.2)	5,027 (35.8)	23.2	<.001
	Husband wants more	615 (57.2)	460 (42.8)		
	Husband wants fewer	380 (66.7)	190 (33.3)		
Husband's Education	No education	1,493 (42.8)	1,999 (57.3)	1240.6	<.001
	Primary	2,738 (59.9)	1,833 (40.1)		
	Secondary	3,653 (72.6)	1,379 (27.4)		
	Higher	2,125 (82.0)	466 (18.0)		

Note: Low fertility = 0–2 children; High fertility = >2 children. χ^2 = Pearson's chi-square statistic. All tests conducted with sampling weights applied.

Multivariate Analysis:

Determinants of High Fertility

The binary logistic regression model identified 13 statistically significant predictors of high fertility. Table 3 presents the adjusted odds ratios, 95% CI, and p-values for the final model.

Table 3: Binary Logistic Regression Estimates for Factors Influencing High Fertility (>2 Children) in Bangladesh (BDHS 2022)

Predictor / Category	aOR	95% CI	p-value
Socioeconomic Factors			
Respondent's Education			

No education (Ref.)	1.00	—	—
Primary	0.85	[0.75, 0.97]	.018
Secondary	0.51	[0.44, 0.59]	<.001
Higher	0.31	[0.31, 0.38]	<.001
Husband's Education			
No education (Ref.)	1.00	—	—
Primary	0.92	[0.82, 1.03]	.149
Secondary	0.68	[0.60, 0.77]	<.001
Higher	0.67	[0.56, 0.81]	<.001
Wealth Index			
Poor (Ref.)	1.00	—	—
Middle	0.89	[0.80, 1.00]	.052
Rich	0.80	[0.71, 0.89]	<.001
Place of Residence			
Urban (Ref.)	1.00	—	—
Rural	1.16	[1.05, 1.28]	.005
Administrative Division			
Barishal (Ref.)	1.00	—	—
Chattogram	1.88	[1.56, 2.27]	<.001
Dhaka	0.79	[0.66, 0.96]	.015
Khulna	0.42	[0.34, 0.52]	<.001
Mymensingh	1.11	[0.90, 1.38]	.342
Rajshahi	0.40	[0.32, 0.48]	<.001
Rangpur	0.71	[0.58, 0.87]	.001
Sylhet	1.86	[1.47, 2.35]	<.001
Religion			
Muslim (Ref.)	1.00	—	—
Non-Muslim	0.39	[0.33, 0.45]	<.001
Mass Media Exposure			
No (Ref.)	1.00	—	—
Yes	0.82	[0.74, 0.92]	<.001
Demographic Factors			
Respondent's Age (years)			
15–24 (Ref.)	1.00	—	—
25–34	8.35	[6.82, 10.23]	<.001
35–49	21.58	[17.33, 26.87]	<.001
Age at First Birth			
10–19 years (Ref.)	1.00	—	—
20–49 years	0.35	[0.32, 0.39]	<.001
Contraceptive Use			
No (Ref.)	1.00	—	—
Yes	2.04	[1.79, 2.32]	<.001
Husband's Desire for Children			
Both want same (Ref.)	1.00	—	—
Husband wants more	1.25	[1.07, 1.47]	.006
Husband wants fewer	0.86	[0.69, 1.08]	.191

Note: aOR = Adjusted Odds Ratio; CI = Confidence Interval; Ref. = Reference category. All estimates are derived from the 2022 BDHS weighted sample (n = 15,685 ever-married women). Respondent working status was non-significant (p = .114) and was excluded from the final model.

Educational Gradient

Educational attainment was the strongest inhibitor of high fertility. Compared with uneducated women, those with primary, secondary, and higher education were 15%, 49%, and 69% less likely to experience high fertility, respectively (primary: aOR = 0.85, 95% CI [0.75, 0.97], p = .018; secondary: aOR = 0.51, 95% CI [0.44, 0.59]; higher: aOR = 0.31, 95% CI [0.31, 0.38]; both p < .001). A dose–response pattern was evident across all levels. A parallel, though weaker, protective effect was observed for husband's higher education (aOR = 0.67, 95% CI [0.56, 0.81], p < .001).

Socioeconomic and Media Factors

Women from the richest household wealth quintile were significantly less likely to experience high fertility compared with the poorest quintile (aOR = 0.80, 95% CI [0.71, 0.89], p < .001), corroborating the well-established inverse wealth–fertility gradient. Regular mass media exposure reduced the odds of high fertility by 18% (aOR = 0.82, 95% CI [0.74, 0.92], p < .001). Rural residence was associated with marginally higher odds relative to urban residence (aOR = 1.16, 95% CI [1.05, 1.28], p = .005).

Regional and Religious Disparities

Compared with the Barishal division, residents of Chattogram (aOR = 1.88, 95% CI [1.56, 2.27]) and Sylhet (aOR = 1.86, 95% CI [1.47, 2.35]) faced nearly double the odds of high fertility (both p < .001). Conversely, Khulna (aOR = 0.42), Rajshahi (aOR = 0.40), Dhaka (aOR = 0.79), and Rangpur (aOR = 0.71) had significantly lower odds. Non-Muslim women were substantially less likely to experience high fertility than Muslim women (aOR = 0.39, 95% CI [0.33, 0.45], p < .001).

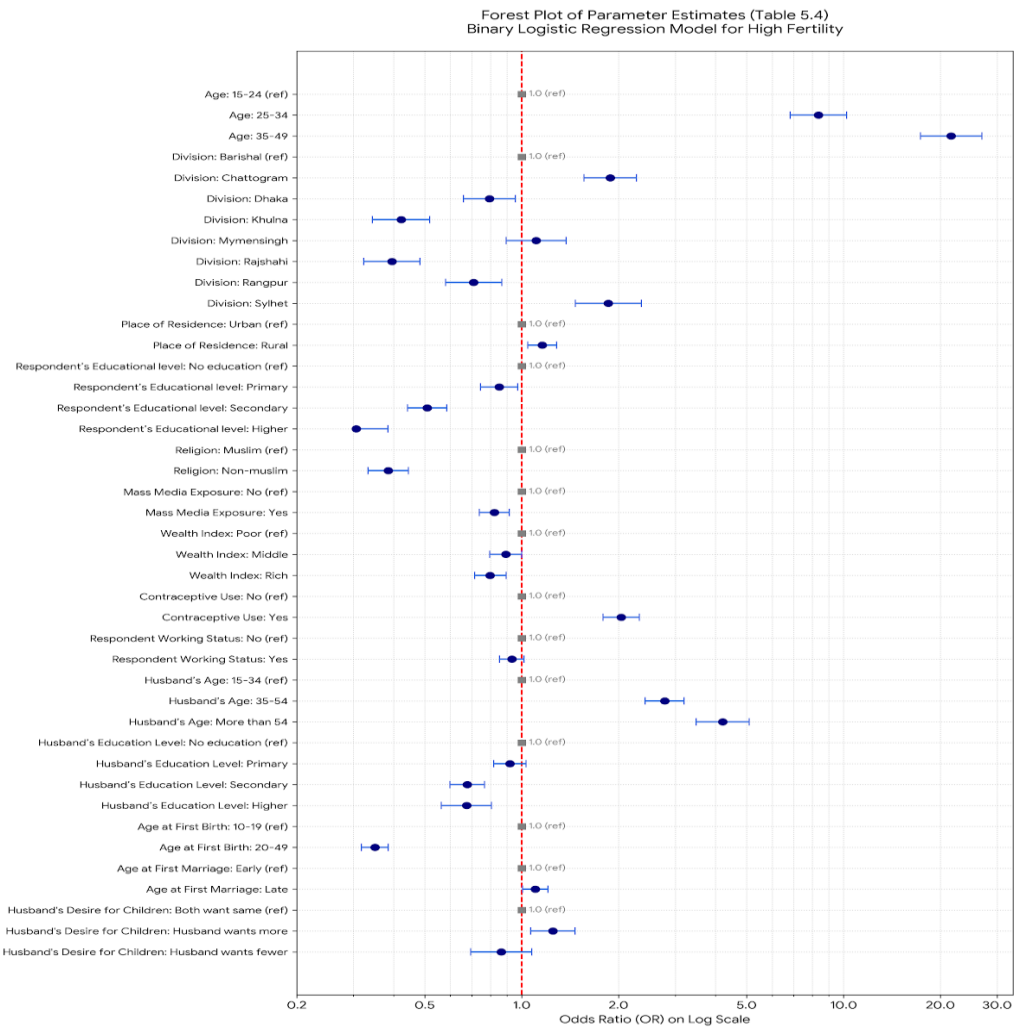

Figure 2: Forest Plot of Adjusted Odds Ratios (aOR) and 95% Confidence Intervals for Determinants of High Fertility (>2 Children) Among Ever-Married Women in Bangladesh (BDHS 2022)

***Note**:* aOR = Adjusted Odds Ratio; CI = Confidence Interval. Values to the right of 1.00 indicate increased odds of high fertility; values to the left indicate decreased odds.

Demographic and Reproductive Factors

Age exerted the strongest demographic influence: women aged 35–49 years were more than 21 times more likely to have high fertility than those aged 15–24 (aOR = 21.58, 95% CI [17.33, 26.87], $p < .001$), reflecting cumulative exposure to the risk of childbearing over the reproductive lifespan. Reproductive timing was also critical: delaying age at first birth to ≥20 years reduced the odds of high fertility by 65% (aOR = 0.35, 95% CI [0.32, 0.39], $p < .001$).

The Contraceptive Paradox and Spousal Influence

Current contraceptive use was positively associated with high fertility (aOR = 2.04, 95% CI [1.79, 2.32], $p < .001$), indicating that contraception is predominantly adopted *after* women have already achieved a high parity—a pattern of post-hoc adoption. Additionally, when a husband desired more children than the wife, the likelihood of high fertility increased by 25% (aOR = 1.25, 95% CI [1.07, 1.47], $p = .006$), reinforcing the importance of spousal concordance in reproductive decision-making.

IV. Discussion

This study analysed the sociodemographic and economic determinants of fertility in Bangladesh using the 2022 BDHS, revealing that while the majority of ever-married women have achieved low fertility, substantial disparities persist across educational, geographic, and reproductive timing dimensions.

The identification of educational attainment as the strongest inhibitor of high fertility is consistent with the theoretical frameworks of demographic transition and the human capital model of fertility (Bora et al., 2022). Education enhances women's autonomy, improves awareness of and access to contraception, and raises the opportunity cost of childbearing through expanded labour market participation. The parallel protective effect of husband's education highlights the dynamic nature of reproductive decision-making. The inverse wealth–fertility gradient corroborates findings from earlier BDHS rounds and comparable South Asian settings, where lower socioeconomic groups may perceive larger families as a form of old-age economic security (Sarkar et al., 2025).

The persistence of high-fertility pockets in the Chattogram and Sylhet divisions likely reflects a convergence of localised cultural and religious norms, lower female educational attainment, and differential access to reproductive health services (Adugna, 2018). The significantly higher fertility odds among Muslim women compared with non-Muslim women may reflect broader socio-cultural attitudes toward family size and contraceptive use, though caution is warranted in drawing causal inferences from a cross-sectional design (Halimatusa'diyah & Toyibah, 2021).

The positive association between current contraceptive use and high fertility is a seemingly counterintuitive finding, and is best interpreted as evidence of post-hoc adoption: women in Bangladesh predominantly initiate contraception after they have already achieved, or exceeded, their desired family size, rather than using it for birth spacing from the outset (Hossain & Zablotska-Manos, 2026; Huda et al., 2017; Kundu et al., 2022). This pattern signals an unmet need for early-stage family planning counselling.

The substantial protective effect of delayed first birth underscores the demographic importance of interventions that prevent adolescent pregnancy and child marriage. The finding that spousal demand for children independently increases fertility odds emphasises that reproductive decision-making remains a collective household process, necessitating male-inclusive family planning strategies. Mass media's protective role highlights the value of information campaigns in reshaping fertility aspirations (Huber et al., 2010).

V. Limitations

This study is subject to several limitations inherent in the BDHS 2022 dataset. First, the cross-sectional design precludes the establishment of causal relationships between predictors and fertility outcomes. Second, reliance on self-reported data may introduce recall bias, particularly regarding reproductive history. Third, because the survey was restricted to ever-married women, the findings do not capture the reproductive behaviours of the unmarried population. Finally, although sampling weights were applied, residual confounding by unmeasured variables, such as community-level healthcare access or individual fertility preferences cannot be ruled out.

VI. Conclusions

Fertility determinants in Bangladesh are multifaceted, operating through intersecting socioeconomic, geographic, cultural, and reproductive-timing pathways. Educational attainment and reproductive timing remain the most modifiable levers for further fertility reduction. Regional disparities in Chattogram and Sylhet demand bespoke, culturally sensitive family planning interventions. Policymakers should complement supply-side contraceptive provision with demand-side strategies—including girl-focused education investments, adolescent

reproductive health programmes, and mass media campaigns—to achieve and sustain replacement-level fertility nationally.

References

[1]. Adhikari, R. (2010). Demographic, socio-economic, and cultural factors affecting fertility differentials in Nepal. *BMC Pregnancy and Childbirth*, *10*(1), 19. https://doi.org/10.1186/1471-2393-10-19

[2]. Adugna, A. (2018). Determinants of the Number of Children Born to Reproductive Women in Ethiopia: Sampling Cluster Based National Spatial Analysis of the 2016 Demographic and Health Survey Data. *Journal of Geography and Geology*, *10*, 29. https://doi.org/10.5539/jgg.v10n4p29

[3]. Afreen, K., Ordine, P., & Rose, G. (2024). Association between Education and Fertility: New Evidence from the Study in Pakistan. *Economies*, *12*, 261. https://doi.org/10.3390/economies12100261

[4]. Ahmed, S., Nahar, S., Amin, M. N., & Shirin, S. (2007). Age at Marriage and Fertility Pattern of Adolescent Married Women in Rural Bangladesh. *Ibrahim Medical College Journal*, *1*(2), 9–12. https://doi.org/10.3329/imcj.v1i2.2898

[5]. Akram, R., Sarker, A. R., Sheikh, N., Ali, N., Mozumder, M. G. N., & Sultana, M. (2020). Factors associated with unmet fertility desire and perceptions of ideal family size among women in Bangladesh: Insights from a nationwide Demographic and Health Survey. *PLOS ONE*, *15*(5), e0233634. https://doi.org/10.1371/journal.pone.0233634

[6]. Alemayehu, T., Haidar, J., & Habte, D. (2010). Determinants of adolescent fertility in Ethiopia. *Ethiopian Journal of Health Development*, *24*, 30–38. https://doi.org/10.4314/ejhd.v24i1.62942

[7]. Bora, J. K., Saikia, N., Kebede, E. B., & Lutz, W. (2023). Revisiting the causes of fertility decline in Bangladesh: The relative importance of female education and family planning programs. *Asian Population Studies*, *19*(1), 81–104. https://doi.org/10.1080/17441730.2022.2028253

[8]. Ezeh, A. C., Mberu, B. U., & Emina, J. O. (2009). Stall in fertility decline in Eastern African countries: Regional analysis of patterns, determinants and implications. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *364*(1532), 2991–3007. https://doi.org/10.1098/rstb.2009.0166

[9]. Halimatusa'diyah, I., & Toyibah, D. (2021). Do Religious People Have More Children? The Effect of Religious Affiliation and Religiosity on Fertility. *Journal of Population and Social Studies*, *29*, 479–499. https://doi.org/10.25133/JPSSv292021.030

[10]. Huber, S., Bookstein, F. L., & Fieder, M. (2010). Socioeconomic status, education, and reproduction in modern women: An evolutionary perspective. *American Journal of Human Biology*, *22*(5), 578–587. https://doi.org/10.1002/ajhb.21048

[11]. Kamal, S. M. M. (2012). Decline in Child Marriage and Changes in Its Effect on Reproductive Outcomes in Bangladesh. *Journal of Health, Population, and Nutrition*, *30*, 317–330. https://doi.org/10.3329/jhpn.v30i3.12296

[12]. Nishat, N., Parvin, M., & Fagun, A. (2021). Determinants of Fertility Trend at District, Divisional and Regional Levels and Policy Implication for Poverty Alleviation. *International Journal of Health Economics and Policy*, *6*, 92. https://doi.org/10.11648/j.hep.20210603.13

[13]. Oljira, L., & Belayihun, B. (2017). *DETERMINANTS OF HIGH FERTILITY STATUS AMONG MARRIED WOMEN: A CASE CONTROL STUDY BEKELE BELAYIHUN [ii]*. https://doi.org/10.13140/RG.2.2.35691.44329

[14]. Rabbi, A. M. F. (2025). Community context and third parity among ever-married women in Bangladesh: Insights from a nationally representative survey. *International Journal of Population Studies*, *12*(2), 94–106. https://doi.org/10.36922/ijps.5833

[15]. Sarkar, B., Asadujjaman, M., Barman, S., Biswas, B., Setu, S. P., & Roy, M. S. (2025). Factors Influencing Fertility Intentions Among Working and Non-Working Women in Bangladesh. *Ethiopian Journal of Reproductive Health*, *17*. https://doi.org/10.69614/ejrh.v17i3.901

[16]. Sobhan, A., Moinuddin, M., & Hossain, Md. M. (2024). Investigating time to first birth among women of reproductive age in Bangladesh: A survival analysis of nationwide cross-sectional survey data. *Journal of Health, Population and Nutrition*, *43*(1), 2. https://doi.org/10.1186/s41043-023-00492-1

[17]. Tomal, J. H., Khan, J. R., & Wahed, A. S. (2022). Weighted Bayesian Poisson Regression for The Number of Children Ever Born per Woman in Bangladesh. *Journal of Statistical Theory and Applications*, *21*(3), 79–105. https://doi.org/10.1007/s44199-022-00044-2

[18]. Uddin, D. M. J., Kabir, D. A., & Naznin, S. (2024). *Machine Learning Approaches for Prediction of Fertility Determinants in Bangladesh: Evidence from the BDHS 2017-18 data*. Research Square. https://doi.org/10.21203/rs.3.rs-3934391/v1