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Title: Exploring the Influence of Religion and Education on Rural Women's Fertility in Selected Blocks of Koch Bihar District, West Bengal

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Abstract

This study explores the relationship between education, religion and fertility within the selected blocks of rural area of Koch Bihar District, West Bengal, India, through a cross-sectional analysis. The findings indicates that the mean age at the birth of the first child is higher for Hindu religion (22.07 years) compared to Muslim religion (19.56 years), suggesting that Hindu religion may delay childbearing more often, potentially due to educational, cultural, or socioeconomic factors. To determine whether the differences in mean fertility levels across various age groups are statistically significant, an analysis of variance (ANOVA) was conducted. With a *F*-value of 7.57, which is significant at the 0.01 level, the analysis confirms that the differences in mean fertility levels among the age groups are statistically significant. The study identifies a positive correlation between female education and fertility i.e. the average number of children per woman decreases as the years of education for both wives and husbands increase. Using multiple regression analysis the result shows that for each year increase in the age at which a woman marries, the total number of children decreases by 0.044. A one-unit increase in the education level of wives is associated with a decrease of 0.036 in the total number of children. An increase in the education level of husbands is associated with a slight decrease in the total number of children by 0.087. Among the predictors, contraceptive use has a significant positive effect (B=0.558, t=2.459). These results have potential implications for future research and policy-making efforts aimed at regulating fertility.

1. Introduction

Fertility is a multidimensional phenomenon influenced by a variety of socio-cultural, economic, and environmental factors etc. Among these, religion and education stand out as critical determinants, particularly in rural areas where traditional values often hold sway (Traeger, 2011). In developing regions like India, where socio-cultural diversity intersects with varying levels of educational attainment, the interplay between religion and education plays a crucial role in shaping reproductive choices and fertility patterns (Solanke, 2015). Understanding these dynamics is essential for formulating policies aimed at improving maternal and child health, achieving population stabilization, and promoting gender equity(Rani, 2021). The district of Koch Bihar in West Bengal offers a unique context for studying these influences due to its socio-economic diversity, rural predominance, and rich cultural heritage (Prata et al., 2017). Fertility patterns in this region reflect the combined impacts of religious practices, educational

attainment, and access to healthcare services (Patidar, 2018). Previous studies have shown that religion often shapes perceptions of family size, contraception, and gender roles, while education serves as a transformative factor, empowering women to make informed reproductive choices (Jejeebhoy, 1995; Caldwell, 1980). Moreover, rural women in India often face structural and cultural barriers to education, which in turn affects their access to reproductive healthcare and decision-making autonomy (Bhatta et al.,2021). Religion may either reinforce or challenge these barriers, depending on its interpretation and influence in the local community (Patidar, 2018). By examining selected blocks of Koch Bihar district, this study aims to explore how the interplay of religion and education impacts fertility behaviour among rural women (No et al., 2018). This investigation is particularly relevant in the context of India's broader demographic transition, where fertility rates have been declining, yet regional disparities persist(Chacko, 2001). This research contributes to the existing body of literature by focusing on the micro-level interactions between religion, education, and fertility in a geographically and culturally specific setting (Mahanta, 2016). The findings aim to provide insights for policymakers and practitioners to design targeted interventions that address the unique needs of rural women in similar socio-cultural contexts.

2. Conceptual framework

The intersection of religion, education, and fertility has been a topic of extensive academic inquiry, particularly in rural settings where socio-cultural norms often shape demographic outcomes (Khan & Anwaruzzaman, 2021). Fertility, defined as the actual reproductive performance of an individual or group, is influenced by a complex interplay of socio-economic, cultural, and religious factors (Upadhyay et al., 2014). Religion often serves as a significant determinant of fertility behaviour, as it shapes attitudes toward marriage, contraception, and the ideal family size (Chowdhury et al., 2023). Religious doctrines and practices can either encourage or restrict reproductive autonomy. For instance, religions that emphasize procreation as a divine command tend to be associated with higher fertility rates, while others that allow contraceptive use and endorse smaller family norms are linked to lower fertility levels (McQuillan, 2004). In India, the diversity of religious beliefs significantly impacts fertility patterns. Studies have shown that Hindu and Muslim communities, which dominate rural West Bengal, exhibit distinct fertility behaviours due to differences in religious norms and socio-economic conditions (Basu, 1997).

Education is one of the most powerful determinants of fertility decline. Women's education, in particular, affects fertility by delaying marriage, enhancing knowledge about contraceptive methods, and increasing decision-making power within households (Jejeebhoy, 1995). Educated women are more likely to have fewer children and invest more in the health and education of their offspring, contributing to a demographic transition(Bose & Das, 2024). However, the relationship between education and fertility is context-dependent and varies across rural and urban areas (Vijaykumar et al., 2016). In rural areas, where traditional gender norms prevail, the impact of education on fertility may be less pronounced due to limited employment opportunities and weaker social support systems (Bongaarts, 2010).

In rural areas, the interplay of religion and education on fertility is further mediated by socio-cultural factors such as patriarchy, poverty, and access to healthcare. Rural women's autonomy is often constrained by traditional gender roles, which influence their ability to make reproductive choices (Kabeer, 1999). Additionally, rural areas in India often lack adequate educational and healthcare facilities, limiting the effectiveness of education and family planning initiatives.

Koch Bihar district, located in West Bengal, is predominantly rural and characterized by socio-economic underdevelopment and cultural diversity. The district is home to various religious communities, each with

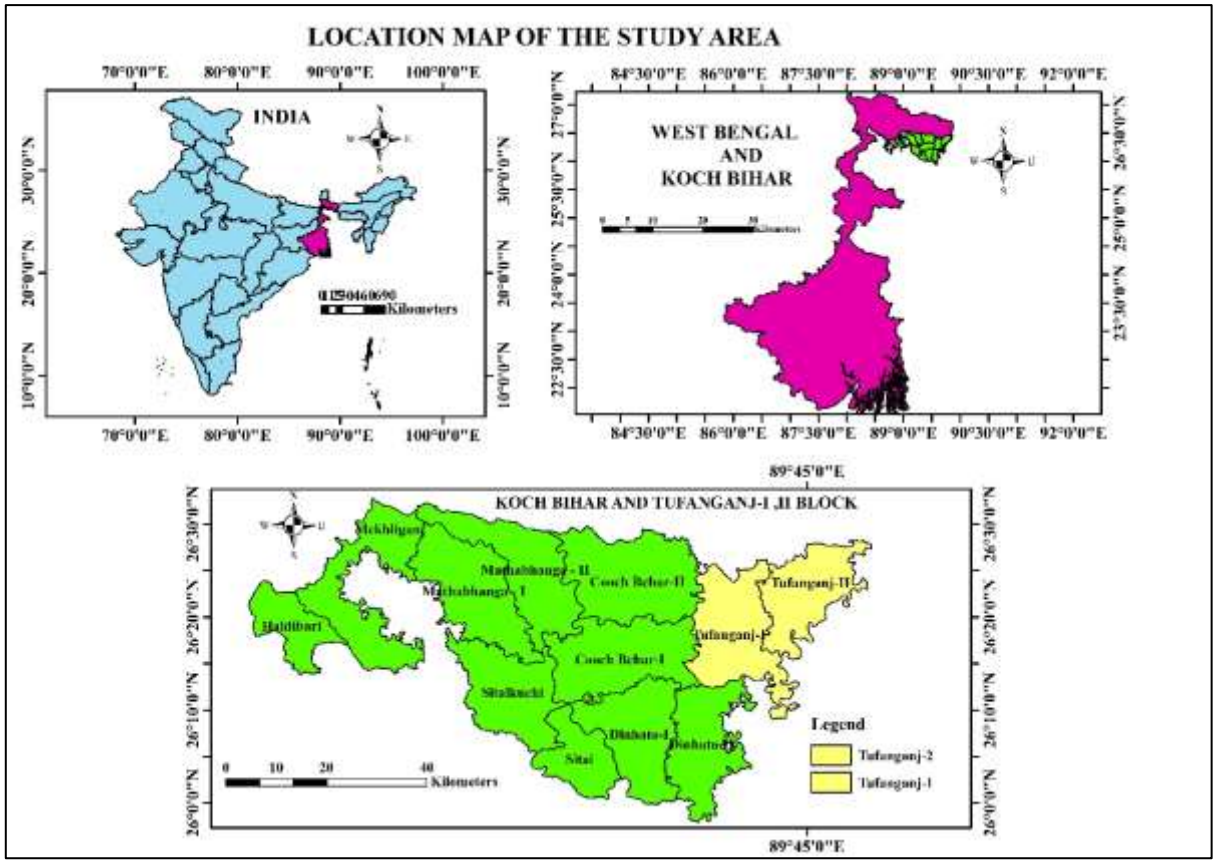
distinct socio-cultural norms that influence fertility behaviours. While literacy rates in West Bengal have improved over the years, gender disparities persist, particularly in rural areas. This study aims to analyse how these dynamics manifest in the fertility patterns of women in selected blocks of Koch Bihar district, contributing to the broader understanding of demographic behaviour in rural India.

3. Aims and Objectives

Our aim of this study is to examine the influence of religion and education on rural women's fertility in selected blocks of Koch Bihar district. A sub-aim of this research is test the independent effects of religious status and education on fertility in the study area.

4. Location of the Study area

Tufanganj-I,II are the two community development block (CD block) located at coordinates 26°24′57″N and 89°35′45″E, have been chosen as the study area. Total area of the study area is 582.69 sq./km. The study area shares its northern boundary with the Alipurduar district. To the east, it is bordered by the Agamoni revenue circle/tehsil in Dhubri district, Assam. The southern boundary connects with the Dinhata II CD block and the Bhurungamari Upazila in the Kurigram District of Bangladesh. On the western side, it is bordered by the Cooch Behar I and Cooch Behar II CD blocks.



5. Database and Methodology

The data for the present study have been collected through a multi-stage sampling design. To analyse the influence of religion and education on rural women's fertility in selected blocks of Koch Bihar district, data was collected from both primary as well as secondary sources. For the present research Tufanganj – I, II blocks of Koch Bihar district was selected. The respondents of the present study was the married

women in the age group of 15-49(referred as women's reproductive age group) and also having at least one living child at the time interview. Tufanganj-I, II blocks have a total 125 inhabitant villages. From the 125 inhabitant villages 5 percent villages is taken for the present research and thus the total number of villages are 6 which were selected for the survey. As the present research is on the overall fertility of the rural women, first the total number of sample households of the selected villages is find out(the total number of household is 5332,) then 2 percent of the households from each village was surveyed for the present research. Thus the total number of sample considered for the present study is 100 households. One married women of the reproductive age group of each of the sample households was interviewed using a structured questionnaire. To deal with the objectives of the paper all the collected data from both the primary as well as secondary sources was classified and tabulated systematically. After the classification and tabulation the data was analysed and interpreted with suitable cartographic and statistical techniques. Maps for the present study was prepared with the help of proper GIS (Geographic Information System) techniques.

To address the objectives of the paper, multiple regression models have been employed. In these models, the number of children per woman (CPW) among the respondents has been used as the dependent variable. CPW is defined as the total number of children a woman has at the time of the survey. Additionally, one-way ANOVA and independent sample t-tests were conducted to examine the statistical differences in fertility levels across various clusters of the selected independent variables.

6. Results and Discussions

The average number of live births ever recorded among the sample couples is 2.13.Table-1 shows the descriptive statistics of the respondents. The table-1 provides insights into age distribution, family size, and age at marriage etc. The majority of individuals fall within the 30-40 age group (53%), followed by 20-30 (35%), indicating that the sample predominantly comprises adults in their prime working or reproductive years. Most households have either two (49%) or one child (24%), with fewer households having three (17%) or four children (10%), reflecting a trend toward smaller families. Regarding age at marriage, the data reveals that early marriages (before age 18) dominate the sample (54%), with a steep decline in marriages occurring in the 19-21 (21%), 22-24 (15%), and above 25 age groups (10%). This pattern may suggest cultural or socioeconomic factors that encourage early marriage, potentially influencing family planning and reproductive outcomes.

Table 1: General Characteristics of the respondents

Age Group	**% of respondents**	**Total Number of children**	**% of respondents**	**Age at Marriage of women**	**% of respondents**
Below 20	1	1	24	Below 18	54
20 to 30	35	2	49	19 to 21	21
31 to 40	53	3	17	22 to 24	15
41 and above	11	4 and above	10	25 and above	10
Total	*100*	*Total*	*100*	*Total*	*100*

Source: ***Calculated by researcher***

Table 2: Religious affiliation of the respondents

Religion	% of Respondents	Mean age at first Child	Gap between first and second Child(mean years)
Hindu	71	22.07	4.10
Muslim	29	19.56	3.20

Source: ***Calculated by researcher***

The table-2 highlights differences in fertility and reproductive behaviours between two major religions group of the study area i.e. Hindu and Muslim populations. Hindus constitute the majority (71%) of the sample, with Muslims making up 29%. The mean age at the birth of the first child is higher for Hindus (22.07 years) compared to Muslims (20 years), suggesting that Hindus may delay childbearing more often, potentially due to educational, cultural, or socio-economic factors. Furthermore, the gap between the first and second child is slightly longer for Hindus (4.09 years) compared to Muslims (3.65 years), indicating differing family planning practices. These differences may reflect variations in cultural norms, access to family planning resources, or societal expectations between the two groups.

Table 3: Religious stance of the respondents and their fertility rate

Religious stance on the use of contraception	Fertility rate(mean)
Strongly encourage the use	1.55
Permits the use with conditions	2.18
Neutral	2.19
Discourage the use	2.35
Strongly oppose the use	3.68

Source: ***Calculated by researcher***

The table-3 demonstrates a clear relationship between religious stances on contraception and fertility rates. Groups that strongly encourage the use of contraception exhibit the lowest fertility rate (mean of 1.55), indicating a significant impact of proactive attitudes toward family planning on reducing the number of children per household. Conversely, groups that strongly oppose contraception have the highest fertility rate (3.68), suggesting limited use of contraceptive methods leading to larger family sizes. Intermediate stances, such as permitting contraception with conditions (2.18) or remaining neutral (2.19), show moderately higher fertility rates compared to strong encouragement. Groups that discourage contraception also show an elevated fertility rate (2.35). These findings highlights how religious perspectives on contraception strongly influence reproductive behaviours, with stricter opposition correlating with higher fertility rates.

Table-4: Mean total number of children per women

Variables	Number of Observations	Total number of children per women(Mean)	Std.deviation	F-value
Female age at marriage (in years)				7.57($p<0.05$)

Up to 18	54	2.41	0.88	
19 to 21	21	2.14	0.91	
22 to 24	15	1.73	0.59	
25 and above	10	1.20	0.42	
Religion				4.24(p<0.05)
Hindu	71	2.01	0.81	
Muslim	29	2.45	1.02	
Education of Wives				8.44(p<0.05)
No Education	11	3	1	
up to 5 Years	10	2.4	0.84	
6-10 years	49	2.1	0.88	
More than 10 years	30	1.6	0.55	
Education of Husband				7.46(p<0.05)
No Education	8	2.88	1	
up to 5 Years	25	2.56	0.96	
6-10 years	37	2.02	0.79	
More than 10 years	30	1.60	0.65	
Contraceptive use				15.07(p<0.05)
Users	84	1.98	0.80	
Non-users	16	2.88	0.86	
Frequency of Religious Worship				11.87(p<0.05)
Daily	54	2.52	0.95	
Weekly	38	1.79	0.66	
Occasionally	12	1.57	0.50	

Calculated by researcher

Table-4 shows the descriptive statistics of the live births ever born against the selected independent variables. According to the National Family Health Survey (NFHS-5) conducted in India (2019–21), the mean age at marriage for women aged 20–49 years is 21.2 years at the national level. This statistic indicates a slight increase compared to NFHS-4 (2015–16), where the mean age at marriage for the same age group was 21.0 years. The mean age at marriage for women aged 20–49 years also varies by religion. The mean age at marriage of Hindu women (20–49 years) is 20.7 years and for the Muslim women (20–49 years) the mean age at marriage is 19.9 years (NFHS-5). Table-4 reveals that fertility levels, as measured by the average number of children per woman, are highest among women who marry early and decrease as the age at marriage increases. To determine whether the differences in mean fertility levels across various age groups are statistically significant, an analysis of variance (ANOVA) was conducted. With a *F*-value of 7.57, which is significant at the 0.01 level, the analysis confirms that the differences in mean fertility levels among the age groups are statistically significant.Table-4 highlights that the average number of children per woman decreases as the years of education for both wives and husbands increase. This trend is statistically supported by a one-way ANOVA, which confirms that the differences among

the means of the education groups for both wives and husbands are significant ($p<0.01$). Additionally, families in which the wife is more educated than the husband tend to have lower fertility levels, whereas fertility is highest in families where both spouses are illiterate. The ANOVA results further validate that these differences in means are statistically significant at the 0.01 level. The practice of contraceptive among the sample couples is observed to be high i.e. 84 percent of the couples have used any modern method of family planning. . The study also finds that the average number of children per woman users of contraceptive (i.e. 1.98) is less than that of the nonusers (i.e. 2.88). The statistical difference between the two means is verified through an independent sample t-test. The results show that the difference in the mean number of live births ever born to the users and to the nonusers of contraceptive is significant at 0.01 level. Table-4 also indicates that Muslim women have a higher fertility rate (2.45 children) compared to Hindu women (2.01 children), and this difference is statistically significant (F-value = 4.24, $p<0.01$). Additionally, the study finds that fertility is highest among women who practices religious worship daily (2.52 children) and decreases with reduced frequency of worship, reaching its lowest among occasional worshippers (1.57 children). This pattern is also statistically significant (F-value = 11.87, $p<0.01$). The bivariate analysis reveals that fertility levels differ significantly across various groups based on age at marriage, religious affiliation, contraceptive use, and the years of education of both wives and husbands and frequency of religious worship. To provide more precise predictions about how these selected variables influence fertility levels, they are analysed collectively alongside other independent variables within a multivariate regression framework.

Table: 5 Significance of Education of Wives, Education of Husbands, and Other Variables in Explaining Fertility

Regressor	**Unstandardized B**	**t**	**VIF**
Constant(Total number of children of women)	3.304	4.637**	
Female age at marriage	-0.044	-1.252**	1.570
Education of Wives	-0.036	-1.667**	1.833
Education of husband	-0.087	-0.621**	1.817
Contraceptive use(*1=user, 0=nonuser)*	0.558	2.459**	1.160
Religious affiliation(*1=hindu, 0=muslim)*	-0.040	-0.211	1.224

R-Square-0.62; F=9.507; d.f. =5; N=100 ***Calculated by researcher***

The regression analysis investigates the factors influencing the total number of children (dependent variable) among women. The model explains 62% of the variation in the number of children (R-square=0.62), with the overall model being statistically significant (F=9.507 $p<0.05$). The constant term (B=0.558, t=2.459) is statistically significant, representing the predicted number of children when all other variables are zero. Result shows that for each year increase in the age at which a woman marries, the total number of children decreases by 0.044. A one-unit increase in the education level of wives is associated with a decrease of 0.036 in the total number of children. An increase in the education level of husbands is associated with a slight decrease in the total number of children by 0.087. Among the predictors, contraceptive use has a significant positive effect (B=0.558, t=2.459). The negative impact of education on fertility may also be due to high contraceptive prevalence among the educated people. The educated

people have better knowledge on family planning and have favourable attitude towards family planning, which results in higher adoption of contraceptives.

7. Conclusions

The study concludes that religion and education play pivotal roles in shaping fertility behaviour among rural women in the study area. The findings reveal that women with higher levels of education exhibit lower fertility rates, underscoring the importance of education as a critical tool for fertility regulation. Additionally, religious beliefs and practices significantly influence reproductive decisions, with variations observed across different religious groups. These results highlight the need for targeted interventions that promote female education and address culturally sensitive aspects of family planning. Policymakers should focus on enhancing educational access and awareness programs that respect religious diversity while fostering informed decision-making on fertility and reproductive health.

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