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Research paper

An Analysis of Fertility Differentials Among The Scheduled Tribes in The Kokrajhar District of Assam, Based on Poisson Regression Technique

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Abstract

The study on the impact of different factors on fertility and determining the groups having higher and lower fertility remains a key interest of policymakers. From such a study, demographers can gain insights into future trends regarding the proportions of different groups in a population. This study aims to investigate the socio-economic and demographic characteristics of children ever born among Scheduled Tribe women in the Kokrajhar district of Assam. Using a stratified random sampling method, the villages within four medical blocks of the Kokrajhar district were chosen. Interviews were conducted with 960 women who had at least one child. In the bivariate and multivariate analyses, one-way ANOVA and Poisson regression were employed. The study found a significant adverse correlation between women's education and the total number of children ever born. High fertility is linked with women's age and the utilization of modern contraceptive techniques. The mean number of children ever born in the study region is 1.57 children per woman. Maintaining the fertility rate among the Scheduled Tribes of the study region requires greater focus on using media to highlight the advantages of small families and family planning initiatives.

List of abbreviations:

1) Child ever born: CEB.
2) Scheduled Tribes: ST.
3) Scheduled Caste: SC.
4) United Nations: UN.
5) Total Fertility Rate: TFR.
6) National Family Health Survey: NFHS.
7) Incidence Rate Ratio: IRR.
8) Negative binomial: NB.

Keywords: *Fertility; Determinant; Scheduled Tribes; Children Ever Born; Poisson Regression.*

1. Introduction

One of the key indicators and factors of population change is fertility, which the demographer uses, together with mortality and migration, to predict the overall growth trend of the population of the future. Fertility may be defined as the total number of children a woman bears during her reproductive period, i.e., 15-49 years. For this reason, fertility trend analysis is mainly based on varying ages of women during their reproductive period. Apart from that, the level of fertility is influenced by several socioeconomic characteristics, such as educational attainment, religion, wealth index, age at marriage, use of contraceptives, etc. According to a recent UN report, the present 7.6 billion of the global population is predicted to rise to an estimated 8.5 billion by 2030, 9.7 billion by 2050, and 10.4 billion by 2100, even after assuming that the fertility levels will continue to decline (UN, 2022). This tremendous human explosion will likely be a threat to human welfare and the environment.

India, with one-sixth of the global population, has surpassed China as one of the world's most populous countries [1]. As a result, achieving the optimal fertility rate is an essential objective in India and other developing countries for achieving sustainable developmental goals. Since the 1970s, the fertility rate of India has been declining and, according to NFSH-5, ultimately attained the replacement level of fertility, having declined from 5.2 in 1971 to 2.18 in 2022 (NFSH-5, 2022). Further, the TFR of Assam, a state in India, has decreased by 0.34 children as per NFHS 2019-21 (NFHS-5), to 1.87 children per woman (Figure 1). Similar declines in the overall fertility rate were observed in Sub-Saharan Africa, Northern Africa, and Eastern, Western, Southern, and Southeastern Asia during the period 1990 to 2019. Also, in

Canada, a decline in the fertility levels among indigenous populations continued between 2001 and 2021, reflecting significant changes in reproductive patterns and demographic changes [2].

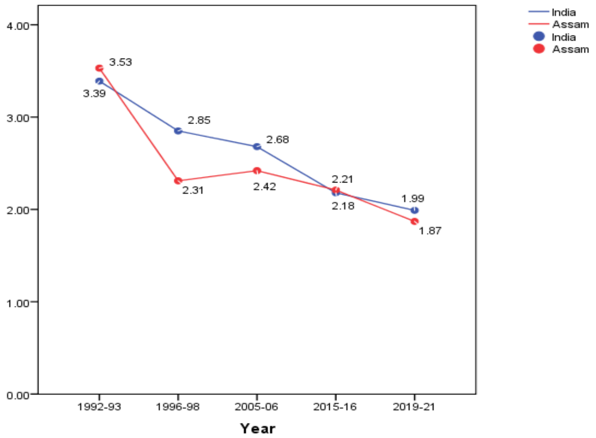

Fig. 1: Comparison of TFR of Assam and India (NFHS Reports).

According to the 2011 census, Assam has a total population of 31,205,576, of which STs constitute only 12.44%, raising concerns regarding the fertility rate among them. In India, the tribal communities are viewed as the most marginalized socioeconomically, often characterized by low literacy levels and unfavorable economic circumstances compared to other social groups [3]. According to a study in the Harijan community of Assam, fertility rates are significantly higher than in other communities [4]. In the Dibrugarh district of Assam, the socio-economic variables have a major impact on fertility in rural areas [5]. Among the Karbi tribe of Kamrup Metropolitan of Assam, high fertility is associated with factors such as illiteracy, poor socio-economic condition, and limited use of contraceptives [6]. Another study on a tribal society of Assam found that education had a significant association with fertility levels among tribals, with the number of births decreasing when wives possess higher education than their husbands [7]. In a tribal population in Orissa, a significant relationship exists between lower levels of child mortality and low fertility rates. In addition, higher marriage ages for women, women's self-chosen mates, and nuclear families all have negative impacts on fertility [8]. The fertility levels and determinants among three tribal communities (Gond, Birhor, and Kawar tribes) of Bilaspur in Chhattisgarh were studied, and it was found that fertility among them is largely influenced by early marriage, low education, and high child mortality [9]. The fertility of the Jenu Kurubas and Kadu Kurubas tribes of Karnataka is significantly influenced by the difference in age at marriage, whereas education does not have a notable impact. Moreover, among the Jenu Kurubas and Kadu Kurubas tribes, extended families and women who have married multiple times experience higher fertility [10]. Among the social groups in India, SC, ST, and other backward-class women have higher fertility and use fewer contraceptives. Furthermore, education plays a significant negative role in fertility across different social groups in India [11]. Maharatna's study reveals that his estimated lower tribal mortality refers to lower tribal fertility than Hindus in the 20^{th} century [12]. In the CANZUS countries, although the fertility rates of indigenous women are relatively low, childbearing occurs at younger ages. The study showed that cultural identity is a significant determinant of the timing of first birth among the Māori women, indicating cultural influence on fertility behaviour [13]. Māori fertility intentions and reproductive choices are significantly influenced by the concept of whakapapa [14]. The fertility preference among women of Meghalaya is gradually shifting towards a small family size, with higher education and more exposure to media significantly increasing the desire for fewer children [15]. A study on the Bhil tribe of Rajasthan shows that Bhil women significantly have higher fertility levels compared to other tribes and general populations, driven by early marriage, mothers' age, and child mortality [16]. According to a study on the Lepcha tribe of Sikkim, education, health awareness, family planning, and socio-economic circumstances all contribute to declining fertility and mortality among Lepcha tribal women [17]. Among the Banjar tribe of Banjarmasin, fertility was positively impacted by increasing female workplace participation, particularly in professional jobs, while greater female political representation was associated with lower fertility, influencing women's reproductive behaviour [18]. Figure 2 shows the trend of the ST fertility rate in Assam and India.

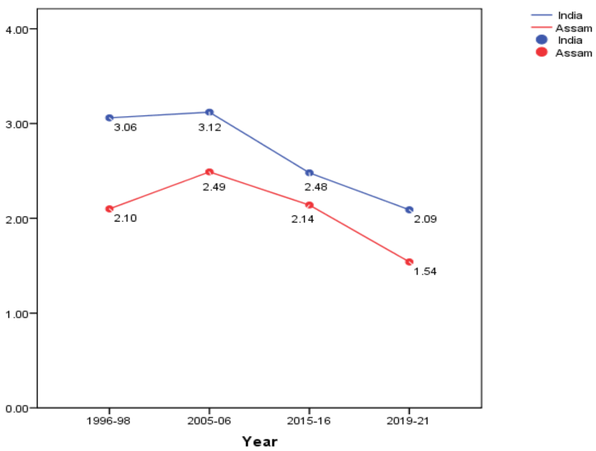

Fig. 2: Comparison of TFR of STs of Assam and India (NFHS reports).

Kokrajhar district, located in the lower part of Assam, acts as the gateway to the northeastern states of India and has a total population of 8,87,142, of which STs constitute 31.4% (Census 2011). The ST population of the district largely resides in rural areas due to their deep-rooted traditions and close association with nature; however, in recent years, they have increasingly shown a positive attitude towards women's education and the adoption of urban lifestyles to enhance their living standards. Given their unique socio-cultural characteristics and the ongoing influence of modernization on fertility, it is worthwhile to investigate the determinants of fertility among the ST women of reproductive age. Therefore, this study aims to examine the determinants of fertility differentials among the ST women in Kokrajhar district within the reproductive age group.

Novelty of the study

From the existing literature review, it is evident that though the fertility differentials across various regions of India have been studied, but still the fertility differentials of ST women of Kokrajhar district have not been studied yet. So, to check how the transition period (as they are now more concerned about education and quality of life) of ST women in the present era is affecting the fertility rate in the study area, this research has been carried out.

2. Materials and Methods

The study is based on the primary data collected through a structured questionnaire administered to 960 eligible women belonging to the ST community across four medical blocks of Kokrajhar district, namely Balajan, Dotma, Gossaigaon, and Kachugaon. A stratified random sampling method was adopted to choose the villages, and the eligible women were randomly selected. The eligible women were from the ST community, aged between 15 and 49 years, residing in the district, and each had at least one child.

2.1. Dependent variable and independent variable

The study focused on CEB as an indication of fertility, with CEB serving as the primary dependent variable in the study. A woman's CEB reflects her reproductive patterns as well as the childbearing experience of an age cohort ranging from 15 to 49 years. This methodology makes it possible to generalize the data and get insights that may serve as the basis for further investigation.
The independent variables of the study consist of women's age categorized as 25 years or younger, between 26 and 35 years, and 36 years or older; religion classified as Hindu and non-Hindu; women's educational attainment categorized as no education, primary, secondary, and higher education; wealth index categorized as poor, middle, and rich; age at marriage categorized as 15 years or less, between 16 and 19 years, and 20 years or older; and current use of contraception categorized as yes or no. The nature of each predictor variable was categorical.

2.2. Statistical analysis

A one-way ANOVA was employed to determine the significant correlation between CEB and predictor variables. In addition, using the Poisson regression technique, the overall impact of each predictor variable on the CEB was determined while adjusting for the influence of other predictors. The dependent variable (CEB) being a count variable, the Poisson regression is the best-fitted model in this study. SPSS 16.0 software was used to conduct the data analysis.

2.3. Models

2.3.1. Poisson regression

The standard model applied to count data is Poisson regression. Considering the dependent variable, CEB among ST women in the study area as Y, and the given independent variables $X_1, X_2, \ldots, X_7$, follows a Poisson distribution with parameter μ. Accordingly, the probability mass function is

$$P(Y = y) = \frac{\exp(-\mu)\mu^y}{y!};\ \text{for } \mu > 0 \text{ and } y = 0,1,2,\ldots \quad (1)$$

Where the parameter μ is linked to the covariates through the log-link function

$$\ln(\mu) = \beta_0 + X_1\beta_1 + X_2\beta_2 + \cdots + X_7\beta_7 \quad (2)$$

β_0 is the intercept, and β's are the Poisson regression coefficients.
For subject i,

$$\ln(\mu_i) = \beta_0 + X_{1i}\beta_1 + X_{2i}\beta_2 + \cdots + X_{7i}\beta_7 \quad (3)$$

2.3.2. Negative binomial (NB) regression

NB regression model is an extension of the Poisson model used when the count outcome shows overdispersion [19]. Let Y be the dependent variable, CEB to the ST women in the study area, and let $X_1, X_2, \ldots, X_7$ be the independent variables. The Hilbe parametrization of the NB distribution is therefore given by [20]

$$P(Y = y) = \frac{\Gamma(y+\frac{1}{\alpha})}{\Gamma(y+\frac{1}{\alpha})\Gamma(\frac{1}{\alpha})}\left[\frac{1}{1+\alpha\mu}\right]^{\frac{1}{\alpha}}\left[\frac{\alpha\mu}{1+\alpha\mu}\right]^{y} \quad (4)$$

Where $\mu>0$ is the mean of Y
$\alpha>0$ is the dispersion parameter of heterogeneity.

2.3.3. Dispersion test and goodness of fit

A dispersion test was performed using the Pearson Chi-Square statistic to assess the suitability of the Poisson regression model for analyzing CEB. This test evaluates if the variance of the outcome aligns with the Poisson assumption of equal variance and mean. If the ratio of the Pearson Chi-Square value to its degree of freedom (df) is close to 1, the Poisson model provides an appropriate fit data, whereas a value substantially greater than 1 indicates the presence of overdispersion in the data [21]. The goodness of fit in a regression model reflects how well the estimated regression corresponds to the observed data. The selection of the model was carried out using log-likelihood and Akaike Information Criterion (AIC). A model with higher log-likelihood and lower AIC values suggests a more efficient and better-fitting model.

Table 1: Goodness of fit for Poisson Model and NB Model

Poisson Regression Model				NB Model			
	Value	df	Value/df		Value	df	Value/df
Deviance	191.113	948	.202	Deviance	72.834	948	.077
Scaled Deviance	191.113	948		Scaled Deviance	72.834	948	
Pearson Chi-Square	198.878	948	.210	Pearson Chi-Square	77.051	948	.081
Scaled Pearson Chi-Square	198.878	948		Scaled Pearson Chi-Square	77.051	948	
Log Likelihood	-1.211E3			Log Likelihood	-1.635E3		
Akaike's Information Criterion (AIC)	2.447E3			Akaike's Information Criterion (AIC)	3.293E3		
Finite Sample Corrected AIC (AICC)	2.447E3			Finite Sample Corrected AIC (AICC)	3.294E3		
Bayesian Information Criterion (BIC)	2.505E3			Bayesian Information Criterion (BIC)	3.352E3		
Consistent AIC (CAIC)	2.517E3			Consistent AIC (CAIC)	3.364E3		

Table 1 shows that the value of deviance and Pearson chi-square for the Poisson model are 0.202 and 0.210, respectively, both of which are less than 1. This figure indicates the presence of underdispersion, hence it does not violate any assumption. Although the NB model also yields deviance and Pearson chi-square values less than 1, the Poisson model demonstrates a higher log likelihood value and a lower AIC compared to the negative binomial model.

Table 2: Omnibus Test

Poisson Model			NB model		
Likelihood Ratio Chi-Square	df	Sig.	Likelihood Ratio Chi-Square	df	Sig.
82.119	11	.000	31.278	11	.001

Table 2 shows that the Omnibus test indicates that both Poisson (χ^2= 82.119, df=11 and p<.001) and NB (χ^2= 31.278, df=11 and p=.001) models are statistically significant. This indicates that the factors collectively have a significant influence on CEB in the study area.

Table 3: Test of Model Effects

Poisson Model				NB model			
Source	Type III Wald Chi-Square	df	Sig.	Source	Type III Wald Chi-Square	df	Sig.
(Intercept)	25.372	1	.000	(Intercept)	8.915	1	.003
Present Age	45.264	2	.000	Present Age	17.540	2	.000
Religion	.008	1	.928	Religion	.002	1	.963
Wealth Index	.337	2	.845	Wealth Index	.078	2	.962
Education	8.146	3	.043	Education	3.024	3	.388
Age at marriage	4.295	2	.117	Age at marriage	1.481	2	.477
Contraceptive usage	11.493	1	.001	Contraceptive usage	4.094	1	.043

Table 3 presents the test of model effects, showing the statistical significance of each independent variable in relation to CEB. In the Poisson model, current age (p<.001), education (p<0.05), and contraceptive use (p=0.001) were found to be statistically significant. In contrast, NB showed only current age (p<0.001) and contraceptive use(p<0.05) to be statistically significant.

Both Poisson and NB models indicated underdispersion, with Pearson Chi-Square values less than 1. When compared to the NB model, the Poisson model demonstrated a higher log-likelihood and a lower AIC, indicating a better model fit. Therefore, the Poisson model was considered the most appropriate for modelling CEB among ST women.

3. Results

3.1. Background characteristics of respondents

Based on socio-demographic characteristics, Table 4 shows the percentage distribution of ST women in the study area with at least one child. The findings reveal that the majority (53.9%) of the respondents are in the age group 26-35 years, with 27.7% being below 25 years old and 18.4% being beyond 36 years old. Among the total responders, 91.2% identified as Hindu, and the remaining 8.8% identified as non-Hindu. Only 21.1% of the respondents had higher education compared to most respondents (40.6%) who had only completed their primary education. The poor wealth index accounted for more than half of the respondents (57%). Approximately 68.4% of the respondents married at age 20 or above, while a few (0.4%) married at age 15 or below. Modern contraceptive methods were used by 29.3% of the respondents.

Table 4: Percentage-wise Distribution of the Socio-Demographic Characteristics of the Respondents

Background characteristics	%	N
Present age of respondent (in years)		
≤25 years	27.7	266
26-35 years	53.9	517
≥36 years	18.4	177
Religion		
Hindu	91.2	876

Non-Hindu	8.8	84
Education		
No Education	26.1	155
Primary	40.6	390
Secondary	22.1	212
Higher	21.1	203
Wealth Index		
Poor	57.0	547
Middle	29.5	283
Rich	13.5	130
Age at marriage		
≤15 years	0.5	5
16-19 years	31.0	298
≥20 years	68.4	657
Modern Contraceptive Use		
Yes	29.3	281
No	70.7	679
Total number of respondents	100	960

3.2. Differentials in child ever born

Based on the current study, the average number of CEB per woman of ages between 15 and 49 years in the study area is 1.57. Table 5 presents the association between several socioeconomic factors and the overall CEB per woman, as determined by one-way ANOVA analysis. The mean number of CEB per woman showed a significant association with the respondent's current age (p<0.001). Women aged 36 years or older had a mean CEB score of 2.0, which was higher than the lower age group. A noteworthy correlation (p<0.001) has been observed between the educational attainment and mean CEB. The women with no educational attainment tend to have more children (CEB=2.0) than those with primary (CEB=1.6), secondary (CEB=1.5), and higher education (CEB=1.4). Furthermore, a statistically significant correlation (p<0.01) has been observed between wealth index and CEB, with women in the poor wealth index having the highest CEB score of 1.6, followed by those in the middle wealth index (CEB=1.5). In terms of contraceptive usage, women using contraceptives have a higher mean number of CEB (1.8) than those who do not use; this relationship is statistically significant at p<0.001. In contrast, the religion and age at marriage of the respondent do not have a significant relationship to the mean of CEB.

Table 5: Analysis of the Association between Several Socioeconomic Variables and Children Ever Born

Background characteristics	CEB			Mean CEB	F-value	N
	1	2	3+			
Present age of respondent (in years)					99.671***	
≤25 years	82.7	16.5	0.8	1.2		266
26-35 years	48.7	40.6	10.6	1.6		517
≥36 years	27.7	41.8	30.5	2.0		177
Religion					0.021 ns	
Hindu	54.5	33.9	11.6	1.57		876
Non-Hindu	52.4	36.9	10.7	1.58		84
Education					31.378***	
No Education	26.5	45.8	27.7	2.0		155
Primary	54.6	35.1	10.3	1.6		390
Secondary	59.9	31.6	8.5	1.5		212
Higher	69	26.1	4.9	1.4		203
Wealth Index					7.213**	
Poor	50.8	34	15.2	1.6		547
Middle	57.6	34.6	7.8	1.5		283
Rich	61.5	33.8	4.6	1.4		130
Age at marriage					1.143 ns	
≤15 years	20	60	20	2.0		5
16-19 years	55.7	29.5	14.8	1.6		298
≥20 years	53.9	36.1	10	1.6		657
Modern Contraceptive Use					48.286***	
Yes	37.4	44.5	18.1	1.8		281
No	61.3	29.9	8.8	1.5		679
Total	54.3	34.2	11.6	1.57		960

Note: For each variable, one-way ANOVA was used to determine the significant correlation between the predictor variable and the outcome variable. Significance level: *** p<0.001, ** p<0.01; ns: not significant.

3.3. Determinants of fertility differentials

Poisson regression analysis was conducted to determine the factors related to fertility differentials; Table 6 displays the results in terms of IRR. The results are described by the differences of IRR across each correlate variable of the categories relative to the reference category. The findings indicate that respondents' age, level of education, and usage of contraceptives were all significant factors of fertility in the study area.

The analysis shows that when compared to women aged 25 years or younger, women aged 35 years and above had nearly 71% (IRR=1.718; p<0.001) more children. Religion did not significantly affect CEB; however, non-Hindu women often tend to have more children than Hindu women. A significant association is observed between education and CEB. It is seen that the CEBs of women were found to be lower by 22% (IRR=0.773, p<0.001) with primary education, by 26% (IRR=0.738, p<0.001) with secondary education, and by 32% (IRR=0.675, p<0.001) with higher education, respectively, than those of women without any education. No significant relation was found between the effect of the wealth index and the respondent's age at marriage with CEB. However, women belonging to the middle or rich wealth index have fewer children than those belonging to the poor wealth index. Moreover, women who married between 16 and 19 years have more children than those married at 15 years or below, while those married at 20 years and above have fewer children. Further, women not utilizing contraceptives have 17% (IRR=0.826, p<0.01) lower CEB than women using them.

Table 6: Poisson Regression Result Demonstrating the Adjusted Effect of Socio-Demographic Characteristics on CEB

Background characteristics	IRR	95% Cl
Present age of respondent (in years)		
≤25 years[R]		
26-35 years	1.371***	[1.205, 1.561]
≥36 years	1.718***	[1.477, 1.999]
Religion		
Hindu[R]		
Non-Hindu	1.007	[0.843, 1.203]
Education		
No Education[R]		
Primary	0.773***	[0.675, 0.886]
Secondary	0.738***	[0.631, 0.863]
Higher	0.675***	[0.574, 0.794]
Wealth Index		
Poor[R]		
Middle	0.921	[0.820, 1.034]
Rich	0.885	[0.755, 1.037]
Age at marriage		
≤15 years[R]		
16-19 years	1.002	[0.895, 1.122]
≥20 years	0.95	[0.809, 1.115]
Modern Contraceptive Use		
Yes[R]		
No	0.826**	[0.742, 0.920]

Note: [R]: Reference category; Significance level: **p<0.01, *** p <0.001.

4. Discussion

The study reveals that the average number of CEB among ST women in Kokrajhar district is 1.57 children per woman. According to the findings, the age of women, education, wealth index, and modern contraceptive usage are the factors influencing fertility differentials. The Poisson regression analysis revealed that the number of CEB is directly correlated with the current age of ST women in the study area. This result might be explained by the fact that the expected number of children would increase as women's ages increased. Furthermore, because older women had a longer childbearing period compared to younger women, the older women can be predicted to have higher fertility than the younger women. Similar results were obtained, consistent results regarding this finding [22 - 25].

Education plays an important role in every aspect of life; so, it holds a prominent role in influencing the fertility rate of a woman. It can change the attitude, knowledge, and ambitions of an individual about the socio-cultural activities, postponing a woman's marriageable age and resulting in decreased fertility. The results of this study indicate that ST woman's fertility is impacted negatively by the level of her education in the study area. Similar results were reported in different studies [23], [26 - 28]. Perhaps the reason education hurts fertility is that it can interfere with early marriage, which delays marriages. It can also increase awareness of family planning and help people become acquainted with different family planning programs. Additionally, attaining higher education stimulates the urge to engage in organized work to improve the standard of living, which opposes having more children. Education is therefore predicted to have an inverse effect on the number of CEB. Since the district is growing, education among the STs in the study area is now gradually increasing. In the past, the district had a few educational institutions, and neither universities nor engineering colleges existed. Thus, higher education was denied to the ST residents of the district, as universities were located far from the district and had low income. In the past, the district saw several riots as the Bodos, the largest ST community of the district, were involved in the Bodo movement to demand a separate state for their political rights, to protect their unique ethnic identity, culture, and language, and to advance regional development. The district currently has two universities, as well as a medical college, and both a central and a state engineering institution. As a result, ST people may now pursue higher education, which might lead to a low fertility rate in the region. Mahanta found that even in a tribal society, education significantly impacts fertility levels, and wives with more education than their husbands have a notably lower number of CEB [7].

According to the study, a negative correlation exists between a family's wealth index and the overall CEB among ST women in the study area. The result shows that the family with the highest wealth index has much lower fertility than those with the lowest wealth index, which was also revealed in the different studies [23], [29 - 31]. Generally, families with high income are capable of rearing and bearing their child with better health and education, which reduces the economic utility of children, lowering the need for more children. Additionally, they have more access to education, which provides information about modern contraceptive methods and family planning policies. On the contrary, families with a poor wealth index are driven to have more children because they believe that their children may be utilized for generating income [32]. Since agriculture serves as the primary source of revenue for the ST population in the study area, families with lower wealth indexes tend to desire to have more children to support their workforce. As urbanization, schooling, and non-farm livelihoods expand, incentives shift toward child quality over quantity, weakening the direct wealth–fertility link. While, wealth index showed a statistically significant result in the bivariate model, it became non-significant in the multivariate model in our study, which is consistent with earlier findings [40]. This is because in bivariate analysis, wealth seems related to fertility differences across households, while once the other key factors are added in the multivariate model, the independent effect of wealth disappears. Therefore, the loss of significance suggests that the advantages and behaviours linked to socio-economic status, rather than wealth alone, drive fertility.

In traditional societies, since most child birth takes place within marriage, it is a significant demographic variable influencing fertility. Early marriage allows for earlier childbearing and a longer reproductive period, resulting in higher fertility [26], [33], [34]. The study reveals that lower age at marriage have significantly greater fertility rates than those with advanced age at marriage among ST women in the study area. Thus, encouraging women to pursue higher education might raise their marriage age, lowering their fertility duration, which will lower the fertility rate. Although age at marriage is commonly expected to influence the number of children a woman has, in this study, it was found to be a non-significant factor, which is consistent with earlier findings [39]. Fertility may be impacted by age at marriage, but in certain circumstances, its impact becomes limited or disappears when other factors are considered. In a context where women prefer childbearing soon after marriage, irrespective of their age, or where fertility is regulated through contraceptives to decide their preferred number of children, the age at marriage becomes less influential. So, these factors play a more direct role in determining fertility than the age of marriage of a woman.

One of the key variables that directly affects fertility is the usage of contraceptive techniques. The knowledge and utilization of contraceptives are a crucial component of family planning strategies. Employing contraceptive methods reduces the risk of unintended births and pregnancy-related health risks for women. Whereas the results in the study area revealed that women belonging to the ST community do not have a positive attitude towards the usage of contraception, which were concurrent with the findings in different studies [35,36,37]. Scheduled Tribe (ST) communities in India continue to experience social, economic, and developmental disadvantages that shape their reproductive behaviour. Compared to other social groups, ST populations generally have lower levels of educational attainment, poorer access to healthcare services, limited exposure to mass media, and fewer economic opportunities. These structural barriers restrict their access to information on reproductive health and modern family planning methods.

Due to limited awareness, misconceptions about contraceptive methods are common among ST women. Many fear potential side effects or perceive modern contraception as harmful to health or fertility [38]. As a result, contraceptive uptake among ST women often occurs late- typically after they have already achieved their desired number of children, rather than as a preventive measure to limit or space births from an early stage. As a result, in the study area, more than 70% of the ST women do not utilize contraceptives.

Consequently, the result revealed that ST women in the study area, who report current contraceptive use, tend to have a higher number of children compared to non-users, because adoption of contraception generally begins only after completing their preferred family size, which agrees with results from earlier findings [23], [31]. This pattern reflects a post-fertility contraception behaviour rather than a proactive fertility-limiting approach.

5. Conclusion

In summary, the current scenario indicates that the level of fertility among ST people of Kokrajhar district is below the replacement level (Mean CEB=1.57). Even though the fertility level has declined to the replacement level, fertility differentials still exist among them. The level of educational attainment of women and the number of CEB were significantly adversely associated. However, women’s age and usage of modern contraceptive techniques were the factors related to the high fertility of the study area. These findings emphasize improving family planning awareness, increasing educational opportunities for tribal women, and providing better reproductive health information through community-based initiatives and targeted mass media campaigns. These interventions can help maintain the ongoing declining trend of fertility and ensure that ST women make informed and empowered reproductive decisions.

Future Work

In future research, by considering different variables such as husband’s characteristics, family planning, and birth interval can be carried out further research by using qualitative, quantitative, or a mix of both research methods to determine the various factors that impact the fertility of ST communities in Kokrajhar, which may provide a more comprehensive and detailed analysis.

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