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Factors influencing India's fertility patterns and differential of women

Jasmine Brahma[1+]
Konita Basumatary[2]

[1]*Bodoland University, Kokrajhar, India.*
Email: jasmine091194@gmail.com
[2]*Department of Economics, Bodoland University, Assam, India.*
Email: konitabasumatary@gmail.com

(+ Corresponding author)

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ABSTRACT

The study aims to identify the factors influencing fertility patterns and differentials in India while taking into account background characteristics such as place of residence, educational attainment, and religious affiliation. The data used for this study comes from all five rounds of the National Family Health Survey. To calculate the Total Fertility Rate and other factors, including place of residence, educational attainment, and religious affiliation, the background data from the National Family Health Survey was analyzed. Interpolation was used to fill up the gaps left by the missing data. The information from the 25 states was collected. Using the Eviews 12 program, a model based on panel data is performed to pinpoint the factors influencing the patterns and differences in fertility. The place of residence, educational attainment, and religious affiliation, usage of contraception, sequence of births, first marital age, birth period, unmet requirements, and gender attitudes of the couples were all found to have an impact on fertility differences. The results of the panel regression study showed that the interaction of numerous factors caused TFR to differ amongst Indian states. Additionally, it is highly important to look into district-level data.

Contribution/Originality: This study examined the factors that influence patterns and create differences in fertility among the Indian states using data from all five rounds of the NFHS through a panel analysis. This will help to reduce the differences in fertility and also improve the reproductive health of women and children.

1. INTRODUCTION

Fertility has been a subject of discussion for a while and is one of the main drivers influencing population growth or decline in developing nations like India, which includes a range of ethnic groups, cultural practices, social conventions, and economic situations where differences in fertility may exist. It is critical to comprehend this problem. Fertility differentials refer to the difference in the levels of fertility rate among various categories of a given population and are identified by various factors like their place of residence, levels of education, religion, usage of contraception, sequence of births, birth period, unmet requirements, gender attitudes of the couples, etc.

Numerous indicators are used to measure fertility, but TFR is primarily used as an index to compare fertility across regions, whether they are the same or different. As per the measure, in India, TFR fell from 1992–1993 to 2019–21, achieving the replacement level of fertility at 2 children per woman as per (National Family Health Survey-1, 1992-93) and National Family Health Survey-5 (2019-21). According to the most recent National Family Health Survey-5 (2019-21), the TFR is below replacement level in some states, including Assam, Madhya Pradesh, and Rajasthan, and above replacement level in Bihar, Meghalaya, Uttar Pradesh, and Manipur. In some states' fertility

rates are still rising, which is problematic for the well-being of a country's women's reproductive system. As a result, it is important to research the key contributing elements that influence the current situation's fertility differential.

Numerous researchers looked into the variables influencing India's fertility rate. However, no prior research has investigated the factors that influence patterns and differences in fertility among the Indian states using data from all five rounds of the NFHS through a panel analysis.

Within this framework, the present study aims to determine the likelihood that factors like place of residence, educational attainment, religious affiliation, usage of contraception, sequence of births, birth period, unmet requirements, and the gender attitudes of the couples influence fertility patterns and differential of women in India.

2. REVIEW OF LITERATURE

Singh, Shekhar, and Shri (2023) examined the trends of age at marriage in India for the past 30 years and the factors that affect this age as well. The researcher discovered that there was a low prevalence of child marriage and that about 25% of women in the 20–24 age range were married before the marriageable age. Additionally, it was discovered that among women aged 20 to 49, the average age of first marriage rose, while it fell for those in the lower wealth quintile, those who lack formal education, and those who are disadvantaged by society. Additionally, it was discovered that Christians, members of other castes, and STs married at older ages. It has some limitations, including the inability to construct cause-effect theory, recalled bias that may result from reporting the months and years of age at first marriage, the use of respondents' prior experiences to determine median age, and the absence of data.

Rahaman et al. (2022) determined the trends and factors that impact the satisfaction of three distinct types of contraceptive demand: limiting demand for traditional contraception, limiting demand satisfied with modern reversible contraception, and limiting demand met among married women who now want to limit their children in India. It was shown that Muslim women from the North-East who were in the early age reproduction group, low parity, and without at least one son had lower levels of satisfying limiting requirements. Additionally, it was determined that modern permanent contraception satisfies the demand-limiting requirement. In India, additional micro-level family planning analysis at the district level was needed because the study was only conducted at the national level.

Barman and Sahoo (2021) studied the trend and pattern of sex choice in India at the federal and state levels, as well as the influence of socioeconomic and demographic factors,through all four rounds of the NFHS. Over time, it was noticed that the preference for the daughter increased while the preference for the son decreased. It also found that women who had more children overall were illiterate, weren't exposed to mass media, were impoverished, wanted more sons, lived in rural regions, and were from Northern India had a higher preference for sons. The study only took into account the optimal number of children, whether they are sons, daughters, or either sex, which could change over time.

Götmark and Andersson (2020) analyzed the levels of fertility in six different global regions with five factors, including education, per capita income, religion, prevalence of contraceptives, and family planning initiatives, through correlation, regression, and graphic analysis. According to this research, the level of fertility was low in regions with higher education, CPR, GDP per capita, and FPP, but it was lower in Eastern Europe and nonexistent in Western Europe and related countries, although it was higher in regions with stronger religions. The relationship between TFR and other significant parameters, including all five factors stated, has to be further studied. It was also necessary to conduct more research on the function of religion and family planning initiatives.

Laelago, Habtu, and Yohannes (2019) examined the proximate causes of fertility and the effects of specific economic and social variables on fertility in Ethiopia in 2011 and 2016 by using a modified Bongaarts model. Only the abortion index was changed in this model to fetal wastage; the other three proximate determinants remained the same. The marriage index was discovered to be one of the four proximate variables that had the greatest impact on

fertility inhibition in 2011 and postpartum fecundability in 2016. Furthermore, it discovered notable variations in background factors' restrictions on childbirth in 2011 and 2016 as well. It had some restrictions, such as the fact that it was based on data from the past, notably about age.

3. METHODOLOGY

Data for the study were gathered from the National Family Health Survey-1 (1992-93) through the National Family Health Survey-5 (2019-21). Except for Uttarakhand, Chhattisgarh, and Telangana, information was gathered from 25 different states. The dependent variable is TFR, while background information from NFHS-2 to NFHS-5 was used to extract explanatory variables like place of residence, educational attainment, and religious affiliation. Interpolation was used to fill in the gaps left by missing data between those two time periods and for the National Family Health Survey-1 (1992-93). Therefore, a balanced panel regression is done through Eviews 12 to identify the factors influencing the patterns and differences in fertility.

A method of statistics known as panel data analysis is typically used to examine data that has been gathered from the same individuals or institutions over multiple periods. The crucial models for modeling such as Pooled Ordinary Least-Squares (OLS), random effect (RE), fixed effect (FE), and feasible generalized least square (FGLS) models are all used to analyze panel data regression (Wooldrige, 2013). However, the independent OLS model, RE model, and FE model are the three most often used panel studies (Basumatary & Devi, 2022). Assuming homogeneity across all sections in panel data research, pooled panel analysis does not treat any section differently. In pooled OLS regression, neither individual differences within the measurement set nor common trends across time are present. Therefore, in pooled OLS regression, it is thought that the intercept is constant across entities. However, the time-invariant fixed effect model allows for heterogeneity and allows each cross-section to have its own intercept (which may differ for each cross-section). Individuals have distinctive qualities that are constant over time and are connected with unrelated variables. The random effect model, often known as the variance components model, is frequently used in panel analysis modeling. This method is time-invariant and considers heterogeneity, but the precise impact on an individual is unrelated to the independent factors (Adefemi, 2017). Due to variability in the data selection process, different intercepts for various entities in the fixed and random effect models exist. The random effect model captures these intercept discrepancies (Baltagi, 1985).

Before panel regression, a stationary state is verified on each data set by executing the unit root test. Unlike the alternate hypothesis, which assumes that a set is steady, the null hypothesis makes the presumption that a set is not steady. In this case, the steady state of the data set for the Indian states at levels and first differences is evaluated using an ADF Fisher test.

With Eviews 12, the Breusch-Pagan Lagrange Multiplier (BPLM), Likelihood (Chow), and Hausman tests were performed to assess which of the OLS, RE, and FE models was the best. To evaluate the suitability of a model between the pooled least squares and the random effect model, the BPLM test first runs the OLS with a second hypothesis indicating the existence of an RE. At a significance level of 5%, the null hypothesis will be accepted if $p>0.05$ and rejected if $p>0.05$. Further, if the null hypothesis is rejected, the Likelihood test, also known as the Chow test, is utilized to determine which of the OLS and FE models is more appropriate. Here, the alternative hypothesis postulates the existence of a RE, while the null hypothesis posits the absence of a FE. Additionally, if the null hypothesis is demonstrated to be rejected after running an RE model, the Hausman test is applied when comparing the RE and FE models. The null hypothesis expresses the presence of a RE, whereas the alternative hypothesis states that there is no FE. So, at the 5% significance level of acceptance, the null hypothesis is rejected if $p<0.05$ and accepted if $p>0.05$. The model with a FE can be regarded as the proper model for the estimation if the test shows the null assumption is false; otherwise, the model with a RE can be regarded as an acceptable model.

To obtain statistical evidence for the panel data regression, further tests, including the autocorrelation and multicollinearity tests, were conducted.

3.1. Estimated Model

Model 1: Factors like place of residence, educational level, and religious affiliation influence fertility differences. In this case, it is determined that the random effect model is superior and more suitable. To ascertain the difference in fertility in this instance, the partial slope coefficients of factors are analyzed.

For residence, education, and religion, the random effect model is.

$$Y_{it} = \propto +\beta_1 X_{1it} + \beta_2 X_{2it} + \cdots + \beta_7 X_{7it} + (\alpha_i - \alpha) + \varepsilon_{it} (1)$$

Where the dependent variable is TFR, which is denoted by Y_{it}; 'i' denotes the states &'t' denotes the time.X_{1it}(Rural residence), X_{2it}(urban residence), X_{3it}(Illiterate women), X_{4it}(Primarily educated women), X_{5it}(High school & above educated women), X_{6it}(Hindu religion), X_{7it}(Muslim religion) are the independent variables. The partial slope coefficients are $\beta_1,\ \beta_2, \ldots, \beta_7$ and the disturbance term isε_{it}. The value of a particular state is α and traps the effect of the state.

Model 2: Factors influencing the TFR include the usage of any contraception, sequence of birth, the first median age of union (25-49), the median number of months of birth period, unmet requirements, and gender attitudes of the couples. In this case, the most appropriate model is FE.

The fixed effect model is: $TFR_{it}=\beta_i + \gamma_1 UAC_{1it} + \gamma_2 FB_{2it} + \cdots\cdots\cdots + \gamma_{13} WAD_{13_{it}} + \mu_{it}$ - (2)

Where the dependent variable isTFR_{it} = Total Fertility rate; 'i' is the states &'t' is the time. UAC_{1it}(Usage of any Contraception), FB_{2it} (Birth of the First), SB_{3it}(Birth of the Second), TB_{4it}(Birth of the Third), FMB_{5it}(Birth of a Fourth or more), $FMAU_{6it}$(first median age of union from 25 to 49), MMB_{7it}(median number of the months of birth period), URS_{8it}(Unmet requirement for spacing), URL_{9it} (Unmet requirement for limiting), $WLDS_{10it}$(Want fewer daughters than sons), $WLSD_{11it}$(Want fewer sons than daughters), WMS_{12it}(Want minimum one son) &WMD_{13it}(Want at least one daughter) are independent variables. The partial slope coefficients are$\beta_1,\ \beta_2, \ldots,\ \beta_{13}$. The disturbance term isμ_{it}.

4. RESULTS

4.1. Stationarity Test

Results of the stationarity test suggest that each data set, except TFR, illiterate, elementary, and secondary and above level of education, usage of any contraception, the unmet requirement for spacing, want fewer daughters than sons, want fewer sons than daughters, want at least one daughter, and accept the null hypothesis when $p>0.05$ at level, that is, it is not in steady state, and further, the test suggests a steady state at the first differences of Augmented Dickey Fuller Fisher test.

4.2. Models for Panel Data Estimation

The findings demonstrate that each test rejects the null hypothesis at $p<0.05$, indicating that the OLS model fails to be appropriate. As a result, the BPLM test shows RE is better than the OLS model. The Likelihood test also shows that the probability value for the cross-section effect supports the alternative hypothesis of the fixed effect model, which says that the cross-section effect is less than 5% significant. The FE outperforms the OLS when considering all the given factors. Furthermore, Hausman test results show that place of residence, educational attainment, and religious affiliation all have probability values of test statistics that are more than 5% significant. The RE is therefore accepted, indicating that the RE is a preferable model to the FE for the analysis. Contrarily, usage of any contraception, sequence of birth, birth period, unmet requirements, and gender attitudes of the couples all have probability values of the statistical tests that are less than the 5% threshold of significance. The FE is therefore accepted, indicating the FE model is the most appropriate for the analysis.

4.3. Ecological and Socio-Economic Factors Determine the Fertility Differential (Table 1)

4.3.1. Place of residence and Fertility

One major element that is thought to be influencing the fertility difference in rural and urban areas is regarded as a place of residence. According to the findings of the estimated calculations, TFR in urban areas is lesser (-0.16) than that of TFR in rural areas (0.15). According to this study, women in rural settings seem to be more fertile than those in urban areas. Many studies revealed a comparable fertility gap between rural and urban areas (Htun & Ardam, 2015). According to Qadeer (2002), the socio-economic gap that exists between rural and urban women, which is the reason rural women are more likely than urban women to marry early, is what causes the rural-urban fertility gap (Das, Ranjan, & Mitra, 1955; Kulkarni, 2011; Zarate, 1967). Also, urban residences have greater amenities than rural ones, which encourages more likely usage of contraceptives (Sisouphathong, Xaovana, Louangvixa, & Chanthalanouvong, 2000).

4.3.2. Education and Fertility

Education is one socioeconomic factor that has a significant impact on fertility differences. When a slope of educational attainment is taken into account, it is found that the TFR for illiterate women (0.40) is higher than that of high school and above-educated women (0.35). The findings showed that TFR decreased as women's educational levels rose. Women with higher education who were between the ages of 15 and 49 years had lower fertility than those who were only elementary or illiterate (International Institute for Population Sciences; International Macro, 2007). As a result, it appears that educated women have a greater tendency than uneducated women to use contraception, delay getting married (Reddy, 2003), prolong the reproductive period (Roy & Hossain, 2017), or have a family of a smaller population (Martin, 1995). After completing secondary school, women are filled with information, are likely to have more freedom to choose their careers and marital partners, and have an understanding of their sexual health (Basu, 2002) as well as the overall well-being of their children (Adhikari, 2010). This changes how women behave regarding conception (Bbaale & Mpuga, 2011). This study has shown that, from a small perspective, improved educational attainment can result in increased production, decreased fertility, and better health conditions (Dreze & Murthy, 2001; James, 2011).

Table1. The random effect model's findings regarding differences in fertility by factors.

The dependent variable is TFR Method applied: Panel least squares (LS) Number of cross-sections included: 25 Total number of panel (Balanced) observations: 100					
Variables		**Slope coefficient**	**SE**	**T-statistic**	**Prob. value**
C		-0.12	0.19	-0.61	0.53
Places of residence	Rural residence	0.15	0.07	1.92	0.05***
	Urban residence	-0.16	0.10	-1.48	0.14
Education	Illiterate women	0.40	0.06	6.18	0.00*
	Elementary	0.24	0.07	3.14	0.00*
	Secondary& above educated women	0. 35	0. 10	3.42	0.00*
Religions	Hindu religion	0.57	0.07	7.57	0.00*
	Muslim religion	0.12	0.03	3.21	0.69
R^2		0.83			
Durbin-Watson stat.		1.47			

Note: * 1% significance level and *** 10% significance level.

4.3.3. Religious Affiliation and Fertility

The people's religious affiliation has a big impact on how they feel about limiting fertility. The estimated results indicate that the Hindu religion has a greater TFR than the Muslim religion; however, the Muslim religion's slope coefficient is not statistically significant. Several studies indicate that Muslims have a higher TFR than Hindus do

(Adhikari, 2010; Arokiasamy, 2002; Balasubramanian, 1984; Das & Pandey, 1985; Visaria, 1974). According to Albsoul-Younes, Saleh, and El-Khateeb (2003), a lack of understanding and false beliefs about contemporary family planning methods are at fault in the majority of societies. These factors are crucial in determining whether family planning is accepted or met with resistance (Adioetomo, 1995; Mistry, 1995; Mulatti, 1995; Pearce, 2001). According to Quraishi (1996) and Jeffery and Jeffery (2002), one of the main factors contributing to Muslims' high fertility rate is women's uneducated status. In addition, multiple marriages leading to the gestation phase resulting in a greater fertility rate (Sargent & Cordell, 2003; Shumayla & Kapoor, 2017), high son desire, and early marriage age (Tafforeau, Damiba, & Maternowska, 1990) could all contribute to the high fertility among Muslim women.

Table 2. The fixed effect model's findings regarding the factors affecting fertility differences.

Dependent variable is TFR Method applied: Panel least squares (LS) Number of cross-sections included: 25 Total number of panel (Balanced) observations: 100					
Variables		**Slope coefficient**	**SE**	**T-statistic**	**Prob. value**
C		1.90	0.81	2.34	0.02
Use of contraceptives	Usage of any contraceptives	0.01	0.01	1.40	0.16
Sequence of births	Birth of first	-0.03	0.01	-2.31	0.02**
	Birth of second	-0.01	0.01	-0.45	0.65
	Birth of third	-0.02	0.01	-1.54	0.12
	Birth of Fourth or more	-0.01	0.01	-0.98	0.32
First marital age	The first median age of union was 25 to 49	0.01	0.02	0.22	0.82
Birth period	Median number of months of birth period	-0.01	0.01	-0.05	0.95
Unmet requirement	Unmet requirement for spacing	0.06	0.03	2.23	0.02**
	Unmet requirement for limiting	0.02	0.01	1.58	0.11
Gender attitudes of the couples	Want fewer daughters than sons	0.03	0.01	4.81	0.00*
	Want fewer sons than daughters	-0.05	0.03	-1.96	0.05***
	Want a minimum of one son	-0.01	0.01	-0.21	0.83
	Want at least one daughter	-0.01	0.01	-1.27	0.20
R^2		0.88			
Durbin-Watson stat.		2.32			

Note: * 1% significance level, ** 5% significance level, *** 10% significance level.

4.4. Proximate Determinants Affecting Fertility Differential (Table 2)

4.4.1. Usage of Contraceptives and Fertility

One of the most significant variables that directly affect fertility is the use of contraceptives or family planning techniques. The fertility rate increases by 0.01%; however, this is not statistically significant. Numerous studies have found that the fertility rate will decrease with every increase in the use of any kind of birth control. It is established that the use of contraception in any way reduces fertility rates, but only slightly. This is because women who use contraceptives often have fewer children than women who do not practice them. After all, the use of contraceptives by women increased as their education level rose (Martin, 1995). Additionally, urban residences have greater health-related amenities, which encourage a higher likelihood of contraceptive usage by urban women (Sisouphathong et al., 2000).

4.4.2. Sequence of Births and Fertility

A 1% rise in the first sequence of birth will, on average, result in a 0.03% drop-in fertility rate. The first order of birth has a demonstrably detrimental effect on fertility rates. Additionally, the second, the third, and any future orders of birth have a negative but insignificant influence on the fertility rate. In other words, women who had higher sequences of birth had larger families in comparison to those with the first sequence of births (Murphy & Knudsen,

2002). This finding supports the positive relationship between the sequence of births and the rate of fertility. According to several studies (including (Howell, Holla, & Waidmann, 2016; World Bank, 2010)), a high sequence of births of young children and infants undergo more complicated levels of deliveries and are more likely to die.

4.4.3. First Marital Age and Fertility

First marital age is a significant proximal factor that affects fertility (Nyi, 2005). According to the estimation results, there is a positive but negligible link between fertility rates and the first median age of union, which spans from 25 to 49 years old. The low prevalence of usage of contraceptives and younger first marital union both increase the duration of the length of gestation and boost reproduction in civilizations (Kabir, Jahan, & Jahan, 2001; Sarkar, 2010). Many studies carried out in the country discovered a negative relationship between the declining rates of fertility and the rising median age of union (Bharati & Dastidar, 1990; Borkotoky & Unisa, 2015; Das & Dey, 1998; International Institute for Population Sciences; International Macro, 2007; Khongsdier, 2005; Sahu, 2006; Varma, Babu, & Rohini, 1999). Additionally, it has been found that marriage at a later stage in life decreases the number of children (Adioetomo, 1995; Coale, 1975; Mohammad, 1985; Sibanda, Woubalem, Hogan, & Lindstrom, 2003; Som & Mishra, 2020), meaning that the earlier a woman marries, the more likely it is that she will have gone to school or were working (Patnaik, 1981), using methods of contraception (Bbaale & Mpuga, 2011). Due to this, fewer people can access education, and there are more at-risk unwanted births, which are harmful to both the mother and the unborn child's health (Balakrishnan & Mahadevan, 1987).

4.4.4. Birth Period and Fertility

The birth period[1] affects fertility rates significantly and is an important indicator of socioeconomic advancement. According to the study's estimated findings, the fertility rate is negatively impacted by the median number of months of the birth period[2], though this effect is not statistically significant. While Fotso, Cleland, Mberu, Mutua, and Elungata (2013) discovered that a birth gap of fewer than 18 months more than doubles the probability of newborn death in contrast to a birth period of 36 months or more, Potter (1988) indicated that a longer birth period increases the likelihood of infants surviving. Compared to mothers without a son, those who already have one are likely to have longer birth intervals (Khan, Bari, & Latif, 2016). As women aspire to have additional children, the time between births tends to shorten after the death of a previous child (Chakraborty, Sharmin, & Islam, 1996; Kamal & Khalid, 2012; Khan et al., 2016). Because of their education and way of life, women from wealthy families tend to have much longer childbearing intervals (Kamal & Khalid, 2012). Higher-educated women have longer birth periods than lower-educated women, and highly-educated women are more likely to use contraception to lengthen their birth periods (Tulasidhar, 1993) because they are more knowledgeable about the advantages and disadvantages of having a smaller family (Som & Mishra, 2020).

4.4.5. Unmet Requirements and Fertility

One of the most prominent indicators of significant alterations in the fertility and reproductive health scenario is the presence of unmet requirements[3]. The TFR is positively impacted by the unmet requirement for limiting[4] even

[1]Birth Period – It is the period between the end of one pregnancy and the beginning of the next once it has reached full term (Medical Dictionary, 2009).

[2]Median Birth Period – It is the period in which half of all children are born after the birth of their siblings (National Family Health Survey-5, 2019-21).

[3]Unmet requirements- Women who are sexually active and fertile but do not use contraception, who wish to postpone having children.

[4](Unmet requirement for limiting) or who want to delay the next child [5](Unmet requirement for spacing) are considered to have unmet requirements (WHO, 2023).

though it is statistically negligible. On the other hand, unmet requirement for spacing[5] had a 0.06% positive and substantial impact on fertility. Fertility increases in conjunction with increased levels of unmet family planning requirements (Akram et al., 2020; Ministry of Health and Family Welfare, 2012). In Maharashtra's National Family Health Survey-2 (1998-99), spacing was a more pressing issue for younger women than limiting was (Ministry of Health and Family Welfare, 2000). This may be brought on by the fact that married women are more likely to be illiterate (Chandra, 1998), and they are more likely to be unaware of the risks involved and fear them, followed by issues with fertility such as lactational amenorrhea the need for more children, and sexual choice (Rajaretnam, 1994), contraceptive method-related issues such as a shortage of availability and awareness (Patil, Rashid, & Narayan, 2010; Rahman, 2016; Westoff, 1978), objections from the husband and other family members, and beliefs in religion (Khokhar & Mehra, 2005), among others.

4.4.6. Gender Attitudes of Couples and Fertility

It has been discovered that, when it comes to gender choice, choosing fewer daughters over sons has a positive and strongly significant impact on the rate of fertility. This means that for every 1% increase in the desire for daughters over sons, the rate of fertility will rise by 0.03%. However, the fertility rate was slightly but favorably impacted by wanting more daughters than males. Additionally, although they are not statistically significant, wanting at least one daughter or son has been demonstrated to negatively affect reproductive rates. Son choice is perhaps the most frequently observed type of gender choice among older women who have had a greater number of children overall as well as who have also suffered the loss of young ones (Barman & Sahoo, 2021).

5. DISCUSSION

The study has thoroughly examined and determined various factors influencing the patterns of fertility and differences among 25 states within India using balanced regression with panel data from 1992-93 till 2019-21.

Place of residence, educational attainment, and religious affiliation are all considered in the random effects model; in contrast, the fixed effects model considers usage of contraceptives, sequence of births, first marital age, birth periods, unmet requirements, and gender attitudes of the couples. The findings from the empirical analysis of panel data showed differences in the rate of fertility between rural and urban residence, among illiterate women and high school and above-educated women. On the other hand, factors such as the first sequence of births and unmet requirements for spacing influenced fertility differences significantly. Many studies revealed a comparable fertility gap between rural and urban areas (Htun & Ard-am, 2015). Educated women have a greater tendency than uneducated women to use contraception, delay getting married (Reddy, 2003), prolong the reproductive period (Roy & Hossain, 2017), or have a family of a smaller population (Martin, 1995). According to several studies (including (Howell et al., 2016; World Bank, 2010)), young children and infants with a high sequence of births were born with more complicated levels of deliveries and were more likely to die. Fertility increases in conjunction with increased levels of unmet family planning requirements (Akram et al., 2020; Ministry of Health and Family Welfare, 2012).

6. CONCLUSION

To narrow the fertility gap, this study concludes that effective program administration and policy execution are required. In rural as well as urban areas, the education sector should be given top priority with a focus on reducing the number of births. From a policy standpoint, the Ministry of Family and Health Welfare (MoFHW) must focus on accessibility, affordability, and availability to lessen the unmet requirement for family planning and lower the fertility differential among reproductive women. Additionally, improved medical facilities should be made available for the well-being and reproductive health of women and their offspring. This study's weakness is that it was only conducted at the national level among selected states due to data availability issues. Further analysis must be conducted in India at the district level from a micro-level perspective.

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