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Growth trends and Differential in Fertility Pattern and Rate in India: An Analysis

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ABSTRACT :

In the present paper an attempt has been made to examine growth trends and differential in fertility pattern in India, on the basis of secondary data which is compiled from the National Family Health Surveys viz., NFHS-1, NFHS-2, NFHS-3, NFHS-4 and NFHS-5. The growth rates in fertility is examined with the help of exponential growth function. The results shows that there is no significant differential in fertility across residence location, social category and religion. It is also found that there has been a gradual decrease in TFR by residence location, social category and religion. Specifically, the Scheduled tribes have been observed to be the highest decrease in TFR during the National Family Health Surveys. The Compound Growth Rate (CGR) shows a significant decline in TFR, which indicating positive trends towards fertility control in the country.

Key Words; Growth, fertility, differential, India.

Introduction

Fertility is the biological continuation of human civilization, involving the total number of live births produced during reproductive lives. The child-conceiving age ranges from 15-49 years. Fertility theories include biological, ethnic, economic, and socioeconomic theories. The law of regulating human population is similar to that of plants and animals. Fertility varies inversely with population density, with increasing density decreasing fertility and increasing mortality. Poverty stimulates population growth due to insufficient diets. Population growth is characterized by biological change rather than social and economic changes.

Social theory focuses on social capillarity and cultural lag, highlighting the role of human volition in declining fertility. Cultural lag theory suggests that attitudes and practices leading to fertility decline are first adopted by the better-educated, wealthier, and socially more privileged groups, then passed on to intermediate and lower-status groups. Birth control, particularly contraception, is a recent development in human culture.

Economic theories suggest that family size is influenced by factors like child utility, cost, opportunity cost, shadow price, and demand. Fertility theory, a combination of sociology and economics, emphasizes parents' focus on the number of grown-up children, with determinants including demand, supply, and regulation costs.

India's population growth rate of 1210 million has negatively impacted economic development, poverty, unemployment, health infrastructure, and environmental sustainability. Despite declining mortality rates due to industrialization, urbanization, and medical advancements, fertility rates have not declined. The Indian family planning program, launched in 1952, has helped reduce fertility rates, which has been a significant topic for health economists, demographers, and policymakers.

Objectives

1. To study the growth trends in fertility rate on the basis of residence location, social category and religion.
2. To examine the fertility differential on the basis of residence location, social category and religion.

Hypothesis

1. Null (H_0): There is no significant difference in the fertility rate on the basis of residence location, social category and religion.
2. Alternate (H_1): There is significant difference in the fertility rates on the basis of residence location, social category and religion.

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Data Source & Research Methodology

The present paper based upon secondary data which is compiled from the five rounds of the National Family Health Survey viz., NFHS-1 in 1992-93, NFHS-2 in 1998-99, NFHS-3 in 2005-06, NFHS-4 in 2015-16 and NFHS-5 in 2019-21. The compiled data has been analyzed for fertility pattern and its differential on the basis of residence location, social category and. In order to examine the growth trends in fertility, the exponential growth function has been used. The specification of this function is as follows:

$$Y= ab^t$$

Y = dependent variable
a = constant term
b= (1+r), regression coefficient
t= time variable
R = (b-1)*100, Compound growth rate in percentage

5. Results and Discussion

5.1 Region and state-wise Total Fertility Rate in India

The region and state wise TFR is presented in Table 1. The data in the table shows that at India level total fertility rate (TFR) is 1.99. In the Northern Region (NR) Rajasthan having the highest TFR i.e. 2.01 followed by Haryana (1.91), Himachal Pradesh (1.66), and Punjab (1.63) respectively. In the Central Region (CR) Uttar Pradesh has highest TFR (2.35) and Madhya Pradesh has lowest TFR (1.99). In the East Region (ER) Bihar has the highest TFR (2.98), followed by Jharkhand (2.26), Odisha (1.82) and West Bengal (1.64). The Northeastern Region (NER) has the TFR of 2.91, with Meghalaya leading in this region (2.91), followed by Manipur (2.17), Assam and Mizoram (1.87 each), Arunachal Pradesh (1.80), Nagaland (1.72), Tripura (1.70) and Sikkim (1.05) respectively. In the Southern region Kerala has the highest TFR (1.79), followed by Tamil Nadu (1.76), Andhra Pradesh (1.68), and Karnataka (1.67). In the Western Regions (WR) Maharashtra has 1.71 TFR, Gujrat has 1.86 TFR and Goa has the lowest TFR (1.30). At overall level, there is a notable difference in TFR across different states and regions in India.

Table-1: Region and State-wise Total Fertility rate in India

Regions	States	Total Fertility Rate (TFR)
Northern Region (NR)	Haryana	**1.91**
	Himachal Pradesh	**1.66**
	Punjab	**1.63**
	Rajasthan	**2.01**
Central Region (CR)	Madhya Pradesh	**1.99**
	Uttar Pradesh	**2.35**
East Region (ER)	Bihar	**2.98**
	Jharkhand	**2.26**
	Odisha	**1.82**
	West Bengal	**1.64**
Northeastern Region(NER)	Arunachal Pradesh	**1.8**
	Assam	**1.87**
	Manipur	**2.17**
	Meghalaya	**2.91**
	Mizoram	**1.87**
	Nagaland	**1.72**
	Sikkim	**1.05**
	Tripura	**1.7**
Southern Region (SR)	Andhra Pradesh	**1.68**
	Karnataka	**1.67**
	Kerala	**1.79**
	Tamil Nadu	**1.76**
Western Regions	Goa	**1.30**

(WR)	Gujarat	**1.86**
	Maharastra	**1.71**
Country	**India**	**1.99**

Source: NFHS, 2019-21.

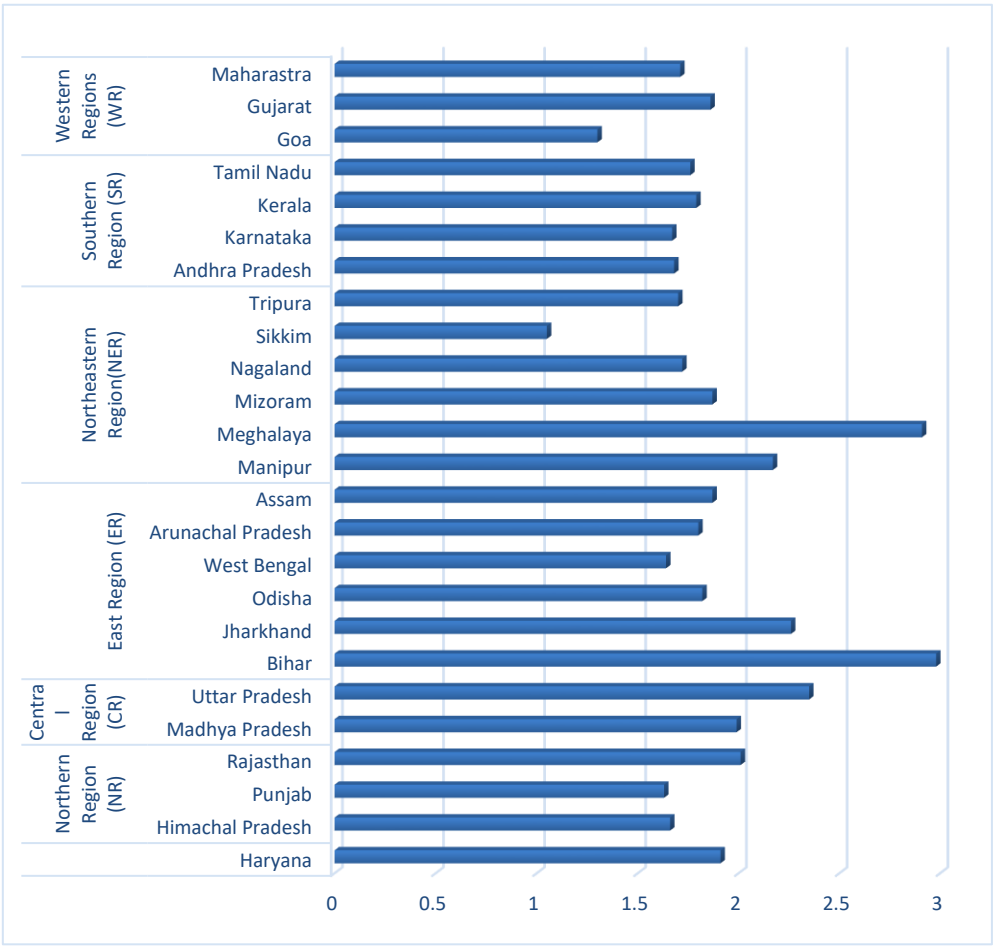

Figure-1: Region and State-wise Total Fertility rate in India

5.2 Growth trends and differential in Total Fertility Rate (TFR) in India

The residence location, religion and social category-wise growth trends and differential in Total Fertility Rate (TFR) in India is presented in Table 2. The data in the table shows that during the NFHS-1 the TFR in Urban and Rural located residence has been worked out 2.7 and 3.67 and these TFRs have been decreased to 1.63 and 2.14 during the NFHS-5 with a compound growth rate of -11.92 percent per annum for Urban located residence and -12.37 percent, per annum, for rural located residence. Further, among the Hindu women TFR has been worked out 4.41 during the NFHS-1 and same has been decreased to 1.94 during the NFHS-5 with a compound growth rate of -12.44 percent, per annum. Among the muslim women the Total Fertility Rate during NFHS-1 was 4.41 and in NFHS-5 it has been decreased to 2.36 with a compound growth rate of -14.49 percent, per annum. While other religion women the TFR was 2.77 during the NFHS-1 and same has been decreased to 2.15 in NFHS-5 with a compound growth rate of -4 percent, per annum, Among the Scheduled Caste women, TFR was 3.92 during the NFHS-1, 3.15 during the NFHS-2, 2.92 during NFHS-3, 2.26 during the NFHS-4 and 2.08 during the NFHS-5. During these NFHS surveys, TFR among SC women has declined with a compound growth rate of -14.78 percent, per annum. Whereas among the ST and other category women the TFR during the NFHS- 1 was 3.55 and 3.30 and these TFRs declined to 2.09 and 1.78 by registering the compound growth rates of -11.92 and -14.4 percent, per annum. It is observed that there has been a gradual decline in TFR among the women as per their residence location, religion, and caste/tribe. Specifically, among the Scheduled tribe women the highest decline has been seen in TFR over the NFHS surveys. The Compound Growth Rate (CGR) also reflects a significant decline in TFR, indicating positive trends towards fertility control in the country. Further, the Chi Square value for TFR on the basis of residence location, religion and social category has been estimated 0.00532, 0.58738 and 0.21025. These values are non-significant at 0.05 percent level of significance and it can be concluded that there is no significant difference in TFR on the basis residence location, region and social category across the NFHS Surveys.

Table-2: Growth trends and differential in Total Fertility Rate (TFR) in India

Particulars	Residence		Religion			Caste/tribe		
	Urban	Rural	Hindu	Muslim	Other	Scheduled caste	Scheduled tribe	Other
TFR (NFHS- 1)	2.7	3.67	3.3	4.41	2.77	3.92	3.55	3.3
TFR (NFHS- 2)	2.27	3.07	2.78	3.59	2.33	3.15	3.06	2.66
TFR (NFHS- 3)	2.06	2.98	2.59	3.4	3.98	2.92	3.12	2.35
TFR (NFHS- 4)	1.75	2.41	2.13	2.62	2.57	2.26	2.48	1.93
TFR (NFHS- 5)	1.63	2.14	1.94	2.36	2.15	2.08	2.09	1.78
CGR	-11.92	-12.37	-12.44	-14.49	-4	-14.78	-11.92	-14.4
X^{2*}	0.00532		0.58738			0.21025		

*= Non significant at 0.05 percent level of significance.

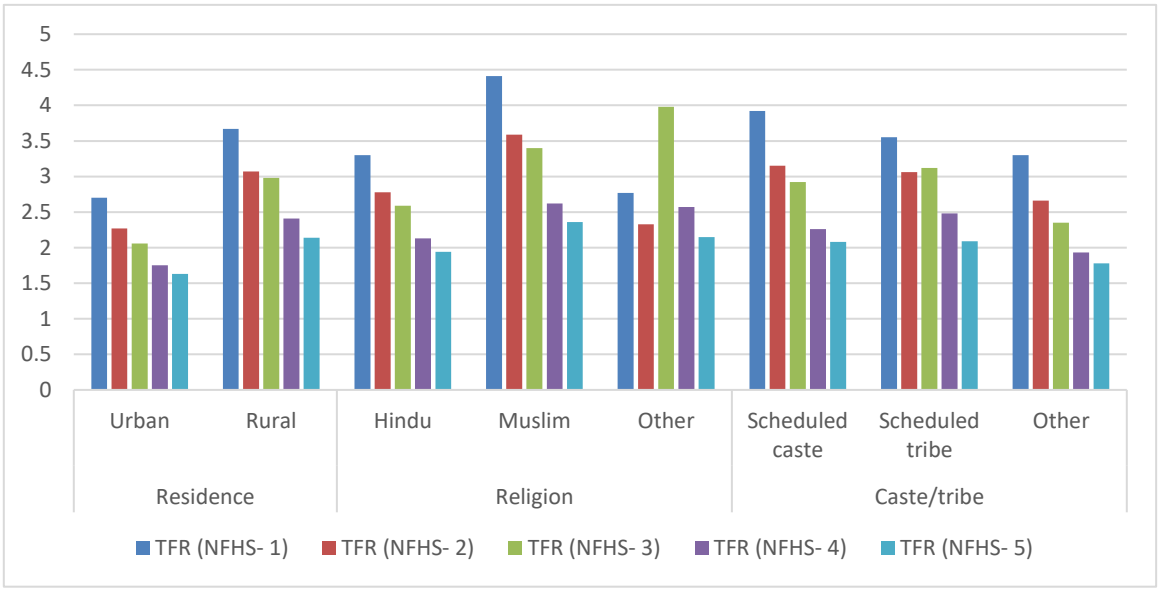

Figure-2: Growth trends and differential in Total Fertility Rate (TFR) in India

Thus, the Null hypothesis (there is no significant difference in the fertility rate on the basis residence location, social category and religion) is accepted and alternate hypothesis (there is significant difference in the fertility rate on the basis of residence location, social category and religion) is rejected.

Conclusion and Suggestions

From the above results and discussion it has been observed that The total fertility rate in India is highest in the East Region, followed by the Central Region, Northeastern Region, Northern Region, Southern Region, and Western Region. Further, it has also been observed there has been a gradual decline in TFR among women on the basis of residence location, and social category and religion. The highest decline is observed among Scheduled Tribe women. The Compound Growth Rate also shows a significant decline in TFR, indicating positive trends towards fertility control. However, the Chi-Square values for TFR on the basis of residence location, religion, and social category are non-significant, indicating no significant difference in TFR across NFHS surveys.

Across different regions of India, there has been a noticeable decline in Total Fertility Rate (TFR) among women, with the highest decrease seen in Scheduled Tribe women. The compound growth rate supports this trend towards fertility control. However, when analyzing TFR on the basis of residence location, social category and religion, differences in TFR is non-significant across various NFHS surveys. This suggests that efforts towards reducing TFR are consistent but may not be influenced by geographical or social factors.

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