# REGIONAL VARIATION IN FERTILITY IN MADHYA PRADESH

H. S. GUPTA AND SMT. A. BAGHEl, Raipur

**ABSTRACT** The paper discusses the variations in fertility among different socio-cultural groups and different regions of Madhya Pradesh. Regionally the level of fertility is low in the central part, medium in the east-central part, high in the west-central part and again medium in the western part of the state. Fertility is higher in rural areas but in the younger age group, urban women have higher fertility.

## INTRODUCTION

"There is no event in personal history more significant for the future than becoming a parent, and there is no pattern of behaviour more essential for societal survival than adequate fertility" (Ryder, 1972, 400). Human breeding is different from animal breeding. The former is not a simple biological process. As Bhende and Kanitkar (1983, 208) remark "within the biological limits of human fertility, several social, cultural, psychological, as well as economic and political factors are found to operate, and these are responsible for determining the levels and differentials of fertility.

Until 1981 census, there was no effort made to collect information on the number of children ever born as a measure of fertility. For the first time, the fertility tables, which were generated on the basis of computerised procesing of 20 per cent sample of individual slips, were published in 1981 census. These tables provide data for rural and urban populations separately but not for the total population. The present study aims at elucidating inter-district differentials of fertility in Madhya Pradesh State.

## FERTILITY INDICES

Fertility refers to the occurrence of live births. For its measurement several indices are in vogue. These include crude birth rate, fertility ratio (child - woman ratio), general fertility rate, age-specific fertility rate, total fertility rate etc. The crude birth rate (CBR) is the ratio of the number of live births in a year to the mid-year total population. The fraction is multiplied by 1000. The general fertility rate (GFR) is a better measure which is expressed in terms of number of live births per 1000 women in the reproductive age-group or, as a modification, per 1000 married women. Fertility rates may be expressed specific for the age of married women (ASFR).

The total fertility rate (TFR) is an estimate of the number of children a cohort of 1000 women would bear if they all went through their reproductive years exposed to the age-specific fertility rates, in effect at a particular time. It is calculated as follows :

$$T F R = \frac{(\Sigma \, A \, S \, F \, R) \times (\text{age interval})}{1000}$$

"This rate (TFR) is generally regarded as the

best single cross-sectional measure of fertility, because it is rather closely restricted to the child-bearing population and is not influenced by differences in the age composition between child-bearing populations. The total fertility rate is a standardized rate because it is referred to a constant base of 1000 women at each age group ".(Bogue, 1969, 659-60).

A glance at Table 1 reveals that in the state, all indices of fertility are higher for the rural population than for the urban population. CBR, GFR and TFR for the rural areas are 32.8, 138 and 5.28. The respective rates for the urban areas are 27.2, 130 and 4.52. Likewise variation in fertility is found according to social groups, educational level, religion and work. Fertility is higher among the shceduled castes and lower among the scheduled tribes than

among the general population. Among the religious groups, the Muslims have the highest fertility and the Christians the lowest. Fertility among the working women is lower than among the non-working women.

As regards fertility among the married women of different educational levels, GFR and TFR exhibit different patterns.

Increase in GFR from 133 among the illiterates to 212 among the matriculates presents a wrong picture which is against the established fact that there is an inverse relationship between the level of fertility and the level of educational attainment. In fact, lower GFR among the illiterates is not because of lower number of children born, but because of a large number of married women under the age of 15 when fertility rate remains very low.

## TABLE 1

## MADHYA PRADESH : FERTILITY INDICES

| Populations | GFR | | TFR | | CBR | |
|---|---|---|---|---|---|---|
| | Rural | Urban | Rural | Urban | Rural | Urban |
| General | 138 | 130 | 5.28 | 4.52 | 32.8 | 27.19 |
| Scheduled Caste | 142 | 138 | 5.60 | 4.79 | | |
| Scheduled Tribe | 129 | 138 | 4.92 | 4.50 | | |
| Hindus | 137 | 128 | 5.27 | 4.43 | | |
| Muslims | 172 | 147 | 6.47 | 5.27 | | |
| Christians | 123 | 101 | 4.87 | 4.00 | | |
| Main Workers | 130 | 105 | 4.90 | 4.02 | | |
| Marginal Workers | 153 | 149 | 5.70 | 5.60 | | |
| Non-workers | 139 | 133 | 5.75 | 4.61 | | |
| Illiterates | 133 | 121 | 5.26 | 4.67 | | |
| Below Middle | 178 | 138 | 5.25 | 4.48 | | |
| Middle | 212 | 149 | 5.11 | 4.03 | | |
| Matriculates | 212 | 144 | 4.71 | 4.01 | | |
| Graduates | 196 | 136 | 4.46 | 3.29 | | |

**TABLE 2**

**VARIATION IN FERTILITY INDICES**

| Fertility Index | Rural Areas | | | Urban Areas | | |
|---|---|---|---|---|---|---|
| | Highest | Lowest | C.V. (%) | Highest | Lowest | C.V. (%) |
| CBR | 42.44 | 21.43 | 15.01 | 36.48 | 21.63 | 12.20 |
| GFR | 180 | 19 | 16.09 | 188 | 104 | 13.76 |
| TFR | 7.28 | 3.66 | 17.01 | 6.24 | 3.54 | 12.86 |



Fig-1
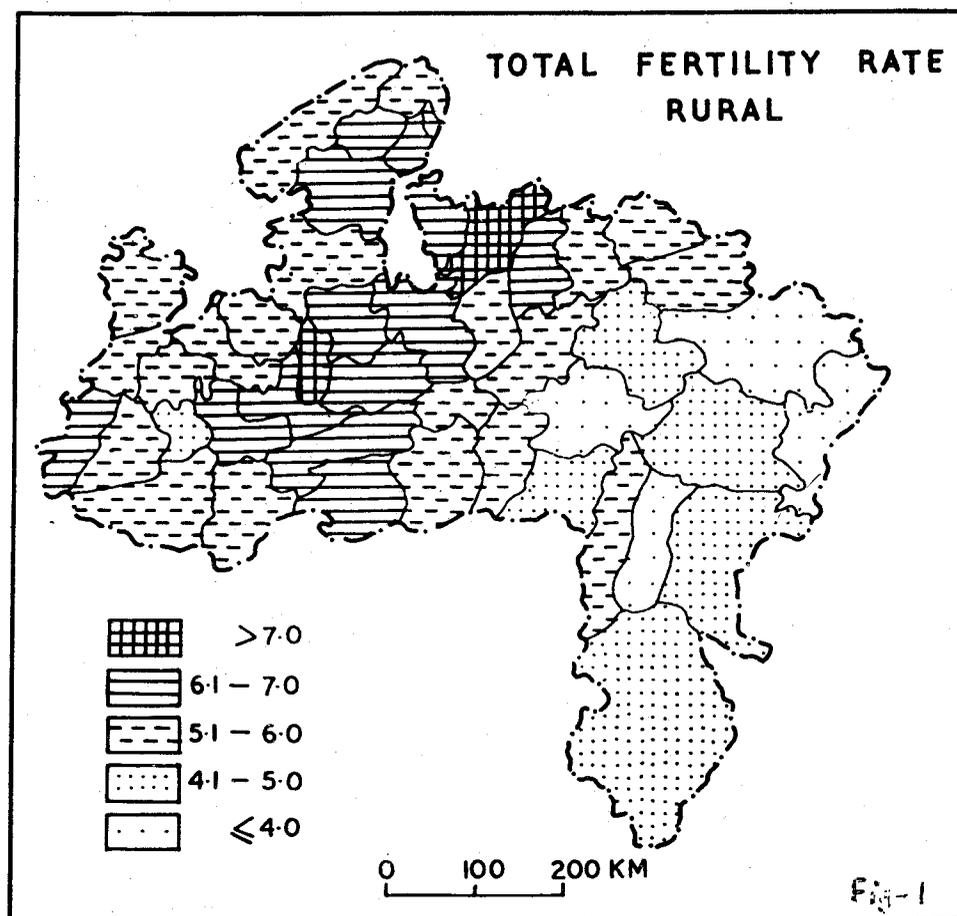
However, TFRs, which are a more reliable index of fertility, indicate that the fertility decreases with increase in educational level.

## REGIONAL VARIATION IN FERTILITY

Inter-district range and coefficients of variation of fertility indices indicate that there is a great regional variation in fertility in the state (Table 2). It may be noted that variation in fertility is higher in the rural areas than in the urban areas.

The rural population constitutes the overwhelming majority of the total population in the state, and it is ubiquitous and pervasive in nature of distribution. On the other hand, the urban population is much less than the rural population and is centred at a few locations only. Therefore rural fertility provides a more appropriate basis for regionalisation of the state with respect to fertility differentials. On the basis of the rural TFRs, the districts may be grouped into the following fertility zones (Fig.1) :

1.  Zone of Higher Fertility (TFR = > 6.0),

2.  Zone of Medium Fertility (TFR = 5.1 - 6.0), and

3.  Zone of Low Fertility (TFR = < 5.0).

*(1)  Zone of Higher Fertility* : There are fifteen districts where rural TFR exceeds 6.

Fourteen of them form almost one contiguous block extending from Gwalior district in the north (across Jhansi district of Uttar Pradesh) to Betul district in the south. The only outlier of this region is Jhabua district. In this zone, GFR (rural) is above 155 and CBR (rural) above 36.26.

*(2)  Zone of Medium Fertility* : The districts with rural TFRs between 5.1 and 6.0 are twenty in number. These districts flank the zone of high fertility. These two zones emcopass the east-central and western Madhya Pradesh. Only one district of medium fertility, namely Rajnandgaon occupies an isolated location in the eastern part of the state. In the zone of medium fertility, GFRs (rural) vary from 120 to 160 and CBRs (rural) from 31.42 to 39.17.

*(3)  Zone of Low Fertility* : The zone with rural TFR less than 5 includes ten districts. Nine eastern most districts of the state and Indore district of the western part fall in this category. In this zone, GFRs (rural) are less than 123 and CBRs (rural) less than 30.

## FACTORS RELATED WITH FERTILITY DIFFERENTIAL

The factors related with fertility differential are many and have been listed by a number of scholars. A few of them have been analysed in this study.

## COEFFICIENTS OF CORRELATION

| Fertility Index | Female Literacy | | Total Literacy | |
| | Rural | Urban | Rural | Urban |
| --- | --- | --- | --- | --- |
| GFR | -.18 | -.28 | -.12 | -.10 |
| TFR | -.30 | -.28 | -.22 | -.16 |

*Education* : "Throughout the world there appears to be a strong inverse correlation between the amount of educational attainment and the level of fertility (Bogue, 1969, 693). It has been indicated earlier that TFR decreases with increasing educational level of married women. Coefficients of correlation were calculated to see the strength of relationship between female/total literacy and GFR/TFR in the districts.

The results indicate that although the relationship is negative, yet only the coefficients for the pair of TFR and female literacy indicate significant correlation at .05 level of confidence. The cause of low correlation seems to be due to the fact that only 1/5th of the population is literate and educational level of most of them is middle or even below that. Small percentage and low level of literacy do not have any significant impact on fertility control. However, it is clear that female literacy has greater impact on fertility control than general literacy.

*Mortality* : Prevalence of high level of mortality has such a psychological impact on the married couples that they want to have more children. Coefficients of correlation were computed between the percentage of the number of deaths among the children ever born (to the women ever married) and GFR/TFR in the districts. The resultant coefficients as tabulated below indicate positive correlation significant at .05 level of confidence in case of the rural population and beyond .01 level of confidence in case of the urban population.

*Age at Marriage* : Early age of marriage increases the span of reproductive period of women and thus may contribute to higher level of fertility. Out of the total married women of the state 58.9 percent were married before they attained the age of 15. The percentage of such maried women varies from 29.8 in Jhabua district to 78.3 in Bhind district. It may be noted that this percentage is, in general, lower in the eastern part and the tribal areas than in the north-western and north-central parts of the state. Coefficients of correlation were calculated between the percentage of women married before the age of 15 and GFR/TFR in the rural areas of the districts. The coefficients of +.34 in case of GFR and + .33 in case of TFR indicate positive correlation significant at .05 level of confidence.

*Some other Factors* : The districts with large Muslim and/or scheduled castes population record higher level of fertility while the reverse is true in case of the districts with large tribal population. Age structure of female population has also some impact on the fertility level. The reproductive age of women is 15 to 49 and even in this age group
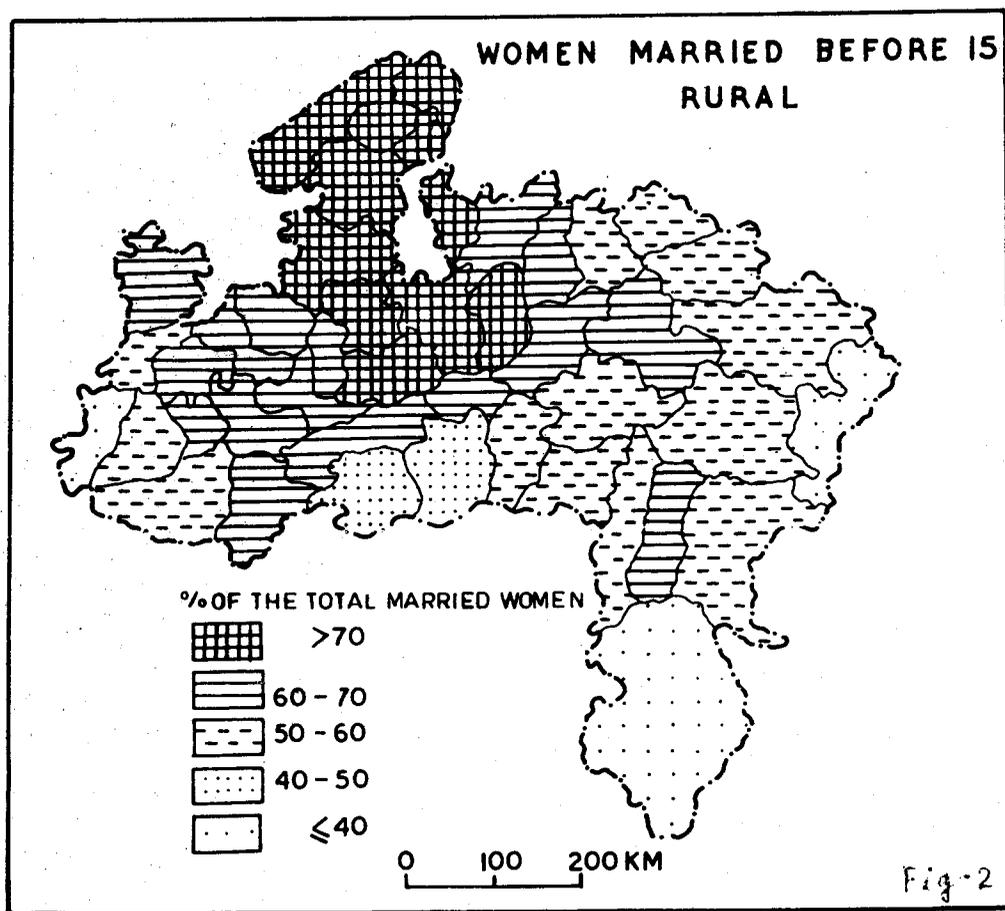
## COEFFICIENTS OF CORRELATION

| Fertility Index | Mortality | |
| --- | --- | --- |
| | Rural | Urban |
| GFR | + .31 | + .50 |
| TFR | + .36 | + .59 |

**TABLE 3**

**MADHYA PRADESH : AGE-SPECIFIC FERTILITY RATE**

| Age - group | Fertility Rate | |
| --- | --- | --- |
| | Rural | Urban |
| Less than 15 | 6 | 12 |
| 15 - 19 | 129 | 150 |
| 20 - 24 | 259 | 281 |
| 25 - 29 | 243 | 213 |
| 30 - 34 | 185 | 137 |
| 35 - 39 | 125 | 80 |
| 40 - 44 | 70 | 39 |
| 45 - 49 | 31 | 17 |
| 50 + | 9 | 6 |



WOMEN MARRIED BEFORE 15
RURAL

% OF THE TOTAL MARRIED WOMEN
> 70
60 - 70
50 - 60
40 - 50
≤ 40

0    100    200 KM

Fig. 2

the highest fertility is found in age-group 20-29 (Table 3). Therefore, the societies with higher percentage of women population in this age-group may have higher level of fertility.

## CONCLUSIONS

The above discussion reveals that the level of fertility is low in the eastern part of the district. The level of fertility is medium in the east-central part, high in the west-central part and again medium in the western part of the state. Analysis of the relationship between some of the factors and fertility differential indicates that the degree of relationship is mostly weak which leads to conclusion that the fertility differential is a result of the combination of many factors. No single factor can be claimed to be of pervasive and overwhelming importance.

## ADDRESS OF THE AUTHORS

1.  Professor H. S. Gupta,

Professor of Geography,

Ravishankar University,

Raipur.


2.  Smt. A. Baghel,

Lecturer,

School of Studies in Geography,

Ravishankar University,

Raipur.

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