

Estimation of fertility measures of central Kashmir

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Abstract

Total fertility rate (TFR) and its corresponding age-specific fertility rates (ASFR) are the measures used generally to determine the current fertility level. The purpose of the study is to estimate the various measures of fertility of central Kashmir and observe their trends and pattern. For this, the secondary data have been taken from the report of census 2011. In this study, crude birth rate (CBR), General fertility rate (GFR), Total fertility rate (TFR), Gross Reproduction rate (GRR) and mean age of childbearing (MAC) of Central Kashmir has been estimated. It has been found that among three districts of Central Kashmir, district Srinagar shows the lowest estimate of TFR especially in urban areas. The study shows that TFR of Central Kashmir is 2.18, which is almost the replacement level. In the light of studies strategies are needed to prevent the continuous decline of total fertility rate (TFR).

Key Words: Fertility, measures, estimate, total fertility rate and central Kashmir.

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INTRODUCTION

Fertility is one of the foremost demographic features for any population. The expansion of a human population depends exclusively on fertility. Based on the number of live births to a woman, fertility represents the actual level of reproduction of a population. Fertility, being a very complex phenomenon, affected by various biological, psychological, social, political and environmental factors, has always been a matter of concern for demographers. Some of them were interested in finding the feasible factors which manage fertility pattern such as education, age at marriage contraceptive use, current family size, occupation, religion etc and some were interested in finding estimates of direct (Crude Birth Rate, Age Specific Fertility Rate, General Fertility Rate, Total Fertility Rate, Gross Reproduction Rate, Net

Reproduction Rate) and indirect (age-sex composition, Child-women ratio, female mean age at marriage) measures of fertility. District level fertility estimates have been derived when provisional results of census are made available, especially after 1991 Census or when district-level surveys are conducted. The first to attempt using census data, with an exercise covering two census periods – 1981 and 1991 was Bhat (1966)¹. Later this exercise was carried by Guilmoto and Rajan (2002)² by using 2001 census provisional data. According to Sample Registration System (SRS) data for 2012, women in India have an average of 2.4 births in their reproductive age group. This key indicator of reproductive health, known as the total fertility rate, has declined from 1991 continuously. Women living in urban areas have fewer children (1.8) children per women than their rural counterparts (2.6) children per women. Among bigger states, the total fertility rate varies from 1.7 in Punjab, Tamil Nadu, and Himachal Pradesh to 3.5 children per woman in Bihar. Among women living in parts of the Central region fertility is higher than the national average (2.9 to 3.3 children per woman in Madhya Pradesh and Uttar Pradesh), Eastern region (2.8 to 3.5 children per woman in Jharkhand and Bihar) and north eastern region (3.0 to 3.8 children per woman in Nagaland, Meghalaya and Arunachal Pradesh³. Unfortunately demographic sources at the district level remain limited. In India, the quality of the civil registration system is still appalling.

Not only major proportion of the population fails to register births, but several local authorities do not compile, tabulate or publish birth registration statistics on an annual basis. Therefore, census of India remains the only source for both simultaneous and exhaustive figures of fertility differentials at the district level. As per estimates of NFHS-3 survey TFR of Jammu and Kashmir were 2.4⁴ and an average 2.25 children per woman for six annual SRS estimates from 2004-2009⁵. As a matter of fact, the latest SRS estimate for Jammu and Kashmir puts fertility at 1.7⁶ children per woman in 2015, signalling a continual decline of fertility rates in the State. Fertility in districts of Jammu and Kashmir such as Kathua, Jammu and Samba had decreased almost at the same pace as elsewhere in India. These three districts characterized by the lowest proportion of Muslim population in the State (below 10 per cent in all the districts) and are located in the extreme south of the Jammu region⁷.

AIMS AND OBJECTIVE

The objective of the study is to give the estimate of fertility level of central Kashmir and point out the region where fertility has achieved replacement level. So, the concerned authorities will take steps to improve the fertility pattern in future.

MATERIAL AND METHODS

The secondary data for this study has been taken from the census of India 2011. The data regarding the estimation of fertility measures has been evaluated by using direct method of estimation because the available data gives clear information about these measures of fertility.

Crude birth rate (CBR): CBR has been estimated by using the following formula:

$$CBR = \frac{B}{P} \times K$$

Where,

B is the total number of live births.

P is the total population.

K is a constant usually taken as 1000.

General fertility rate (GFR): GFR has been enumerated by using below method.

$$GFR = \frac{B}{W_{15-44}} \times K$$

Where,

B is the total number of live births.

W_{15-44} is the total number of women of child bearing age.

K is a constant usually taken as 1000.

Total fertility rate (TFR): It has been estimated using the traditional formula of

$$TFR = 5 \sum_{i=15}^{49} ASFR_i$$

Under usual notation which can be approximated by,

$$TFR = \int_{a=15}^{49} f(a) da$$

Where,

$f(a)$ is the ASFRs at the age group 'a to a +5' in the reproductive ages.

Gross reproduction rate (GRR): GRR is enumerated by using the formula,

$$GRR = \frac{B^F}{B^T} \int_{a=15}^{49} f(a)$$

which can be approximated as

$$GRR = 5 \frac{B^F}{B^T} \sum_{i=15}^{49} ASFR_i$$

Where,

$\frac{B^F}{B^T}$ is the proportion of all births which are female and $f(a)$ is the ASFRs at the age group 'a to a +5' in the reproductive ages.

The Mean Age of Childbearing (MAC): MAC is expressed as:

$$MAC = \frac{\int_{a=15}^{49} a f(a) da}{\int_{a=15}^{49} f(a) da}$$

which can be approximated by

$$\bar{m} = \frac{\sum_{i=15}^{49} a f_a}{\sum_{i=15}^{49} f_a}$$

where

'a' is the mid-point of each age group 'a to a+5' in the reproductive span of life and $f(a)$ is ASFR in the same age group. Using above formulae, measures of fertility is estimated on evaluating the data taken from census 2011.

RESULTS AND DISCUSSION

The trends and pattern of fertility schedules have been shown in figure 1. From fig.1, it has been shown that all the fertility schedules shows the traditional (reciprocal of V-shape) pattern. It can also be observed that, ASFR of Srinagar and Budgam districts attains highest peak in the age group (30-34) years and lowest peak in the age interval (15-19) years, while district Ganderbal attains highest peak in the age group (25-29) years and lowest in (15-19) years. The figure also shows that central Kashmir which comprises all the three districts attains maximum value of ASFR in age group (30-34) years. From the above observation it is found that the age interval (30-34) years is the most fertile period and (15-19) years is the least fertile period in the reproductive ages of women of central Kashmir. The CBR, GFR, TFR, GRR and MAC have been estimated and presented in table 2. It can be observed that in Central Kashmir, district Budgam shows the highest TFR 3.47 children per woman, followed by district Ganderbal 3.19 children per woman while district Srinagar attains 2.29 children per woman that is very close to the replacement level. As the three districts are

located in the region of central Kashmir, on comparing the estimates of fertility measures of the individual districts to the whole region i.e, central Kashmir, study shows that there is a need to aware the people of district Srinagar about fertility decline and strategies must be applied by the concerned authorities so that fertility will remain above the replacement mark. On the other hand TFR estimates of Budgam and Ganderbal districts are above 3 children per woman, if the authorities does not take the situation into notice time is not far away, their estimate of TFR will also coincide that of Srinagar resulting the TFR below replacement level that will create the problem of ageing which is matter of concern for the authorities. Table 2 shows that among three districts Ganderbal has highest CBR (23.15 per 1000 population) and GFR (93.6 per thousand women), for district Budgam CBR is (22.55 per 1000 population) and GFR is (84.74 per thousand women) and the estimates of CBR (per thousand population) and GFR (per thousand women) for Srinagar is 18.4 and 81.52 respectively. It can also be observed from table 2, that Gross reproduction rate of Budgam is 1.5, attains highest estimate among three districts in central Kashmir, followed by Ganderbal (1.39). In Srinagar GRR has been estimated as 0.96 that is least among all the districts in the region i.e, central Kashmir. Mean age at childbearing (MAC) has been estimated as presented in table 2, from the table 2 it is observed that mean age of childbearing is highest in Srinagar (33.74) years followed by Budgam (33.46) years while as among the three Ganderbal attains the least value (31.17) years. As the MAC of district Srinagar is highest which suggest that mean age of mothers at the birth of their children on an average is 33.74 years which is the indication of late marriage. Various studies show that late

marriage is the main cause of fertility decline. There are many causes for this delay in marriage. Education delays woman's age at marriage, enables the achievement and use of information on modern contraceptive devices and family planning, boosts women's participation in the labour force, and negatively affects family size, thus reducing fertility⁸⁻¹⁰. In Jammu and Kashmir the late marriage phenomenon were increasing due to illiteracy, conflict, modernization impact, poverty, caste consideration, dowry, Higher education, jobs and search for proper match¹¹. Age at marriage affects fertility by varying fertility schedule and family building pattern. Therefore, due to its combined effect through several routes, age at marriage can be termed the best single predictor of fertility¹². There are three factors that affect the timing of fertility decisions: proportion of women in the labor force, women's earnings and men's earnings. Demand for children increases with an increase in the husband's wages, while the wife's wages will have the opposite effect. Women with increase in wages serve to lower fertility¹³. Common reasons behind decline in fertility are rise in contraceptive use, urbanization and socioeconomic changes, such as rise in age at marriage, women's employment outside the home and increase in women's education. All European countries have experienced almost a long term downward trend in fertility approaching below replacement level¹⁴. To initiate decline in fertility rates, certain factors are essential such as family planning, the participation of women in the work force, female schooling and the average age of women at first birth¹⁵. Therefore to avoid further decline in fertility, issues regarding this must be taken into consideration by concerned authorities to overcome the problem.

Table 1: Age- specific fertility rate of different regions

Age-group↓	Srinagar			Budgam			Ganderbal			Central Kashmir		
	No. of women	Births	ASFR	No. of women	Births	ASFR F(a)	No. of women	Births	ASFR F(a)	No. of women	Births	ASFR F(a)
15-19	57,124	282	0.004	37,282	186	0.004	15,500	139	0.008	109906	618	0.005
20-24	58,413	2243	0.038	30,744	1790	0.055	13,141	867	0.065	102298	5339	0.052
25-29	57,921	5869	0.101	25,345	4424	0.174	11,161	2025	0.181	94427	12318	0.130
30-34	48,970	6529	0.133	22,032	4728	0.214	9,324	1621	0.172	80326	12878	0.160
35-39	46,875	4557	0.097	21,526	2890	0.133	8,784	922	0.104	77185	8638	0.111
40-44	36,603	1890	0.051	17,984	1297	0.070	6,869	439	0.063	61456	3837	0.062
45-49	31,955	1127	0.035	15,055	692	0.045	5,964	280	0.046	52974	2297	0.043
TFR		2.29			3.47			3.19			2.18	

Source: No. of women and births have been taken from Census of India 2011.

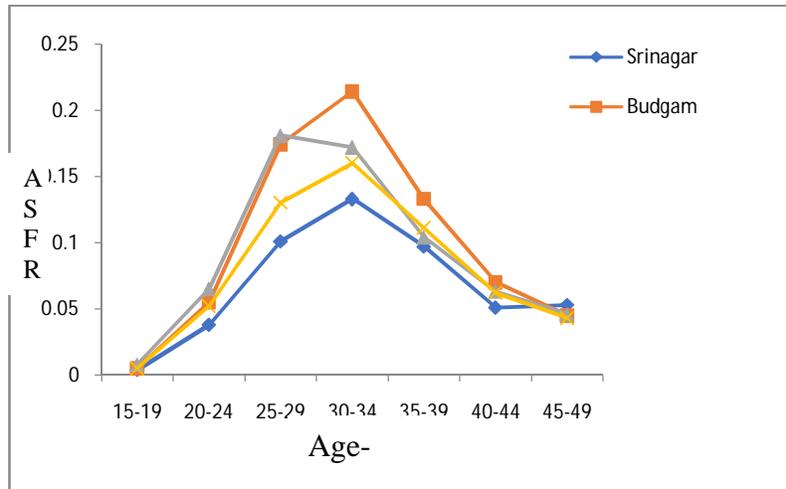
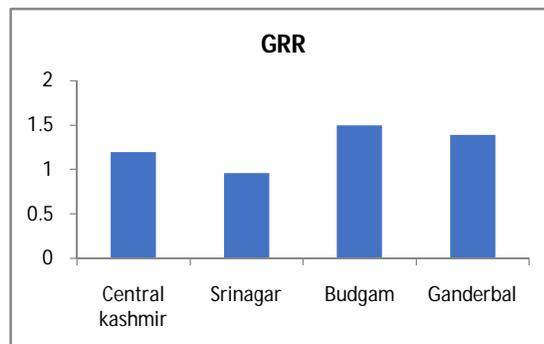
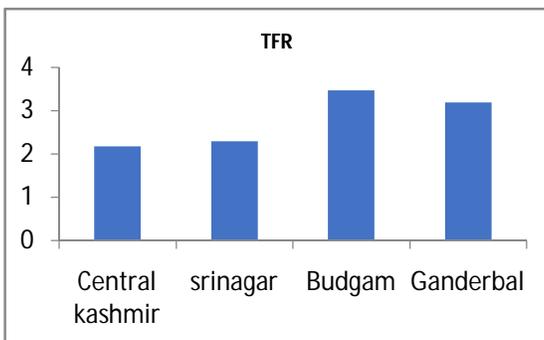
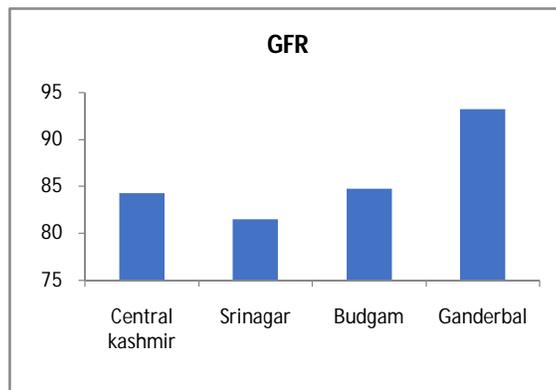
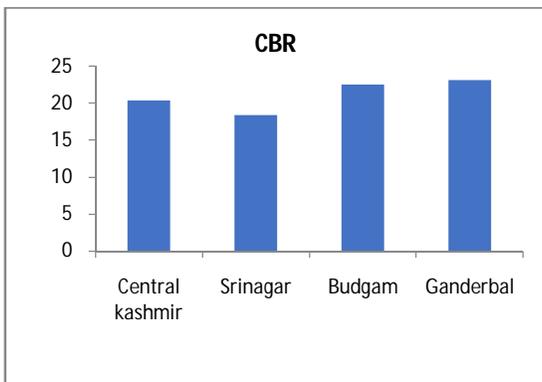


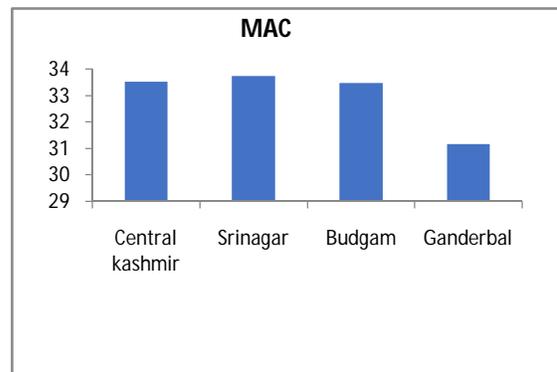
Figure 1: Trends in age-specific fertility rate of different regions.

Table 2: Estimates of fertility measures of Central Kashmir

Region	CBR	GFR	TFR	GRR	MAC
Central Kashmir	20.38	84.26	2.18	1.20	33.51
Srinagar	18.40	81.52	2.29	0.96	33.74
Budgam	22.55	84.74	3.47	1.50	33.46
Ganderbal	23.15	93.26	3.19	1.39	31.17

Trends in CBR, GFR, TFR, GRR, and MAC of Central Kashmir.





CONCLUSION

The present study shows that the ASFR of the central Kashmir show traditional (reciprocal of V-shape) pattern. TFR of district Srinagar is very near to the replacement level as per the data given by census 2011. Also MAC of Srinagar is quite high which indicates the late marriage in the region as a main cause of fertility decline, not only in Srinagar but also in entire Kashmir division. The study also gives the information about measures of fertility of central Kashmir which is a clear signal for the authorities to take situation into control so that the fertility will remain above replacement mark in future.

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