

Some Aspects of Marriage and Fertility in Rural Uttar Pradesh

Introduction

HUMAN fertility is mainly determined by three factors: age at which a female marries, age at which her reproductive life gets terminated, and the pace at which she builds her family. These three, in turn, are affected by a number of social and cultural factors including caste, education, use of family planning methods, taboos on sex relations, and length of breast feeding. Several studies have been conducted in rural Uttar Pradesh (U P.) on differentials in age at marriage and fertility; the necessary data were collected in sixtees. Since then there has been a gap; this gap of five to seven years is very crucial since demographic transition especially changes in the levels of nuptiality and fertility has reached rural areas of India. When family planning programme started taking roots in 1975, an effort was made to study nuptiality and fertility among different sections of population in rural Uttar Pradesh. The effort was to compare the situation in the middle of seventees to the studies carried out in earlier years.

Such a study has utility on its own. Level of fertility is high and uniform for most sections of a society in very early stages of demographic transition. Then fertility starts changing in relatively better off sections of population who set examples for others and fertility differentials emerge; this is an indication of onset of transition in fertility, a harbinger of a declining trend in fertility.

II. Data and Methods

(a) *Data*

A scheme "Birth and Death Data Collections through Auxiliary Nurse

Midwives" at all the ten sub-centres of Kadipur Primary Health Centre of Sultanpur district in Uttar Pradesh was introduced in August 1975 to study whether Auxiliary Nurse Midwife (ANM) could be used effectively to collect information on vital events in the villages where they were posted (headquarter village). A baseline survey was carried out by the Population Centre, India Population Project, U.P., Lucknow and basic information on several socio-economic and demographic characteristics of the households was collected. The present analysis is an outcome of this baseline data, collected from ten headquarter villages of Kadipur PHC.

The total number of households covered were 2405 of which 53 could not be studied for various reasons. The total population in the remaining 2,352 households was 14,751 with an average household size of 6.3 persons and a sex ratio of 943 females per 1000 males. The population of 2,352 households included 2,592 eligible couples (A couple was eligible if both the partners were alive and age of the female was less than fifty years on the reference date of the survey). The crude birth rate estimated for the period August 1974 to July 1975 was about 43, and death rate of about 16 per thousand population and the infant mortality rate was 159 per thousand live births.

The first step in the study was to assess how far these 10 subcentre headquarter villages were representative of the rural areas of Uttar Pradesh or even of rural areas of Sultanpur district. Table 1 compares various socio-demographic characteristics of the ten study villages with the rural areas of Sultanpur and U.P. The characteristics of study population were quite similar to those of the rural Sultanpur or rural U.P., excepting higher Hindu proportion and literacy in the study area. The two (Hindu proportion and literacy rate) are probably interrelated. In any case, there is enough similarity in population characteristics between study area and the district or state rural population.

(b) Methods

The index used for nuptiality is mean age at marriage obtained by asking respondent's age at first marriage for both the spouses. The index of fertility is cumulative fertility of females in different age groups. Index was used for comparative purposes. To overcome sampling fluctuations in this index, the cumulative fertility for a specific age group of population was plotted against the average age of mothers in that age group. Then a free hand curve was used to smooth these fluctuations. The figures for ages 15, 20 etc. were read from this smoothed curve.

in. Results

The first of the two sections discusses various aspects of nuptiality. It is subdivided into sub-sections on (i) differentials in age at marriage, (ii) relationship

TABLE 1-PERCENTAGE DISTRIBUTION OF POPULATION IN THE STUDY AREA, RURAL SULTANPUR AND THE RURAL U.P.

<i>Characteristics</i>	<i>Per cent distribution of Population 1971, Census</i>		
	<i>U.P. (Rural)</i>	<i>Sultanpur (Rural)</i>	<i>Study (Rural)</i>
(») Age			
0-14	41.9	40.7	42.9
15-49	44.9	44.8	42.3
50 and over	13.2	14.5	14.9
(b) Religion			
Hindu	83.8	87.4	94.7
Muslim	15.5	12.6	5.3
Others	0.7	—	—
(c) Literacy	21.7	17.2	24.8
(d) Marital Status			
Unmarried	-	37.7	39.9
Married	—	56.5	52.7
Widowed/Divorced/Scparted	-	5.8	7.4
(e) Working Population	30.9	37.2	31.3
(f) Occupation for Working Populat on			
Cultivators	57.4	57.4	51.9
Agricultural-labourers	20.0	32.2	28.9
Others	22.6	10.4	19.2

of age at marriage with interval for the first birth, reflecting effects of adolescent sterility (or sub-fecundity), and (iii) impact of age at marriage on fertility. The second section discusses fertility differentials and compares them with corresponding results from earlier studies.

Age at Marriage

Differentials in age at marriage. Universal marriage and early marriage are two main features of Indian nuptiality behaviour. In rural areas pre-puperty

marriages of girls are common but cohabitation generally takes place after a lapse of some years, when they attain menarche. Social customs, illiteracy and non-recognition of whatever work they do as participation in labour force are some of the factors responsible for early marriages. Table 2 presents variations in age at marriage of males and females by different socio-economic characteristics.

TABLE 2-MEAN AGE AT EFFECTIVE MARRIAGE BY SOCIO-ECONOMIC CHARACTERISTICS

<i>Characteristics</i>	<i>Mean age at marriage (Years)</i>	
	<i>Male</i>	<i>Female</i>
Total	18.3	15.9
(a) Religion		
(1) Hindu	18.3	15.9
(2) Muslim	19.1	16.3
(b) Caste		
(1) Upper	19.1	16.6
(2) Middle	17.5	16.1
(3) Schedule	17.4	15.2
(c) Type of Households		
(1) Nuclear	18.4	15.7
(2) Join	18.4	16.0
(d) Education Level		
(1) Illiterate	18.2	15.9
(2) Up to Primary	18.5	16.3
(3) Up to High School	18.5	16.6
(4) Intermediate and above	18.7	—

Mean ages at effective marriage are 18 and 16 years for males and female respectively for the sample as a whole. The Scheduled castes marry at lowest ages compared to other caste groups considered here. No significant differences in the age at marriage for girls were found by religion, type of household and educational level.

Age at marriage and interval for first birth. The interval between marriage and first birth is affected by several social and biological factors. If the marriage takes place at an early age, adolescent sterility—the temporary sterility immediately following the menarche—plays an important role in increasing the first birth interval. Frequent visits to parents and other customs prevailing in the society also tend to affect the interval between marriage and first birth. Table 3 presents the age at first birth for women marrying at different ages.

TABLE 3-AGE OF MOTHER AT FIRST BIRTH, MONTHLY PROBABILITY OF CONCEPTION AND PERCENT STERILE BY AGE AT MARRIAGE

<i>Age at marriage</i>	<i>Estimated average age (Years)</i>	<i>Mean age of mother at first birth (Yrs.)</i>	<i>Mean interval for first birth (Yrs.)</i>	<i>Mean interval (months) for conception leading to live birth</i>	<i>Monthly probability of conception leading to live birth</i>	<i>Per cent sterile</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
less than 12	12	16.75	4.75	48	0.0208	69
13-14	14	18.25	4.25	42	0.0238	64
15-16	16	19.50	3.50	33	0.0303	55
17-18	18	20.25	2.25	18	0.0556	18
19 and over	19.75	21.75	2.00	15	0.0667	0

Mean birth interval for first birth varied from 4.75 years for those whose average age at marriage was 12 years to 2.00 years for those marrying at ages 19 and over. This increased birth interval may be either due to less exposure to sexual activity at younger ages or to the adolescent sterility (or sub-fecundity). The former factor might be more important in the very early age, say upto 14 years of age, but the latter factor becomes more important after that. An attempt therefore has been made under certain assumptions to estimate the proportion of women adolescent sterile at different ages.

Age-specific fecundability. Let us assume that the population is homogeneous with each woman having a constant probability of conception leading to a live birth. Then assuming that the number of months taken for conception is a geometric distribution, the average number of months for conception = $1/P$. Col. 5 of Table 3 gives the number of months taken to conceive and hence is equal to $1/P$. Thus P (fecundability) can be estimated by reversing above 5 and is given in Col. 6.

Age-specific adolescent sterility. Let us assume that all women become fecund (percentage adolescent sterility is zero after age 19. The fecundability of the group is, therefore, 0.0667. Then the lower probability of conception (fecundability) at earlier ages at marriage is either due to less exposure of women to sexual activity or due to presence of sterile adolescent women in the group. Assuming that the former factor is similar in all ages, specially 14 and above, the percentage adolescent sterile can be obtained by expression

$$(1 - \alpha) \cdot 0 + \alpha \cdot \beta = \gamma.$$

where α = proportion of women fecund; β = fecundability for women who were fecund; γ = observed fecundability for the specific age group. Based on this expression the percentage of sterile adolescent women in different age groups had been computed and are shown in Col. 7, Table 3, which shows that 69 per cent women were sterile in the age group 12 or less; this percentage is gradually reduced to 64 and 55 in the ages 13-14 and 15-16, and then sharply to 18 percent in the age group 17-18 years. It seems, therefore, that onset of fecundity is a slow process till the ages 15-16, and beyond that age it becomes quite fast.

Relationship between age at marriage and age at first birth. On the assumption that a fraction of women in each age group were sterile at younger ages, the estimate of percentage sterile adolescent women in different age groups had been obtained in the earlier section. Another approach to look at this declining interval is to see whether there is any overall relationship between the age at marriage and age at first birth at these earlier ages at marriage. The plot of these two points for various ages showed that there is a linear relationship.

Age at first live birth = $9.70 + 06$ (age at marriage). Therefore for every year of increase in age at marriage, there is 0.6 years of postponement in the age at first live birth. This is an overall pattern for the age range 12 to 18 years and seems to be a result of average incidence of adolescent sterility.

Age at marriage and fertility. Age at marriage of woman affects her fertility performance, since marriage marks the beginning of the reproductive life of a couple. An attempt has been made in this section to study differentials in fertility by age at marriage (Table 4).

It may be seen that differences in fertility for different age at marriage cohorts are much more prominent in the beginning of reproductive life, till they disappear toward the end, especially so far the first four marriage age cohorts. A comparison of figures indicates that those females who married earlier have higher cumulative fertility at younger ages. Differences in cumulative fertility upto the age of 20 may be due to differing exposure periods, frequent visits of brides to the parents usually occurring in early periods of married life, and difference in age at marriage. The fertility performance pattern of the first two marriage age cohorts is almost similar except in very early ages. There is only

TABLE 4—CUMULATED AVERAGE NUMBER OF LIVE BIRTH TO FEMALES
AT SPECIFIED AGES FOR DIFFERENT AGE AT MARRIAGE GROUPS

Age in Years	Age at marriage groups				
	12 Years I	13-14 Years II	15-16 Years III	17-18 Years IV	19+ Years V
15	0.58	0.30	0.00	0.00	0.00
20	1.86	1.63	1.33	0.88	0.20
25	2.96	2.96	2.61	2.30	1.28
30	3.94	4.09	3.66	3.30	2.26
35	4.72	4.82	4.51	4.27	3.26
40	5.32	5.45	5.16	5.08	4.26
45	5.92	6.03	5.86	5.75	5.09
50	6.47	6.48	6.46	6.33	5.19
Total number of couples	104	568	740	301	179

a slight difference in the cumulative fertility performance patterns between marriage age cohorts 15-16 years and 17-18 years, which in themselves are different from the earlier two at marriage age groups. The pattern for the last age at marriage cohort (19 and above) is completely different. The following are the more significant observations:

- (i) The cumulative fertility of first two groups (marriage age of less than 12, and between ages 13-14) is the same at age 25 and remains the same till the end of the reproductive life by which time they got 6.5 children.
- (ii) Despite the difference in progression of their fertility patterns in the next two groups (marriage age between 15-16 and 17-18), the number of children they had by end of the reproduction is about the same as that of the first two groups.
- (Hi) Groups first and second, third and fourth which were comparable in pairs had different cumulative fertility pattern except at the end of the reproductive life.
- (iv) The cumulative fertility pattern for the fifth group differed from the rest of these groups. They got about 0.6 children less than other groups by the time they completed their reproductive life.

Let us now compare the relationship of age at marriage and fertility obtained in this study with other studies conducted in Uttar Pradesh and its neighbourhood in the sixtees (Table 5). One urban study in Nagpur has also been taken.

Table 5 – COMPARISON OF TOTAL FERTILITY RATE OF THE FEMALES CLASSIFIED ACCORDING TO THE AGE AT MARRIAGE

Age at marriage	Study under review	Age at marriage	Varanasi Survey (1969)	Age at marriage	Delhi Survey (1960)	Age at marriage	Rural U.P. (1969)	Age at marriage	Nagpur (1963)
<12	6.47	<12	7.7	<13	8.2				
13-14	6.48	13-14	7.6	14-15	7.7	<15	7.4	13	5.3
15-16	6.46	15-16	7.8	16-17	7.9	16-17	7.4	13-17	4.1
17-18	6.39	17-18	7.3	18-19	7.9	18-19	7.6	18+	3.6
19+	5.89								

Two observations stand out; first, the relationship of fertility with age at marriage is similar in all studies conducted in rural areas though the cumulative fertility for earlier studies were found to be higher than observed in the study under discussion (1975)—difference of more than one child in the cumulative fertility; second, there was a difference in the relationship between the study under discussion and that done in urban areas (1963). This difference represented rural-urban differential in the fertility pattern.

Differentials in Fertility

Fertility and differentials by socio-economic status. An attempt is made here to identify factors affecting cumulative fertility for each group under study. As stated earlier the cumulative fertility is estimated from free hand curve to correct for some of the sampling fluctuations.

The socio-economic characteristics under reference here are: (i) Religion, (ii) Caste, (iii) Type of household, (iv) Education of Husband, (v) Education of wife, (vi) Occupation of husband.

The castes are grouped into three broad categories: the upper Castes, middle and the Scheduled Castes. This grouping is based on the similarity of pattern of living and the relative positions of different castes in the society. Table 6 presented fertility differentials by socio-economic characteristics.

The following were significant differentials:

- (i) No fertility differentials were observed among Hindus and Muslims in rural areas in Uttar Pradesh.
- (ii) Schedule caste fertility was slightly higher compared to 'upper' or 'middle' castes,
- (iii) Joint families had slightly higher fertility compared to nuclear families.

TABLE 6—CUMULATIVE FERTILITY BY SOCIO-ECONOMIC CHARACTERISTICS OF THE POPULATION

<i>Socio-economic characteristics</i>	<i>Cumulative fertility</i>	<i>Socio-economic characteristics</i>	<i>Cumulative fertility</i>
I. Religion		IV. Education of Husband	
(a) Hindu	6.15	(a) Illiterate	6.20
(b) Muslim	5.85	(b) Upto Middle Class	6.28
		(c) High School & above	6.38
II. Castes		V. Education of wife	
(a) Upper	6.18	(a) Illiterate	6.38
(b) Middle	6.18	(b) Literate	6.05
(c) Scheduled	6.38		
III. Type of Household		VI Occupation of Husband	
(a) Joint	6.33	(a) Own agriculture	6.00
(b) Nuclear	6.05	(b) Agricultural labour	7.60
		(c) Service	5.85
		(d) Business	6.25

- (iv) It is generally stated that education is negatively associated with fertility. In this study, education of husband appears to be positively associated with fertility though the variation by educational level is not large. Illiterate husbands had 6.2 children, which increased to about 6.4 for husbands with 'High School and above' education.
- (v) Literacy status of wife was negatively associated with fertility—illiterate wives had total cumulative fertility rate of 6.4 children compared to 6.1 for wives who were literate.
- (vi) Fertility differentials have also been studied by occupation status of husbands. The highest fertility is observed for agricultural labourers (7.6 children). The fertility levels of other three occupational categories are 6.3, 6.0, 5.9 children for businessmen, those owning agriculture, and those in service respectively.

IV Comparison Of Fertility in Different Studies

Levels of Fertility

Table 7 shows levels of total fertility rate in different studies. All studies

except one were conducted in rural areas of U.P. or in its neighbourhood. The level of total fertility in the rural Uttar Pradesh was about 7.5 children in sixteens. In the present study, this level is about 6.5. This reduction of about 1 child (or 13 per cent) may be the combined effect of modernising influences and acceptance of family planning.

Levels of Fecundability

Table 7 shows estimated levels of age specific fecundability in the study under review (1975) as compared to the studies done else where. Barring

TABLE 7—COMPARISON OF MONTHLY PROB \BILITY OF CONCEPTION LEADING TO LIVE BIRTH IN DIFFERENT STUDIES

<i>Age of wife</i>	<i>Monthly probability of conception leading to live birth in this study</i>	<i>Age of wife</i>	<i>Estimates of fecundability Pathak (1971)</i>	<i>Age of wife</i>	<i>Estimates of fecundability James (1913)</i>
Less than 12	0.0208	20	.049	20	0.15
13-14	0.0238	21	.061		
15-16	0.0303	22	.068		
17-18	0.0556	24	.070		
19 and over	0.0667				

fluctuations in the estimates, the fecundability seems to have shown increased recently by about 36 per cent at age 19-20 (Pathak, 1971). The increased level of fecundability is still very low—almost one-half of the level observed in western population (James, 1973).

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