

Research Article

Biological and Social Determinants of Fertility Behaviour among the *Jat* Women of Haryana State, India

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Fertility is a way through which human beings biologically replace themselves in order to continue their existence on earth. The present paper therefore attempts to study the factors affecting fertility among the *Jat* women of Haryana state. A household survey was conducted in 15 villages of Palwal district in which the concentration of *Jats* was found to be highest and 1014 ever married women were interviewed. Age at marriage, present age, education status, family type, and preference for male child were the most important factors that affected fertility in the studied population. Age at menarche, age at first conception, occupation status, use of birth control measures, and household per capita annual income did not affect the fertility in the studied population.

1. Introduction

The study of human fertility is of paramount importance in population studies. Human fertility is responsible for the biological replacement and maintenance of the human species, since every society replenishes itself and grows through the process of fertility. Therefore, in context of population dynamics it is important to note that fertility is one of the major counteractive forces that aids in overcoming mortality. Contrary to this, an increased level of fertility more than desired might result in population explosion [1]. India is the largest democracy of the world and is expected to reach the replacement level fertility by 2020. In spite of these welcoming trends, India still adds 16 million people to its population every year [2, 3]. This is primarily because of the marked cultural diversity of India wherein the factors that affect the fertility status vary from one population to another [4]. Studies have reported that there are plethora of factors that affect the fertility pattern of a population, either directly or indirectly. Age at menarche, age at marriage, age at first conception, and number of conceptions and live births are some of the biological factors that determine fertility. In contrast to this, the educational status, occupation status, household per capita annual income, family type, and use of

birth control measures are the social factors that affect the fertility pattern of a population. Among the social factors that affect the fertility status of a population, preference for male child is one of the most important. The preference for a male child among the parents in the Indian society is one of the most important reasons leading to the explosion of population in the society [5–7].

The present study in the light of this tries to determine the various biological and social factors that govern the fertility pattern among an endogamous Hindu caste group that is the *Jat*.

2. Materials and Methods

The *Jats* are an endogamous community of North India. They follow strict mating patterns with community endogamy and clan exogamy. In the present study, 15 villages with thickly populated *Jat* community in Palwal district, Haryana state were selected. A pretested and modified interview schedule was framed and utilized for the collection of data. Household survey was conducted among a total of 1014 ever married women. Informed written consent was taken from the participants before beginning the interview and they were familiarized with the purpose of the present study. The

TABLE 1: Measures of fertility rate in the studied population.

Measures of fertility rates	Jat community	Haryana	India
Crude birth rate (CBR)	21.76	21.6	21.6
General fertility rate (GFR)	89.18	81.2	—
Child women ratio (CWR)	368.33	186.1	
General marital fertility rate (GWFR)	118.68	114.38	111.12

interviews were conducted in isolation in order to maintain privacy and confidentiality of the study. Information pertaining to the reproductive history of the respondent, namely, age at menarche, age at marriage, age at first conception, age at last conception, and age at menopause, number of conceptions, and number of live births were ascertained from the participants. Besides this, the data pertaining to education status, occupation, per capita annual income, and birth control measure were also collected from the participants.

Statistical analysis was performed through SPSS version 20. The data was represented in terms of percentage, mean, and standard deviation. Student's *t*-test was used when the difference between the means in two groups was considered; however when more than two groups were present analysis of variance (ANOVA) was used. Stepwise regression analysis was utilized to ascertain the variables that affected fertility in the present study.

3. Results and Discussions

3.1. Measures of Fertility Rate. In the present study, certain measures of fertility are utilized in order to understand the fertility trends of the present population. A comparative analysis of the fertility rates for the present study in comparison to the Haryana and Indian estimates is as given in Table 1. The findings reveal that the crude birth rate of the presently studied population is comparable to the Haryana and India statistics. However, general fertility rate, general marital fertility rate, and the child women ratio of the studied community are higher as compared to the estimates from Haryana and India [8–10].

Table 2 demonstrates the distribution of the women included in the study based on their present age and their conceptions and live births. 60.44% are within the age range of 30–49 years, whereas 39.56% of the women are 50 years and older. In the present study, as expected, older women were found to have more number of conceptions as well as live births as compared to the younger women (35–69 years). These observations points towards the changing position of women in India are primarily due to the reforms that have occurred before, during, and after the British rule. These changes account to increased urban migration, female political participation through law reforms, and increased

number of educational and career opportunities that are available to women due to the incentives provided by the Haryana government [11].

The age at which a woman attains menarche is important indicator that affects the fertility status since it is through menarche only that the commencement of childbearing period occurs. In the present study, the age at menarche does not affect the fertility status (Table 3). The mean age at menarche for the presently studied population is 14.96 ± 1.6 years. The reported mean age at menarche for the presently studied population is in accordance with a recent study from Haryana by [12] that reported the mean age at menarche to be 14.4 years. However, it is quite high as compared to various other studies from India like Punjabi girls (12.38 years) [13], Gujjars (14 years) [14], Khasi girls (13.22 years) [15], Oraons of Assam (13.26 years) [16], Thotis of Andhra Pradesh (13.06) [17], Koms of Manipur (12.50 years) [18], and Meities of Manipur (12.54) [18]. There are numerous factors that influence the age of onset of menarche like genetic factors, socioeconomic conditions, general health and lifestyle, nutritional status, seasonality, physical activity, and altitude levels [19–22]. Reference [23] had reported that the mean intakes of food energy, protein, iron and riboflavin, niacin, and Vitamin A were significantly less than the recommended dietary allowances in a group of 400 adolescent girls from rural as well as urban Haryana. Therefore, it is quite likely that the poor nutritional status and also high illiteracy (73.5% in the present study) that is quite prevalent among women might be contributing to observed age at menarche in the studied population.

The mean age at marriage for the presently studied population is 15.89 ± 2.58 years. The age at marriage was found to be quite close to the age at menarche. This is a hint towards the strong cultural constraints that are prevailing in the studied community which compel the girls to get married immediately following menarche. From Table 4 it is clear that majority of the women are getting married before the age of 18 years (74.16%) suggesting that child marriage is quite prevalent in this community. Further, the age at marriage is also affecting the number of live births in the community. This is a negative indication which might increase the fertility rate of the present population (Table 4). The reported mean age at marriage of the present study is in line with the findings by [12] that reported the mean age at marriage among Haryana women to be around 16 years. However, it is still lower as compared to that of Gujjar (17 years) [14], Gaddi Brahman (17.8 years), and Rajput (18.3 years) [24] women. The age of marriage exhibits a geographical variation worldwide as well. The practice of early marriage is most common in sub-Saharan Africa and South Asia. In specific parts of West Africa, East Africa, and South Asia, marriage before puberty is not unusual. However, the same is not documented in the present study. In North Africa, the Middle East, and other parts of Asia marriage shortly after puberty is common among those living in traditional lifestyles. Marriages of female adolescents between sixteen and eighteen years of age are also common in parts of Latin America and Eastern Europe. In contrast, marriages in western societies usually take place later in life [25].

TABLE 2: Age cohort-wise distribution of conceptions and live births in the studied population (based on present age).

Age cohort	Number of women	Conception		Live births	
		Number	Mean	Number	Mean
<35	40 (3.94)	192	4.68	167	4.073
35–39	214 (21.1)	876	4.15	763	3.63
40–44	195 (19.23)	843	4.34	752	3.87
45–49	164 (16.17)	737	4.57	658	4.13
50–54	142 (14.02)	657	4.62	593	4.20
55–59	97 (9.57)	454	4.72	414	4.35
60+	162 (15.97)	785	4.85	726	4.48

TABLE 3: Distribution of fertility vis-à-vis age at menarche in the studied population.

Age at menarche (in years)	Number of women (%)	Mean number of conceptions	Mean number of live births
9+	2 (0.197)	3.5	2.33
10+	2 (0.197)	4	4
11+	6 (0.59)	5.66	5
12+	42 (4.14)	4.75	4.34
13+	98 (9.67)	4.52	4.14
14+	238 (23.49)	4.35	3.91
15+	299 (29.51)	4.49	3.98
16+	184 (18.16)	4.52	4.09
17+	84 (8.29)	4.61	4.25
18+	58 (5.72)	4.72	4.24

TABLE 4: Distribution of fertility vis-à-vis age at marriage in the studied population.

	Number (%)	Mean conceptions	Mean live births	p value
Age at marriage				
<18 years	749 (74.2)	4.58	4.14	
≥18 years	261 (25.8)	4.29	3.81	0.005
Age at first conception				
≤19 years	494 (49.5)	4.63	4.15	
>19 years	503 (50.5)	4.38	3.97	0.078

The mean age at first conception for the presently studied population is 19.82 ± 3.08 years. The mean age at first conception of the presently studied population is quite similar to the study by [12] that reported that nearly three-fourths of the women have first conception before the age of 20 years. Reference [14] had also reported the mean age at first conception to be 19 years among the Gujjars of Delhi. In the present study, it is clear that nearly half of the women (49.75 percent) have their first conception even when they are of 19 years of age (i.e., in their teenage). The mean numbers of conceptions (4.63) and live births (4.148) were also found to be higher for the age cohort of less than 19 years and both mean number of conception and mean number of live births decreased with increase of the age at first conception. This again provides a negative indication with respect to the fertility levels of the present population. However, the age

at first conception was not found to affect fertility in the community (Table 4).

The reported gap between the age at marriage and age at first conception can be due to the social impetus that is experienced by a woman in a *Jat* community following marriage. After marriage a woman is absorbed into the household of her in-laws wherein she takes the role of her mother-in-law's protégé and helper. A newly married woman often sleeps with her mother-in-law in *saal*, the hind portion of house designated for women and children (unpublished observations). Consequently, little interaction takes place between the husband and the wife since the house is a gendered social space. The cohabitation between newly married couple is not possible because there is no specially designated place for the couple. Reference [26] notes that during the initial few years of marriage husband-wife

TABLE 5: Impact of education, occupation, per capita household income, use of birth control measures, and family type on fertility.

	Women	Mean conception	Mean live birth	p value
Education				
Literate	26.5	4.29	4.15	
Illiterate	73.5	4.57	3.8	0.04
Occupation				
Agriculturalists	47.8	4.3	3.84	
Home makers	52.2	4.42	3.92	0.418
Household per capita annual income				
Less than 10000	14.3	4.54	3.95	
10000–50000	33.55	4.47	4.06	
50001–100000	21.46	4.43	4.1	0.901
100001–200000	15.21	4.51	4.06	
More than 200000	15.47	4.33	3.93	
Birth control measures				
Yes	61.9	4.38	4.02	
No	38.1	4.71	4.16	0.129
Family type				
Nuclear	41.1	4.36	3.88	
Joint	58.9	4.55	4.17	0.005

interaction is little except covert sexual intercourse to beget children unlike the situation observed in the western world wherein the newlyweds are under less or no restrictions. Moreover, the younger females of the household do most of the physical labour. Apart from doing household chores, they also go to fields to collect fodder and firewood. A typical Haryanvi married woman has a huge chunk of responsibility from taking care of the children and the animals of the household to providing a helping hand to their husbands in the harvesting, cleaning, and storing the grains. Women largely take care of all domestic affairs. The newly married daughter-in-law has the lowest position in the household [26, 27]. The lower status of newly married woman, weak conjugal bond, and work pressure all may contribute to the reported gap with age at marriage and age at first conception.

Table 5 tries to understand the impact of education, occupation, per capita household income, use of birth control measures, and family type on fertility. Educational status is an important social factor that affects fertility. Woman's autonomy is reflected in terms of education attainment and professional careers which are the two major factors that determine the family size of the woman in a household. Mostly, educated women marry late because of their educational and professional careers and are also conscious of having a limited family size. In the present study, 73.5% of the women were illiterate. The mean numbers of conceptions and live births were found to be significantly higher among the illiterate women as compared to that of the literates. The difference was found to be statistically significant with a *p* value of 0.04. The results of the present study are similar to those reported by Choudhury and Devi [28] and Singh [29]. Besides the education status, the family type also affected the fertility status in the studied population. In the present study, it is observed that women living in joint family have

significantly higher number of live births (4.17 versus 3.88) and conceptions (4.55 versus 4.36) as compared to those living in nuclear families (*p* value 0.005). This could be due to the better care that is offered to the newborn by the extended family members. These findings are in line with studies by Karim [30] and Pakrasi and Malaker [31] that have reported an association between family type and fertility levels.

Occupation status of a woman has important effect on the fertility pattern of a population [32]. The percentages of women who are home makers and agriculturalists are almost equal accounting to 52.2 percent and 47.8 percent of the women, respectively. As expected the mean numbers of conceptions and live births are slightly higher among the home makers although the difference was found to be not significant (*p* value 0.418). These findings are concurrent with the findings by Asghar et al. [33] which reported that occupation status of the women does not affect the fertility pattern.

In the present study, the economic status of the *Jat* women is divided into five arbitrary classes based on their per capita annual. The highest mean numbers of conceptions and live births are observed in the first class with least amount of per capita annual income that is less than 10000 rupees. However, no specific trend was observed in the mean number of conceptions and live births for the present study, suggesting that economic status of the woman is not affecting the fertility levels in the present population. The findings of the present study are in negation with studies by Asghar et al. [33], Rao [34], and Mukhopadhyay [35] that have reported an association of fertility and economic status. Birth control measures have important implications on the fertility behaviour of a woman. In the present study it is seen that the use of birth control measures does not have any influence on the fertility behaviour of the *Jat* women. These findings are

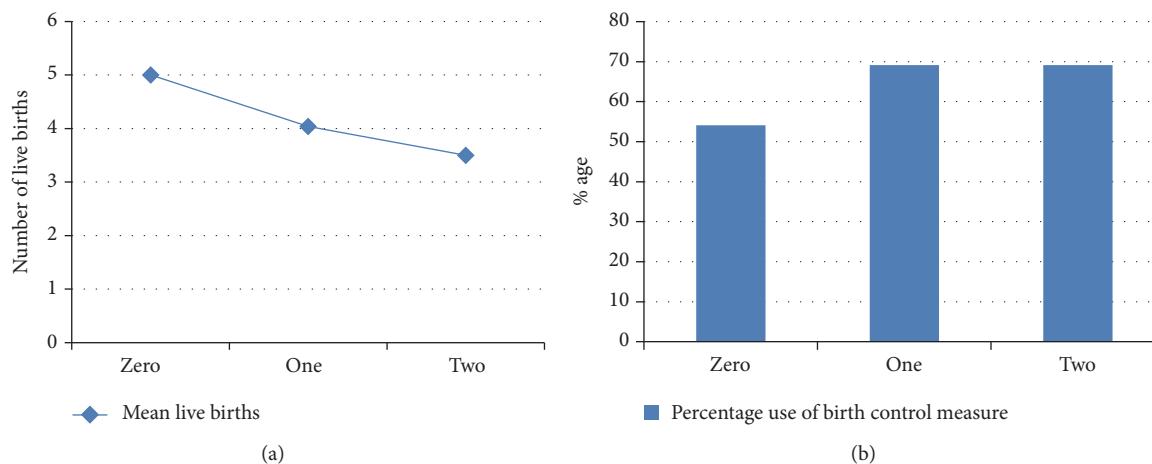


FIGURE 1: (a) Mean number of live births and (b) birth control measures (in percent) use among women with zero, one, and two live births of sons.

TABLE 6: Stepwise regression analysis of factors influencing fertility in the studied population.

Factors	R square	Standard error	p value
Present age	0.032	±1.549	<0.0001
Age at marriage	0.042	±1.543	0.008

similar to that reported among Manipuri Muslims [33] and Kolams of Andhra Pradesh [36].

Stepwise regression analysis reveals that the present age and the age at marriage are the two important factors that influence fertility in the studied population. They account for only 4 percent of the factors that influence fertility in the studied population (Table 6).

In order to assess the impact of son preference in the community, an evaluation of the number of live births and birth control measures was done. It was observed that as the number of sons in the first two live births increased the mean number of live births decreased, whereas the use of birth control measures increased. This is suggestive of the prevailing sex preference in the community (Figure 1).

4. Conclusions

Age at marriage, educational status, family type, present age, and preference for male child were the most important factors that affected fertility in the population. Age at menarche, age at first conception, occupation, per capita annual income, and birth control measure did not affect fertility in this population. The present study reported that three-fourths of the women in the studied population are getting married before the age of 18 years. Besides this, there is son preference in the studied community. These findings demonstrate the prevailing sex bias in the community. In spite of the rapid socioeconomic growth that has occurred in the recent years in the country the observed fertility behaviour is not a welcoming trend. These findings manifest the need

for community specific policy planning to curb the unlikely prevailing gender inequalities in the population.

Competing Interests

The authors declare no competing interests.

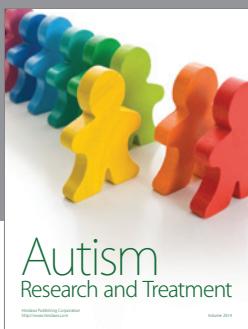
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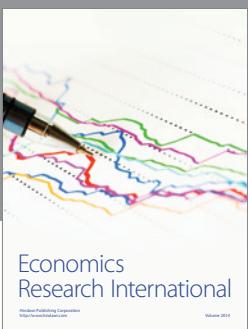
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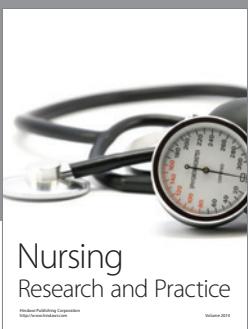
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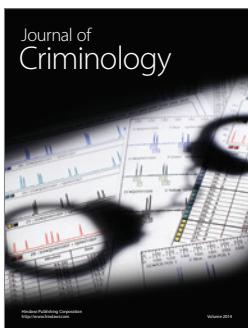
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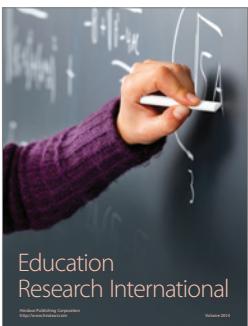


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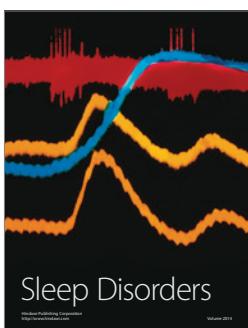
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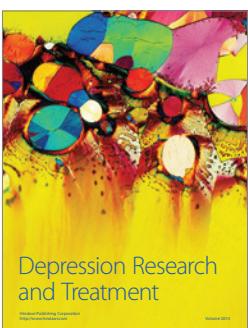
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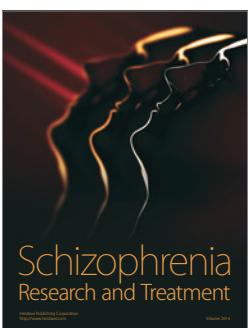
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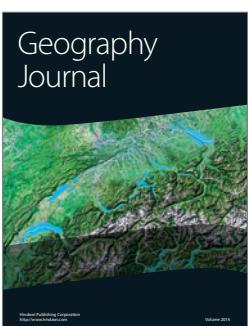
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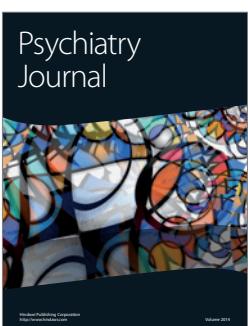
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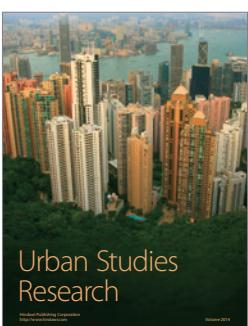
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