

## Anthropo-Demographic Features and Health Care Practices Among the Jaunsaris of Jaunsar-Bawar, Dehradun, Uttar Pradesh

Gautam K. Kshatriya<sup>1</sup>, Paramjit Singh and S.K. Basu<sup>2</sup>

1. Department of Population Genetics and Human Development National Institute of Health and Family Welfare,  
Munirka, New Delhi 110 067, India

2. Executive Director, Foundation for Research and Development of Underprivileged Groups, I-1628,  
Chittaranjan Park, New Delhi 110 019, India

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**ABSTRACT** India is a vast country with a population of more than 930 million. The tribal populations of India constitute a significant proportion of India's total population. There are more than 400 tribal population groups constituting around 8 per cent of India's total population. Most of these tribal populations across the country are faced with similar health conditions accentuated by widespread poverty, illiteracy, malnutrition, poor environmental and personal hygiene and poor maternal and child health care practices. Present study investigates anthropo-demographic features, and health care practices among the Jaunsaris of Chakrata tehsil of Dehradun district of Uttar Pradesh (U.P.). Demographic analysis on 904 Janusari families belonging to Kalsi and Chakrata blocks of Dehradun district has been conducted. The results of the study indicate that total fertility rate (TFR) of the Jaunsaris (3.84) is marginally higher than Indian national population of 3.8. Crude Birth Rate (CBR) is found to be 32 per thousand as against 30.4 per thousand for India (SRS, 1993). Crude Death Rate (CDR) for the Jaunsaris is computed as 11.85 per thousand as against National average of 10.6 per thousand (SRS, 1993). The current population growth rate of 20 per cent for the Jaunsaris is marginally higher than Indian national population of 19.8. As a Jaunsaris are polyandrous population, sex ratio is found to be 889 as against 972 for scheduled tribes of India (Census of India, 1991). Infant mortality rate (IMR) for Jaunsaris (81 per 1000 live births) is comparable to that of Indian national population of 82 per thousand live births. The present findings are discussed in the light of prevailing health care practices among the Jaunsaris.

### INTRODUCTION

The Jaunsaris of Jaunsar-Bawar also called as Khasas, are tribal population, but they are divided into caste groups like Brahmins, Rajputs, Bajgis and Koltas. They practise frater-

nal type of polyandry and also practise polygyny to some extent. The elder brother, however, is the head of the household. Marriages between socially upper castes (Brahmins and Rajputs) and backward castes (Bajgis and Koltas) are not acceptable as a rule. Although each group is endogamous in itself, marriages between Brahmins and Rajputs have social approval to a limited extent. In such cases however, marriage is usually solemnized between a Brahmin boy and a Rajput girl. Similarly, social differences are more pronounced between the higher and the backward castes among the Jaunsaris. The Bajgis are an artisan caste and are mostly weavers. The Koltas are believed to be the original inhabitants of this area, but were overpowered by invading Rajputs few centuries back. They have been precariously placed in the social hierarchy of Jaunsaris and have been treated as agricultural labourers.

The topography of the habitat of Jaunsaris is like any other hilly region with rugged terrain and mountains of variable heights. This region lies between 21° 31' and 31° 33' north latitude and between 77° 45' and 78° 72' east longitude. Jaunsar-Bawar is surrounded by Tehri Garhwal in the east, Uttarkashi in the north, Sirmour in the west and the Doon valley in the south. This region is situated at north western end of Uttar Pradesh (U.P.) covering an area of 343.5 sq miles and separated from Sirmour district by river Tons, upto its confluence with the Yamuna river near Kalsi in Dehradun dis-

tract. The Jaunsar-Bawar is divided into two development blocks *viz.* Chakrata and Kalsi contained in the Chakrata tehsil of district Dehradun. The altitude of this region varies from 1000m to 2300m above sea level.

This paper examines anthropo-demographic features, health care practices and genetic profile among the Jaunsaris of Dehradun district, U.P. The trends are discussed in the light of prevailing socio-economic, and cultural traditions. An attempt is also made to compare fertility and mortality estimates with those for other Indian tribal populations and Indian National population derived from 1991 census.

#### MATERIAL AND METHODS

In the present investigation 904 Jaunsari families from randomly selected villages of Kalsi and Chakrata blocks of district Dehradun, Uttar Pradesh (U.P.), were studied. Villages were chosen on the basis of predominant distribution of the tribal groups under study, followed by a random selection of the households.

The fertility and mortality data as well as data on health care practices were collected using a semi-structured schedule. Reproductive performance data were collected by pregnancy by pregnancy enumeration. The collected information was further cross-checked from elderly members of the household and sometimes from the village elders also. The data have been further divided into age specific events. Average parity has been calculated in each 5 year age interval for the women in the child bearing age. Thus, the mean parity of the women at the end of child bearing age (age interval, 45+) may be designated as the total fertility.

Since most of our information is based on oral histories without much substantiation by written evidence, indirect estimation technique has also been employed for calculating total fertility rate. The fertility levels as calculated by indirect estimation method (United Nation, 1967) suggests that the ratio of the average par-

ity of women at the end of child bearing age to the average parity of a younger group (women in the age interval, 25-29) is closely related to the relative mean parity of women early and late in their twenties.

The relationship is represented as

$$T.F./P_1 = P_2/P_3$$

Which may be rewritten as

$$T.F. = (P_1)^2/P_2$$

Where T.F. = Total Fertility

$P_2$  = Mean parity of women in the age interval, 20-24.

$P_3$  = Mean parity of women in the age interval, 25-29.

Further, various fertility indicators *viz.* age specific fertility rate (ASFR), age specific marital fertility rate (ASMFR), general fertility rate (GFR), general marital fertility rate (GMFR), total fertility rate (TFR), total marital fertility rate (TMFR) and crude birth rate (CBR); and mortality indicators *viz.* crude death rate (CDR) and infant mortality rate (IMR) have been calculated following the standard definitions (SRS, 1993).

In the absence of exact age at death in the present investigation regarding offspring mortality, we have used indirect estimation procedure (Brass and Coale, 1968; Brass, 1975) to assess mortality parameters. This method translates proportion of surviving and proportion of dead among the children ever born to women in different age groups into conventional measures of mortality. Brass demonstrated that the proportion of children dead to the women in the 5 year age intervals in the child bearing age is, with a set of adjustment factors, equivalent to the probability of dying by exact age  $x$ , comparable to  $qx$  in the life table function. The adjustment factors consist of scalar multiplying factors which can be selected on the basis of mean age of child bearing ( $\bar{m}$ ) and the ratios of mean parity for the first three 5 year age intervals of the women in the child bearing age.

#### RESULTS AND DISCUSSION

The fertility records of Jaunsari mothers in various child bearing age groups (Table 1) indicate a total fertility of 4.26 estimated from

**Table 1 : Estimation of fertility and mean age at child bearing from age specific average parties among the Jaunsaris**

Age Interval	No. of Women	No. of Births	Mean Parity
15-19	362	102	0.282
20-24	309	385	1.246
25-29	266	580	2.180
30-34	217	628	2.894
35-39	212	753	3.552
40-44	91	344	3.780
45+	98	418	4.265
Total	1555	3210	2.064

Estimated Total Fertility =  $(P_{15}^2/P_{45}) = 3.81$   
 Mean age at child bearing =  $m = 27.89$  (After U.N., 1983)

the average parity of women in the age group 45+. However, the indirect estimation of total fertility calculated from  $(P_3)^2/P_2$  has been found to be 3.81 which differs little from the observed fertility rate for the women in the age group of 45+.

Table 2 presents fertility indices of the Jaunsaris as compared to U.P. and Indian national population at 1991. It can be observed that ASFR's and ASMFR's for Jaunsaris are intermediate between the population groups of U.P. and Indian national population from the age group 25-29 years onwards. Table 3 shows a comparison of fertility and mortality indicators of Jaunsaris with that of rural U.P. and rural Indian national population derived from SRS 1993. It can be seen once again that the values of all the fertility and mortality indicators of Jaunsaris lie in between those of U.P. and Indi-

**Table 2 : Fertility indices for the Jaunsaris, UP and Indian National Population**

Age Interval	ASFR			ASMFR		
	Jaun-saris	UP	INDIA	Jaun-saris	UP	INDIA
15-19	33	72.3	69.6	64	14.1	236.1
20-24	207	278.6	234.4	225	326.4	307.9
25-29	225	266.9	189.7	232	276.5	207.6
30-34	175	203.4	114.3	177	208.4	121.3
35-39	75	130.5	61.1	78	136.4	65.7
40-44	33	66.6	28.5	35	71.6	31.8
45-49	20	27.6	10.1	21	31.3	12.0

\*Figures are taken from SRS (1993)

**Table 3 : Fertility and Mortality Indicators among Jaunsaris, UP and Indian National Population**

Statistic	Jaunsaris	UP	INDIA
GFR	125	167.9	125.2
GMFR	147	-	162.4
TFR	3.84	5.4	3.8
TMFR	4.16	6.40	5.1
CBR	32	37.2	30.4
CDR	11.85	11.2	10.6
IMR	81	98	82
Sex Ratio	889	942	972
Growth Rate	20	26	19.8

an national population and is not in accordance with high tribal fertility rates reported for various Indian tribal populations (Bhowmik et al., 1975; Sharma, 1978; Sinha and Pal, 1983; Ray and Roth, 1984; Singh et al., 1987; Basu et al., 1988; Basu and Kshatriya, 1989; Satish et al., 1991; Kshatriya, 1993; Kshatriya et al., 1993).

Further the sex-ratio of 889 for Jaunsaris is less than that for U.P. (942) and Indian national population (927). The sex-ratio for Scheduled Tribe population of India has been enumerated as 972 at 1991 which is better than Indian national population at the same time and is much higher than that of Jaunsaris. Such a vast dif-

**Table 4 : Estimation of proportion dead by age specific mortality among the Jaunsaris**

Age interval	Age a	No. of children dead	K**	Age specific child mortality	
				D**	q <sub>a</sub> ***
15-19	1	4	0.895	0.039	0.035
20-24	2	21	0.962	0.054	0.052
25-29	3	50	0.964	0.086	0.083
30-34	5	66	0.977	0.105	0.103
35-39	10	96	1.014	0.127	0.129
40-44	15	48	0.991	0.139	0.138
45-49	20	63	0.989	0.151	0.149

e<sub>a</sub>\* based on q<sub>a</sub> values ( 57.12 )

\* Multipliers for age (a), Brass (1975); Ages 1-5 based on  $P_1/P_5$ , Ages 10-20 based on  $m = 27.89$

\*\* Proportion of children dead

\*\*\* Probability of dying by age (a)

ference between ST population of India and Jaunsaris could be attributed to the fraternal polyandry practised by Jaunsaris.

The distribution of age specific mortality among Jaunsaris together with multiplying factors  $K(a)$  and the resultant  $q(a)$  values is presented in table 4 along with the life expectancy at birth. These estimates are based on  $q_5$  values and interpolated from Brass one parameter model life table (Carrier and HobCraft, 1971). Jaunsari's life expectancy at birth is 57.12 years. While this figure is comparable to (58.6 yrs) Indian national population (Census of India, 1991), it is much higher than the life expectancy at birth of 36.9 years for Juangs of Orissa (Ray and Roth, 1984), 41.09 years for Bastar tribes (Basu and Kshatriya, 1989), 44.28 years for Kutia Kondhs of Orissa (Satish et al, 1991) and 46.7 years for Bison Horn Madias (Kshatriya et al., 1993). Comparison of offspring mortality by maternal age of Jaunsaris with that of Kharia tribal population of Orissa shows non-significant differences (Table 5) at

**Table 5 : Intergroup comparison for offspring mortality to the women for various child bearing age groups, based on standardized normal deviate**

Age	Paired Populations				
	Internal Junsaris vs Muria	Junsaris vs Madia	Junsaris vs Bhattra	Junsaris vs Habla	Junsaris vs Kharia
15-19	0.638	0.178	0.571	2.237*	-
20-24	2.491*	1.213	1.109	4.925*	0.147
25-29	3.502*	4.291*	1.511	5.321*	0.589
30-34	5.102*	4.581*	3.525*	4.382*	1.240
35-39	4.454*	4.540*	3.982*	3.375*	1.115
40-44	4.035*	2.804*	3.232*	3.971*	0.665
45+	4.401*	4.835*	4.286*	4.482*	1.107

\* The 'Z' values are significant at 5 per cent level

all ages, while comparison with Bastar tribes shows significant differences in general at all ages with the exception of offspring mortality in the maternal age 15-19 years for Muria, Madia and Bhattra tribal populations where the inter group comparison shows non-significant differences. This clearly indicates that Jaunsari women reveal appreciably low offspring mortality which decend with age when compared with other tribal population with the exception of Kharias.

**Table 6 : Age at menarche and marriage among the Jaunsari women**

Age Interval	No. of Women	%	No. of Women	%
<b>I. Age at menarche</b>				
a. 10-12	2	0.32		
b. 12-14	156	24.57		
c. 14-16	476	74.96		
d. 16-18	1	0.15		
<b>II. Age at Marriage</b>				
a. 10-15			157	54.1
b. 15-20			115	39.7
c. 20-25			14	4.8
d. 25-30			4	1.4
Total	635	100.00	290	100.00

Table 6 presents age at menarche and marriage among Jaunsari women. It can be observed that 74.96 per cent of Jaunsari girls attain menarche between the age 14 and 16 years and 54.1 per cent of Jaunsari girls get married between the age 10 and 15 years. The average age at menarche and marriage for Jaunsari girls comes out to be  $14.59 \pm 0.89$  years and  $15.71 \pm 0.19$  years, respectively. Age at marriage among the Jaunsaris is much lower than its corresponding figure of 20 years for tribal population of India (Sinha, 1986) and Indian national population, and of 18.16 years for the population of U.P. (NFHS, 1992-93). Similarly, the delayed onset of menarche can presumably be attributed to their socio-economic status.

**Table 7 : Distribution of family types in the Jaunsaris**

Type of family	Number of families
Nuclear	265 (29.31)
Joint	639 (70.69)
Total	904 (100.00)

Figures within parenthesis represent percentage

Table 7 shows the distribution of family types in the Jaunsaris. It can be observed that joint families with a frequency of 70.69 per cent preponderate in the Jaunsaris as compared to nuclear families with a frequency of 29.31 per cent. Table 8 shows the distribution of families according to the type of marriages. Although 63.4 per cent of marriages are monogamous, a significant proportion of 23.4 per cent of marriages are polyandrous. Polygynous marriages are found to occur with a frequency of 6.1 per cent and another 7.1 per cent mar-

**Table 8 : Distribution of families according to marriage types**

Marriage type	No. of marriages
Monogamous	537 (63.4)
Polyandry	212 (23.4)
Polygyny	55 (6.1)
Polyandry & Polygyny	64 (7.1)
Total	904 (100.00)

Figures within parenthesis represent percentage

**Table 9 : Land holding pattern in the Jaunsaris**

Land holding (in acres)	Number of families	%
0-5	574	71.04
5-10	185	22.90
10-15	44	5.44
15-20	5	0.62
Total	808	100.00

riages are a mix of polygynous and polyandrous.

Table 9 presents individual land holding pattern in the Jaunsaris. More than 70 per cent of the Jaunsari families have less than 5 acres of land and another 23 per cent of the Jaunsari families have land holding between 5 and 10 acres. Thus, in the present study more than 93 per cent of tribal population have less than 10 acres of land. The average land holding comes out to be 4.28 acre per family.

**Table 10 : Literacy rate among the Jaunsaris**

Literacy	Male	Female
Literates	1379 (49.43)	781 (34.83)
Non Literates	1411 (50.57)	1461 (65.17)
Total	2790 (100.00)	2242 (100.00)

Figures within paranthesis represent percentage.

Literacy rate as evident from table 10 turns out to be 49.43 per cent among the males and 34.83 per cent in females. Literacy rate is much higher than its corresponding figure of 36.8 per cent in Indian tribal males and 14.5 per cent in Indian tribal females, but is similar to the corresponding figure of 55.73 per cent for U.P. men and 25.31 per cent for U.P. women (NIPCCD, 1995).

It can thus be seen that the Kharias with a

high literacy rate, a small landholding and most of them being aware of modern methods of irrigation are hardly distinguishable from the surrounding non-tribal populations.

In the context of their health seeking behaviour, it was found that nearly 84 per cent of the respondent families had visited primary health centre at one time or another (Table 11) and

**Table 11 : Utilization of health services by the Jaunsaris**

Respondents	Number	Percentage	Number	Percentage
Ever visited PHC	767	84.84	-	-
Never visited PHC	137	15.16	-	-
Satisfied by services	-	-	387	50.46
Unsatisfied by services	-	-	380	49.54
Total	904	100.00	767	100.00

among these 50.46 per cent of the families were satisfied with the services provided at primary health centre (PHC). However, their first preference to seek remedies from any illness still remains to be their traditional systems of medicine. A number of cases of respiratory infection, tuberculosis, leprosy, skin diseases, diarrhoea and sexually transmitted diseases can be seen among the Jaunsaris.

In the present study 677 couples were interviewed regarding the practice of family planning methods. It was found that 95.5 per cent of couples were aware of different family planning methods and 82.6 per cent couples were aware of the incentives associated with them. Out of 635 couples, only 15 per cent of them were currently using any family planning methods (Table 12). And as the average family size is small, even the state government is going slow as far as promoting family planning

**Table 12 : Eligible Couples currently using any FP methods among the Jaunsaris**

Family planning methods	No. of couples	Percentage
Current users	95	14.96
Non-users	540	85.04
Total	635	100.00

methods are concerned. Regarding their attitudes towards family size and regarding their belief about child birth, 22 per cent of the respondents believed that children were the gift of God. Out of 55 per cent respondents who gave multiple responses, 60 per cent believed that children were the gift of God.

Eventhough Jaunsaris are quite literate, maternal care during and after pregnancy is not satisfactory. It was observed that 94.63 per cent of pregnant women were consuming essentially the same diet as they were taking before pregnancy (Table 13). And only 4.45

Table 13 : Food habits and status of TT immunisation during pregnancy among the Jaunsari women

Food Intake/ vaccination	Number of women	Percent- age	Number of women	Percent- age
Take same food	617	94.63	-	-
Take less food	4	0.61	-	-
Take more food	29	4.45	-	-
Take restricted diet	2	0.31	-	-
Immunised against TT	-	-	272	40.90
Not immunised	-	-	393	59.10
Total	652	100.00	665	100.00

per cent of the women increased their food intake. It was observed that 38.25 per cent of women consumed alcohol during pregnancy and 90 per cent pregnant women continued with their usual activities till the last trimester. In the present study, only 40.9 per cent of the pregnant women were found to be immunised against Tetanus Toxoid (Table 13). Nevertheless, this figure is much higher than its corresponding figure of 12.6 per cent for the scheduled tribe population of U.P. but is similar to the figure of 43.8 per cent for Indian tribal population. The figure of TT immunisation for total Indian population and total population in U.P. is reported to be 61 per cent and 44.2 per cent, respectively (NFHS, 1992-93). Over 88 per cent of the deliveries are conducted at home (Table 14) attended by elderly ladies of the household. Hospital services are secured only in difficult cases. This figure is higher than its corresponding figure of 77.9 per cent of Scheduled tribe population of India but

Table 14: Place of delivery among the Jaunsari tribal population

Place	Number	Percentage
At home	561	88.91
At PHC/Pvt. Hosp./ CHC/Distt. Hosp.	70	11.09
Total	631	100.00

is lower than 98.8 per cent for Scheduled tribe population of U.P.

Placental cord is cut with the help of a blade in 44.37 per cent of cases, with knife in 35.18 per cent of cases and with scissors in 19.33 per cent of cases. The Jaunsaris customarily apply mother's milk on the placental cord of the newborn. Thus, information available on 607 newborns in present study indicate that mother's milk was applied on the placental cord of 50.74 per cent of newborns while in 36 per cent cases of newborn nothing was applied on the placental cord.

Table 15 presents child care practices among the Jaunsaris. It can be seen from the table that 94.75 per cent of the infants get their first feed as mother's milk with colostrum. Only in 2.8 per cent of the cases do the mother give their feed to the infants without colostrum. Thus, infants receive the most essential nutrition in the form of colostrum. This could perhaps be one of the several reasons associated with low IMR in Jaunsaris. In nearly 2.41 per cent of cases, infants get their first feed in the form of cow's milk, honey, milk powder, glucose, sugar solution, simple water etc. As far as initiation of the first supplementary diet is concerned, 73.95 per cent of the newly born infants get their first supplementary diet between 6 and 12 months.

Similarly, 37.02 per cent of newborns are breast fed up to a minimum period of two years. There is a tendency among the Jaunsaris to keep an infant on breast feed as long as possible. Infact, only 18.25 per cent of newborns leave their mothers milk by the end of their first year of life. The long duration of breast feeding in the Jaunsaris can be reasoned out from the fact that the Jaunsaris women are

**Table 15 : Child care practices among the Jaunsaris of Dehradun**

<i>Child care practices</i>	<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>
<b>I. First Feed Given to Infants</b>						
a. Mother's milk with Colostrum	596	94.75	-	-	-	-
b. Mother's milk without Colostrum	18	2.86	-	-	-	-
c. Honey	9	1.43	-	-	-	-
d. Cow's milk	4	0.64	-	-	-	-
e. Any other	2	0.32	-	-	-	-
<b>II. Age at First Suppl. Diet</b>						
a. 6 months	-	-	95	18.20	-	-
b. 6-12 months	-	-	386	73.95	-	-
c. After 1 year	-	-	41	7.85	-	-
<b>III. Duration of Breast Feed</b>						
a. 1 year	-	-	-	-	104	18.25
b. 2 year	-	-	-	-	211	37.02
c. Till next conception	-	-	-	-	94	16.49
d. Still feeding	-	-	-	-	161	28.24
Total	629	100.0	522	100.0	570	100.00

**Table 16 : Status of child immunisation among the Jaunsaris**

<i>Vaccination</i>	<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>
<b>I. BCG</b>						
a. Yes	334	56.90	-	-	-	-
b. No	253	43.10	-	-	-	-
<b>II. Polio</b>						
a. Yes	-	-	308	52.38	-	-
b. No	-	-	280	47.62	-	-
<b>III. DPT</b>						
a. Yes	-	-	-	-	262	44.63
b. No	-	-	-	-	325	55.37
Total	587	100.00	588	100.00	587	100.00

basically involved in household activities and in those income generating resources which do not require them to leave their kids at home.

Table 16 presents the status of child immunization among the Jaunsaris. It can be observed that only 50 per cent of the children are immunized against BCG, DPT and Polio. Clearly, vaccination programme has not been very successful. A similar trend was also observed for the administration of TT vaccine to the pregnant mothers and under utilisation of health services. This is primarily because of the topography of the region, difficult terrain, inaccessibility, inadequate staff, severe winter and non functional sub-centres in the area. As recently as 1992-93, NFHS provided some extraordinary vaccination figures for BCG, Polio and DPT among various population groups of India. Among the scheduled tribe

population of U.P., the vaccination figures for BCG, Polio, and DPT has been reported to be 12.5, 16.9 and 16.9 per cent, respectively. Equally distressing are the vaccination figures of BCG, Polio and DPT among and Scheduled tribe population of India which are reported to be as 50.2, 54.7 and 52.9 per cent, respectively. BCG, Polio and DPT vaccination figures for total population of U.P. and Indian total population have been reported to be as 48.9, 51.8, 52.2 and 62.2, 67.0 and 66.3 per cent, respectively.

Thus, in studying the Jaunsaris two distinct trends are clearly observable. While the Jaunsaris are more literate, prefer joint families, have small landholding, are more mobile as far as opportunities are concerned, reveal higher life expectancy at birth, have better child care practises, yet, their knowledge and attitudes

regarding competitive economy, personal hygiene, modern medicine, maternal care during and after pregnancy, are not quite satisfactory. Compounded with age at marriage, communication facilities and available government health infrastructure, Jaunsaris of Jaunsar Bawar are struggling hard to gear themselves with the modern pace of development.

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