

Anthropo-Demographic Study Among the Caste and Tribal Groups of Central Himalayas: 2. Fertility Differentials and Determinants

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ABSTRACT An attempt is made to study the fertility patterns of Kumauni Caste Groups and Bhotia Tribal Groups of Central Himalayas. The relationship between fertility and some socio-cultural factors such as education, income and occupation are highlighted. The fact that fertility behaviour and gender inequality have a strong relationship is also emphasized. Among the caste groups of Kumaun, high caste Brahmins have lower fertility than the Scheduled Castes, which may be result of caste based differentials in education, income and other socio-cultural factors. The Bhotia tribal groups have lower fertility than the caste groups, however the different groups of the Bhotia Tribals also show differential fertility a result of their diverse development profiles.

Most of the developing countries today face an explosive growth rate as their fertility levels have not declined substantially whereas their mortality rates have declined appreciably. India has got an explosive growth rate which is very detrimental for her development. With 2.4 per cent of the world land area, India is currently supporting 16 per cent of the world population. The density of population per sq km has risen in every successive census (except in 1921) and stood near 274 per sq km in 1991 in contrast with 77 per sq km in 1901.

India shows regional variation in demographic indicators. This state and regional diversity in population trends is seen to be a reflection of differential development among the various states. The contrast between Kerala and Uttar Pradesh is of particular interest as these two states are poles apart demographically.

In many aspects, particularly demographically, Kerala is taken to be the most progressive Indian state. By 1981, Kerala had attained the lowest level of birth rate (CBR 25.6) and death rate (CDR 6.6) in the country as a whole. It is now very much closer to several developed countries of the West. According to Visaria (1991) the two southern states of Kerala and Tamil Nadu had already reached the replacement level of fertility in 1988.

Uttar Pradesh on the other hand has been classified as one of the five BIMARU states of India, the other four being Bihar, Madhya Pradesh, Rajasthan and Orissa. Having a high birth rate, a high death rate and a high growth rate, it is demographically speaking one of the most backward states in India. Shiva Kumar's (1991) estimates of UNDP's "Human Development Index" (which is essentially a weighted average of life expectancy, adult literacy and real income indicators) for Indian states put Uttar Pradesh near the bottom of the international scale, between Ethiopia and Zaire.

MATERIAL AND METHODS

Data were collected from two major groups, the caste groups of Kumaun and the Bhotia tribal groups. A total of 847 households was covered comprising of 316 and 531 households from the Bhotia tribal groups and caste groups of Kumaun, respectively. The districts from which the data were collected were Pithoragarh, Chamoli and Almora. The caste groups are Brahmins, Rajputs and Scheduled Castes whereas the Bhotia tribal groups are the Dharchula Bhotias, the Juhar Bhotias and the Marcha Bhotias. For details see Paul Chachra and Bhasin (1998).

RESULTS AND DISCUSSION

FERTILITY MEASURES

Crude Birth Rate (CBR)

The Kumauni caste groups show a typical pattern in their crude birth rates with the high castes exhibiting a much lower crude birth rate than the low castes (Table 1). The Brahmins have a low crude birth rate of 19.04 whereas the Scheduled Castes have a rather high crude birth rate of 29.64. The decadal growth of the Scheduled Caste population has been more than that of the general population during the last decade: the Scheduled

Caste decadal growth rate being 30.99 per cent and that of the general population 23.7 per cent (1991 census). The Rajputs too have a high crude birth rate. Among the Bhotia tribal groups the Juhar Bhotias exhibit the lowest Crude Birth Rate (15.64) whereas the Marchas Bhotias have the highest (35.98). The Juhar Bhotias have high contraceptive usage whereas the Marcha Bhotias appear to have a longer reproductive span compared to the other groups. The Bhotia tribal groups (23.54) have a lower crude birth rate than the caste groups (26.23). For the population on the whole the crude birth rate is 25.28 which though high is lower than the crude birth rate for India, 1991 (29.5).

Table 1: Crude Birth Rate (CBR) and General Fertility Rate (GFR) among the Caste Groups of Kumaun and the Bhotia Tribal Groups of Uttarakhand

Group	CBR	GFR
I. Kumauni Caste Groups		
Brahmins	19.04	78.65
Rajputs	28.86	117.37
Scheduled Castes	29.64	126.21
Kumauni (Total)	26.23	108.87
II. Bhotia Tribal Groups		
Marchas	35.98	128.44
Juhars	15.64	56.49
Dharchulas	24.16	95.23
Bhotias (Total)	23.54	86.48
Total	25.28	100.31

Overall the birth rate for both the groups, Kumauni caste groups (29.6) and Bhotia tribal groups (23.5) is much below that of Uttar Pradesh (36.3). No region wise data on birth rate are available for 1991. However the birth rate for the three districts from which the sample has been derived *i.e.* Pithoragarh (35), Almora (36.1) and Chamoli (38.9) all had a comparatively lower birth rate than Uttar Pradesh (39.6) in 1981. Thus in 1981 the hill region had a lower birth rate than the state, Uttar Pradesh. The birth rate of Uttar Pradesh has declined to 36.3 in 1991, the decline being slight. In the hill region the decline in fertility could be greater as high literacy rate and well developed infrastructure are present in the hill region as compared to the other regions of Uttar Pradesh.

India's birth rate of 29 is less than that of the surrounding countries of South Asia except

Sri Lanka (21). However, within India there is a lot of diversity in birth rates with some regions having a very high birth rate. According to the SRS, 1992 the level of birth rate in India was 29.2 per thousand population and varied from 30.9 in rural areas to 23.1 in urban areas. Among the major states the birth rate in 1992 varied from 17.7 in Kerala to 36.3 in Uttar Pradesh. In the rural areas birth rate varied from 17.6 in Kerala to 38.0 in Uttar Pradesh. Kerala is the only major state having a birth rate below 20, both in rural and urban areas. On the other extreme is Uttar Pradesh having the highest birth rate in both urban (28.9) and rural (38.0) areas.

The birth rate for the world in 1990-95 is 26 according to the UNFPA Population Indicators, 1993. However there is a great diversity in fertility in the different regions of the world, a sharp contrast exists between the more developed regions and less developed regions of the world. The birth rate of the more developed regions is only 14 as against 29 for less developed regions of the world. Africa has got the highest birth rate of 53 followed by Asia (26) and Latin America (26). Most of the countries in these regions are less developed. Other regions in which more developed countries are located, like Northern America (16), Europe (13), Oceania (19) and USSR (16), all have comparatively much lower birth rates.

Europe with an overall birth rate of 13 has the lowest birth rate in the world. The birth rates of countries in Western and Southern Europe is lower than those of Northern and Eastern Europe. Developed countries in Northern America and Oceania have low birth rates. However in Oceania less developed countries like Melanesia (32) and Papua New Guinea (33) have high birth rates.

Countries in Southern and Northern Africa have comparatively lower birth rates than Middle, Eastern and Western Africa. Less developed Latin America also has high birth rates particularly the countries of Central America in comparison with countries in South America and the Caribbean.

Developed Asian countries like Japan, Hong Kong, Republic of Korea and Singapore have birth rates less than 20. Eastern Asia with an overall birth rate of 20 is the region with the lowest birth rates in Asia whereas Western Asia (34)

has the highest birth rates. Southern Asia also has a high birth rate (32) and South Eastern Asia is not far behind with a birth rate of 28. In Eastern Asia China has been successful in bringing down its birth rate to 21. In comparison Southeast Asian countries can be said to have moderate birth rate and some West Asian countries have high birth rates.

Among the South Asian Countries Afghanistan has the highest birth rate (53). It is followed by Pakistan (41), Bhutan (40), Iran (40), Bangladesh (38) and Nepal (37). India's birth rate of 29 appears to be moderate comparatively. Sri Lanka with a birth rate of 21 has the lowest birth rate in South Asia. The overall birth rate for the population under study (25.28) is below that of India (29) and Uttar Pradesh (36.3) but much above that of Kerala (17.7). Bhasin (1990) has reported a crude birth rate of 25.42 for the population of Sikkim and a birth rate of 28.4 among the Gaddis of Chamba District of Himachal Pradesh. The birth rates of these populations inhabiting the Himalayas are quite similar to the present population.

General Fertility Rate (GFR)

The general fertility rate considers the women in the reproductive age, 15-49 years and could be said to be an improvement of the crude birth rate. The pattern for general fertility rate among the caste groups and the Bhotia tribal groups are similar to that of crude birth rate. The Brahmins have a very low general fertility rate (78.6) compared to the Scheduled Castes (126.2). The Marcha Bhotias (128.4) and Dharchula Bhotias (95.2) have a higher general fer-

tility rate than the Juhar Bhotias (56). For the population on the whole the general fertility rate is 100.

At the national level 119 children were born to every 1000 women belonging to ages 15-49 years. Among the major states general fertility rates varied from 62 in Kerala to 161.9 in Uttar Pradesh. Hence it is seen that the general fertility rate of the population under study is below that of India and Uttar Pradesh but above that of Kerala. For the population on the whole the general fertility rate (100) is quite similar to that reported by Bhasin (1990) for the Sikkim population (100.89) whereas the Gaddis of Himachal Pradesh have a slightly higher general fertility rate (110.5).

Age Specific Fertility Rate (ASFR)

A more precise picture of fertility can be obtained by examining the age specific fertility rates (ASFR) because it is not affected by the age structure of the population unlike the crude birth rate and the general fertility rate.

Table 2 shows that the age specific fertility rates for the caste group (total) follow the expected pattern. Fertility peaks in the 20-24 age group, reflecting a pattern of early marriage and childbearing. Fertility rates decline steadily with women in the thirties and forties showing a very low level. Within the caste groups the Brahmins show a peak at a higher age, 25-29 years, compared to the Rajputs and Scheduled Castes who both show a peak at 20-24 years. The Scheduled Castes also have a longer childbearing period as they continue to bear children at later ages.

Table 2: Age Specific Fertility Rate (ASFR) among Kumauni Caste Groups, Bhotia Tribal Groups and Total (Caste + Tribals) of Uttarakhand, Uttar Pradesh, Kerala and India

Group	Age groups (in years)					
	15-19	20-24	25-29	30-34	35-39	45-49
I. Kumauni Caste Groups						
Brahmins	-	142.85	218.75	111.11	-	-
Rajputs	57.14	300	200	-	35.71	-
Scheduled Castes	102.56	333.33	29.41	200	100	-
Kumauni (Total)	54.05	272.72	155.17	94.11	41.09	-
II. Bhotia Tribal Groups						
Marchas	-	117.64	260.86	307.69	153.84	-
Juhars	-	150	103.44	133.33	-	-
Dharchulas	58.82	235.29	166.66	76.92	-	-
Bhotias (Total)	12.65	166.66	171.87	160.71	38.46	-
Total	36.84	237.8	161.11	120.56	40	-
Uttar Pradesh	72.9	272.4	266.5	200.4	138.6	28.7
Kerala	24.1	145.4	115.7	43.2	11.4	0.5
India	74.4	235.2	189.6	113	66	11.4

For the Bhotia tribal groups, the ASFR of the Dharchula and Juhar Bhotia groups peak at 20-24 signifying early childbearing in these groups. However, the Marchas Bhotia group show high fertility rate at a later age groups. Childbearing appears to continue for a longer period for this group and could be a cause for their high fertility. The Bhotia tribal groups shows a fertility peak in the 25-29 age groups.

Between 15 and 49 years of age, child bearing is not likely to be evenly distributed. In fact, fertility is usually concentrated quite heavily between ages 20 and 29. In India the highest fertility is reached in age group 20-24 in all the major states. Fertility declines after age 30 in all the major states. In the age group 30-34 the variation in the level of age specific fertility rate is from 43.2 in Kerala to 20.4 in Uttar Pradesh. Kerala for all age groups has a lower fertility than India whereas Uttar Pradesh for all age groups except the 15-19 age group has higher fertility than India.

Bhasin (1990) also found that fertility peaks at age groups 20-24 for both the Sikkim population and the Gaddis of Himachal Pradesh. However, for the Buddhists of Sikkim and Gaddis of Himachal late childbearing also occurs in age group 30-34 and 35-39 years, respectively.

Total Fertility Rate (TFR)

The total fertility rate presents a single index of total fertility and is independent of the age composition of the population.

The total fertility rate for the caste groups and Bhotia tribal groups is presented in table 3. The total fertility rate for the entire population is 2.98 with the two major groups showing a difference. The Kumauni caste groups total fertility rate is 3.08 whereas the Bhotia tribal groups total fertility rate is 2.75. Among the caste groups and Bhotia tribal groups the Scheduled castes (3.8) and the Marcha Bhotias (4.2) have very high total fertility rates whereas the Brahmins (2.3) and Juhar Bhotias (1.9) have low total fertility rates.

The total fertility rate for India is 3.6, with a higher total fertility rate in the rural areas (3.9) than urban areas (2.6). The total fertility rates for the major states ranged from 1.7 for Kerala to 5.2 for Uttar Pradesh. Kerala is the only state

Table 3: Gross Reproduction Rate (GRR), Mean Age of Fertility Schedule, Total Marital Fertility Rate (TMFR) and Total Fertility Rate (TFR) among the Caste Groups of Kumaun and Bhotia Tribal Groups of Uttarakhand

Group	GRR	Mean Age	TMFR	TFR
I. Kumauni Caste Groups				
Brahmins	1.15	27.16	3.01	2.36
Rajputs	1.44	24.60	4.80	2.96
Scheduled Castes	1.80	26.59	5.31	3.82
Kumauni (Total)	1.50	25.84	4.75	3.08
II. Bhotia Tribal Groups				
Marchas	2.04	30.46	5.61	4.20
Juhars	0.94	27.28	4.14	1.93
Dharchulas	1.31	24.93	2.80	2.68
Bhotias (Total)	1.34	27.93	4.29	2.75
Total	1.45	26.56	4.71	2.98

having total fertility rate below two in both rural (1.7) and urban (1.7) areas. On the other hand Uttar Pradesh had total fertility rate above 3.5 in urban areas and above 5 in rural areas (1992 SRS).

In 1981 while Uttar Pradesh had a total fertility rate of 5.8, the three hill districts *i.e.* Chamoli (4.7), Pithoragarh (3.9) and Almora (4.2) all had comparatively lower total fertility rates. These districts had lower fertility than Uttar Pradesh which could be a result of the regional environment.

In recent decades, total fertility rates have been falling, the world TFR declined from an average of 3.8 births per women in 1975-1980 to 3.4 in 1985-90, an overall reduction of 10.5 per cent in 10 years, and this rate is expectation to further decline to 3.3 in 1990-95 (United Nations, 1996).

The TFR for 1990-95 in the more developed regions of the world is a low 1.9 (UNFPA, 1993). The regions of the world where low TFR exists are broadly Europe (1.7), Northern America (2.0), Former USSR (2.3) and Oceania (2.5). In Europe, Southern (1.5) and Western Europe (1.6) have a slightly lower TFR than Eastern (2.0) and Northern Europe (1.9). Italy (1.3) has the lowest TFR while Albania has the highest TFR in Europe (2.7). Australia and New Zealand in Oceania and Canada and United States in Northern America have low TFRs of 1.9, 2.1, 1.8 and 2.1, respectively.

A high TFR is found among the less developed regions of the world (3.6). These regions

are Africa (6.0), Asia (3.2) and Latin America (3.1). Africa has the highest TFR in the World particularly Eastern (6.8), Middle (6.5) and Western Africa (6.5). Northern and Southern Africa have comparatively lower TFRs of 4.7 and 4.2, respectively. Rwanda with a TFR of 8.5 has the highest TFR in the world. Rawanda, Ethiopia, Malawi, Somalia and Uganda in Eastern Africa; Angola in Middle Africa; Benin, Cote d'Ivoire, Guinea, Mali and Niger in Western Africa have very high TFRs of 7 and above. Mauritius is the only country in Africa with a low TFR of 2.0.

In Latin America some of the Caribbean countries like Cuba (1.9) and Puerto Rico (2.2) have the lowest TFRs whereas certain Central American countries have the highest TFRs (Gautemala - 5.4, Nicaragua - 5.0 and Honduras - 4.9). In South America the TFR ranges from 2.3 in Uruguay to 4.6 in Bolivia.

In Asia Western (4.7) and Southern Asia (4.3) have higher TFRs than Eastern (2.1) and Southeastern Asia (3.4). Hong Kong (1.4) has got the lowest TFR in Asia whereas Yemen (7.2) has got the highest TFR. Countries which have a below 2 TFR in Asia are Hong Kong, Japan (1.7), Republic of Korea (1.8) and Singapore (1.7). Except for Singapore all these countries are located in Eastern Asia. In Southeastern Asia Lao People's Democratic Republic has got the highest TFR. Other Southeastern countries with a high TFR are Cambodia (4.5), Myanmar (4.2), Philippines (3.9) and Vietnam (3.9). In West-

ern Asia a number of countries have high TFR of five and above. They are Iraq (5.7), Jordan (5.7), Oman (6.7), Saudi Arabia (6.4), Syrian Arab Republic (6.1) and Yemen (7.2).

In Southern Asia most of the countries have high TFR except Sri Lanka, whose TFR is only 2.5. Afghanistan has the highest TFR of 6.9. It is followed by Pakistan (6.2), Iran (6.0), Bhutan (5.9) and Nepal (5.5). Bangladesh has also a high TFR of 4.7 whereas India's TFR of 3.9 can be said to be comparatively moderate.

The present population has a TFR (2.98) which is lower than that of Bhutan (5.9), Nepal (5.5), India (3.9) and Uttar Pradesh (5.2). However, it is higher than Kerala's TFR of 1.7. Among the population whose TFR have been reported by Bhasin (1990) the Sikkim population and the Gaddis of Himachal Pradesh has a slightly higher TFR of 3.1 and 3.5, respectively.

Age Specific Marital Fertility Rate (ASMFR)

The age pattern of marital fertility is almost similar to the pattern of age specific fertility rate. Among the caste groups and Bhotia tribals the Scheduled Castes and Marcha tribals age specific marital fertility rate starts showing a decline after age forty. The decline sets in at an earlier age for the other groups. The cause for high fertility in these groups could be a longer period of childbearing particularly during later years. The caste groups have higher fertility at the younger age groups whereas the Bhotia

Table 4: Age Specific Marital Fertility Rate (ASMFR) of Kumauni Caste Groups and Bhotia Tribal Groups and Total (Caste and Tribal Groups) of Uttarakhand, Uttar Pradesh, Kerala and India

Group	Age groups (in years)					
	15-19	20-24	25-29	30-34	35-39	45-49
I. Kumauni Caste Groups						
Brahmins	-	250	233.33	120	-	-
Rajputs	333.33	387.09	204.08	37.03	-	-
Scheduled Castes	333.33	378.37	31.25	208.33	111.11	-
Kumauni (Total)	285.71	357.14	162.16	102.56	43.47	-
II. Bhotia Tribal Groups						
Marchas	-	333.33	272.72	363.63	153.84	-
Juhars	-	300	115.38	153.84	-	-
Dharchulas	333.33	250	153.84	90.90	-	-
Bhotias (Total)	166.66	281.25	180.32	187.5	-	-
Total	259.25	336.2	168.6	134.92	43.1	-
Uttar Pradesh	218.8	325.3	277.4	207	144.6	32.8
Kerala	258.6	284.9	146.8	50.1	13	0.7
India	247.1	314.5	209.9	120.7	71.1	13.6

Tribal women have comparatively high fertility at a later age (Table 4).

In general the age specific marital fertility for all age groups is higher than age specific fertility. For India the age specific marital fertility rates are high for the age groups 15-19, 20-24, 25-29 and 30-34 years. Drastic decline in fertility sets in after 35 years. The pattern for age specific fertility rate for India indicates that fertility occurs mainly at younger ages. However, the duration of high fertility period is quite long (15-34 years). For Kerala it is seen that for a married woman fertility declines drastically after 30 years of age whereas in Uttar Pradesh fertility decline sets in after the woman is 40 years of age. Thus it can be seen that in Kerala the married woman tends to effectively curtail fertility at her later ages than compared to the women of Uttar Pradesh.

Total Marital Fertility Rate (TMFR)

Like Total Fertility Rate, Total Marital Fertility Rate is the cumulative value of age specific marital fertility rates at the end of the reproductive period. It indicates the average number of children expected to be born per married woman during the entire span of her reproductive period, if the age specific marital fertility rates continue to be the same and there is no mortality.

As seen in other fertility measures the Total Marital Fertility Rate for the Scheduled Castes (5.3) and Marcha Bhotias (5.6) is high compared to the Total Marital Fertility Rates of the Brahmins (3.0) and Juhar Bhotias (2.8). Also the total marital fertility rate for the population (4.71) is low compared to Uttar Pradesh.

The Total Marital Fertility Rate for India is found to be 5.1 and varied from 4.6 in urban areas to 5.2 in rural areas. Among the major states the Total Marital Fertility Rate ranges from 3.8 for Kerala to 6.5 for Assam. Uttar Pradesh also has a high total marital fertility rate of 6.4.

Gross Reproduction Rate (GRR)

The gross reproduction rate indicates the average number of children a woman is expected to give birth during her entire reproductive span conforming to the age specific fertility rates for a given year and if there is no mortality. The gross reproduction rate for India in the year 1992

is 1.7 and varied from 1.2 for urban areas to 1.8 for rural areas. Among the major states the gross reproduction rate ranged from 0.8 for Kerala to 2.4 for Uttar Pradesh.

The gross reproduction rate for the Brahmins (1.1) and Juhar Bhotias (0.9) is low compared to the Scheduled Caste (1.8) and Marcha Bhotia (2.0). For the population on the whole the gross reproduction rate is low (1.4) compared to Uttar Pradesh (2.4). The gross reproduction rate for the caste groups is 1.5 whereas it is lower for the Bhotia tribals groups (1.3).

Mean Age at Childbearing

The mean age at childbearing is the maximum for the Brahmins (27 years), among the Kumauni caste groups, and the Marcha Bhotias (30 years) among the Bhotia tribal groups. Childbearing in these groups tend to occur at later age than the other groups. The groups in which childbearing occurs at a early age are the Rajputs (24 years), Scheduled Castes (26 years) and the Dharchula Bhotias (24 years). For the two major groups the mean age at childbearing for the Kumauni caste groups (25 years) is lower than the Bhotia tribal groups (27 years). For the population on the whole the mean age of childbearing is 26 years. Among all the groups the Marcha Bhotias have the highest mean age at childbearing indicating that child births occur for woman in the older age group.

Comparatively the mean age of childbearing for the Sikkim Population (30.19) and Gaddis population of Himachal Pradesh (29.61) as reported by Bhasin (1990) is higher than the present population (26.56).

Child Woman Ratio

This is also a measure of fertility and is simply a ratio between the number of children and the number of women in reproductive age group. As seen in table 5 the child woman ratio has three variants. The child woman ratio shows that among the caste groups the Brahmins show the least ratio (994.38) indicating lower fertility for them, whereas the Scheduled Castes show the maximum child woman ratio (1281.55). Among the Bhotia tribal groups, the Juhar Bhotias have a low child woman ratio (734.46) whereas the Dharchula Bhotias have the highest (1285.71).

The caste groups have a higher child woman ratio (1182.57) than the Bhotia tribal groups (1063.08). The other child women ratio variants show a similar pattern.

Table 5: Child-Woman Ratio among Caste Groups of Kumaun and Bhotia Tribal Groups of Uttarakhand

Group	C 0-4	C 5-9	C 0-9
	W 15-44	W 20-49	W 15-49
I. Kumauni Caste Groups			
Brahmins	481.48	702.12	994.38
Rajputs	646.46	769.66	1244.13
Scheduled Castes	693.98	820.35	1281.55
Kumauni (Total)	613.25	767.48	1182.57
II. Bhotia Tribal Groups			
Marchas	470.00	420.45	770.64
Juhar	325.15	566.17	734.46
Dharchula	662.65	791.04	1285.71
Bhotias (Total)	447.97	573.88	870.27
Total	548.93	694.98	1063.08

The Child Woman Ratio C 5-9 to 20-49 for the Sikkim population is 737.39 and for the Gaddis of Himachal Pradesh is 719.40 (Bhasin, 1990) which is slightly higher than the present population (694.98). The present population has a higher Child-Woman Ratio than Kerala (525), almost a similar one to that of India (695) and a lower one than that of Nepal (738.48) and Bhutan (756.1).

The fertility rates and ratios for the Kumauni caste groups and Bhotia tribal groups is lower than the rates prevalent in the state of Uttar Pradesh and shows the difference in the demographic profile of Uttarakhand and the state of Uttar Pradesh. The state of Uttar Pradesh is demographically speaking the most backward state in India with the highest fertility rates in India. Being a vast state it can be divided into five regions one of them being Uttarakhand or the hilly region. Uttarakhand by virtue of its topography occupies a distinct ecological niche. Besides this environmental difference Uttarakhand is developmentally speaking far ahead of Uttar Pradesh. Its infrastructure (communications, health and educational facilities) is better than Uttar Pradesh as a result it has a population that has higher literacy rates. Consequently the use of contraceptives is also more in the hill region. The hill region is also characterised by small land

holdings, resulting in a sizeable proportion of the population looking for alternative employment opportunities other than agriculture. A number of them opt for the service sector causing a lot of migration particularly among the male population. All these factors have contributed to the lowering of fertility rates in the hill region.

Differential Fertility

Davis and Blake (1956) had suggested that fertility is directly influenced by eleven proximate determinants. Bongaarts (1982) reduced them to four : marriage, contraception, induced abortion and postpartum infecundability. These proximate determinants are in turn influenced by various economic, social, cultural and environmental factors.

A number of socio-economic and cultural factors influence fertility and diversity in them is responsible for the differential fertility levels in various population groups in the world. Among the caste groups of Kumaun caste based differentials in income, occupation, education and age at marriage is responsible for the diversity in fertility levels. For instance the Scheduled Castes or Shilpkars occupy the lower strata in society and are economically on the lower end of the scale. Their literacy levels are the lowest among the caste groups and many of them work as farmers and labourers and as a result their fertility levels are the highest. Similarly diversity in the development profiles of the Bhotia tribal groups is responsible for their differential fertility.

Number of Children Ever Born to Women in Different Age Groups of Wife and Husband

It can be observed in table 6 that as age groups of the woman increases there is a very clear and gradual increase in the average number of children ever born per ever married woman, as the woman nears the end of her reproductive life span. For the present population the wives who are in the 15-19 year age group have only an average of 1.12 children ever born per ever married woman whereas the wives who are in the 50+ age group have an average of 6.01 children ever born per ever married woman. Among the age groups of 20-24 of husbands, the average number of children are 1.3 and in the 50+ age group the number is 5.65 children.

Education and Fertility

As can be observed in table 8 in general for all population groups the illiterate wife tends to have a higher average number of children ever

born per ever married woman than the literate wife. Also the less educated wife has a higher average number of children ever born per ever married woman than the more educated one. For

Table 6 : Average Number of Children Born per ever married woman by present age of wife among Kumauni Caste groups and Bhotia Tribal Groups of Uttarakhand

Group	Age groups (in years)						
	15-19	20-24	25-29	30-34	35-39	45-49	50+
I.Kumauni Caste Groups							
Brahmins	0.5	1.72	2.54	3.4	3.84	6	6.16
Rajputs	1	1.57	3.06	3.87	4.75	5.86	5.38
Scheduled Castes	1.42	1.91	3.19	3.87	5.75	5.95	6.61
Kumauni (Total)	1.16	1.76	2.95	3.72	4.71	5.94	6.06
II.Bhotia Tribal Groups							
Marchas	1	1.4	2.04	2.53	3.61	5	6.68
Juhars	—	1.3	2.82	3.06	3.92	5.07	5.4
Dharchulas	1	1.4	2.91	4.76	4.46	8	6.4
Bhotias (Total)	1	1.36	2.57	3.34	3.98	5.16	5.93
Total	1.12	1.65	2.81	3.57	4.4	5.7	6.01

Table 7: Average Number of Children born per ever married woman by present age of husband among the Kumauni Caste Groups and Bhotia Tribal Groups of Uttarakhand

Group	Age Groups (in years)					
	20-24	25-29	30-34	35-39	45-49	50+
I.Kumauni Caste Groups						
Brahmins	—	2	2.43	3.3	4.42	5.42
Rajputs	1.12	1.77	3.16	4	4.64	5.95
Scheduled Castes	1.63	2.13	3.05	3.61	4.82	6.33
Kumauni Total	1.42	1.97	2.92	3.66	4.62	5.88
II.Bhotia Tribal Groups						
Marchas	—	1.33	2.26	2.57	3.77	5.25
Juhars	1	1.5	2.62	3.05	4.14	5.6
Dharchulas	1	1.6	2	3.92	5.14	4.55
Bhotias (Total)	1	1.46	2.37	3.27	4.24	5.32
Total	1.3	1.82	2.75	3.51	4.46	5.65

Table 8: Average Number of Children born per ever married woman by Educational Level of wife among the Kumauni Caste Groups and Bhotia Tribal Groups of Uttarakhand

Group	Educational level				
	Primary	Middle	High	Intermediate	P. Graduate
I.Kumauni Caste Groups					
Brahmins	3.69	3.25	2.9	2.25	1.75
Rajputs	3.22	3.66	2.36	1.66	1
Scheduled Castes	3.05	2	2.75	2	—
Kumauni (Total)	3.41	3.11	2.97	2	1.5
II.Bhotia Tribal Groups					
Marchas	2.2	4	2.28	2	—
Juhars	3.83	2.2	2.96	2	—
Dharchulas	3.54	2	1	—	—
Bhotias (Total)	3.53	2.62	2.64	2	—
Total	3.46	2.88	2.68	2	1.5

instance, among the Brahmins the average number of children ever born per ever married woman for the illiterate wife is 5.05, for the primary level educated wife it is 3.69 and for the graduate level educated wife the average

able in explaining fertility behaviour in Bangladesh and F. Nii Amoo Dodoo (1992) also found that the more educated women of Sub-Saharan Africa are more interested in reducing fertility. In the less developed regions of the world edu-

Table 9: Average Number of Children born per ever married woman by Educational Level of husband among the Kumauni Caste Groups and Bhotia Tribal Groups of Uttarakhand

Group	Educational level				
	Primary	Middle	High	Intermediate	P. Graduate
I. Kumauni Caste Groups					
Brahmins	5.06	4.3	3.79	3.14	3.71
Rajputs	4.15	2.75	3.45	3.19	3.25
Scheduled Castes	4.82	3.33	3.13	3.58	3.5
Kumauni (Total)	4.65	3.41	3.52	3.25	3.53
II. Bhotia Tribal Groups					
Marchas	4.85	3.33	3.33	2.18	1.28
Juhars	4.7	5.2	3.55	3.15	2.2
Dharchulas	4.14	1.25	2.9	2.83	1
Bhotias (Total)	4.61	3.41	3.35	2.73	1.61
Total	4.63	3.41	3.46	3.07	2.57

Table 10: Average Number of Children born per ever married woman by Income of Family among Kumauni Caste Groups and Bhotia Tribal Groups of Uttarakhand

Group	Income groups (in Rupees)				
	Below 7000	7001-1400	14001-21000	21001-28000	Above 28001
I. Kumauni Caste Groups					
Brahmins	6	4.05	3.81	4.18	3.42
Rajputs	5.47	3.37	3.9	3.93	3.36
Scheduled Castes	5.64	4.04	3.89	4	4
Kumauni (Total)	5.67	3.83	3.86	4.03	3.5
II. Bhotia Tribal Groups					
Marchas	3.9	3.83	3.19	3.87	3.66
Juhars	3.89	4.34	3.17	3	4.16
Dharchulas	4.3	3.56	3.78	1.5	3.66
Bhotias (Total)	4	4	3.37	3.14	3.79
Total	5	3.89	3.68	3.59	3.62

number of children ever born per ever married woman is only 1.75. Table 9 shows a similar trend when education level of the husband is considered.

In many studies the education-fertility relationship have been reported. Education by influencing age at marriage, use of contraceptives, infant and child mortality, female employment and attitudes and beliefs, has an important negative impact on fertility. According to Jain (1985) adult female literacy and infant mortality are the two most important determinants of regional variation in rural fertility in India. Chaudhury (1984) found education to be a significant vari-

cation is a powerful determinant of fertility. Natarajan (1989), studying fertility in Uttar Pradesh, found female literacy and provision of health facilities to be important factors in explaining variation in fertility.

Income and Fertility

In general, as seen in table 10 as the income level increases the average number of children ever born per ever married women decreases. For the population on the whole families whose annual income is below Rs. 7000 have a high average number of children ever born per ever married woman (5.00) whereas in those families

whose annual income is above Rs. 28001 the average number of children ever born per ever married woman is comparatively less (3.62). This trend is seen in all population groups in the present study.

In developing countries the strong association between fertility and income has been highlighted. Income by determining access to health and educational facilities influences fertility. Dastidar (1996) found that both fertility and

Table 11: Average Number of Children born per ever married woman by Husband's Occupation among the Kumauni Caste Groups and Bhotia Tribal Groups of Uttarakhand

Group	Occupation			
	Business	Agriculture	Service	Animal Husbandary
I.Kumauni Caste Groups				
Brahmins	3.7	4.84	3.4	2
Rajputs	3.15	4.42	3.56	-
Scheduled Castes	4.5	3.83	3.58	-
Kumauni (Total)	3.48	4.57	3.51	2
II.Bhotia Tribal Groups				
Marchas	3.16	4.83	2.4	4.33
Juhars	4.34	4.47	2.95	4.37
Dharchulas	4.85	3.75	1.77	3.91
Bhotias (Total)	4.22	4.52	2.54	4.18
Total	3.96	4.55	3.24	4.12

Table 12: Average number of Children born per ever married woman by Wife's Occupation Tribal Groups of Uttarakhand

Group	Occupation			
	Agriculture	Weaving	Agri. & Weave.	Others
I.Kumauni Caste Groups				
Brahmins	3.99	1	-	-
Rajputs	3.89	-	-	4
Scheduled Castes	4.16	-	-	4.5
Kumauni (Total)	4.03	1	-	4.4
II.Bhotia Tribal Groups				
Marchas	-	4.75	3.44	-
Juhar	-	3.33	3.85	3.51
Dharchula	8	3.7	3.46	-
Bhotias (Total)	4.5	3.83	3.47	-
Total	4.03	3.81	3.47	4.4

mortality decrease with the increase of monthly expenditure among the Hindu and Muslim groups inhabiting Calcutta slums.

Occupation and Fertility

The various population groups show occu-

pational differentials in fertility. As can be seen in table 11 for the population on the whole, the average number of children ever born per ever married woman is least when the husband's occupation is "service" (3.24) and the maximum when the husband's occupation is "others" (4.63) and "agriculture" (4.55). Those who work as labourers also have high fertility (4.04). Small sample size is responsible for the rather low fertility among the Brahmin husbands who work as labourers and those who are involved in animal husbandry. Table 12 shows that among the various population groups women's occupation too appears to show differential fertility. Those who are occupied in the services have the least average number of children born per ever married woman (2.57) whereas those involved in agricultural have a high average number of children born per ever married woman (4.03).

Occupation is strongly associated with fertility. Occupation influences the usage of contraceptives. Srinivasan et al. (1984) found that the states of India with greater contraceptive use have in general achieved a more advanced stage of socio-economic modernization causing him to speculate that this achievement has generated the observed higher levels of motivation. Pick et al. (1988) in a study in Mexico found that besides education which had a major negative impact on fertility occupation too had a negative impact. Pandey et al. (1987) in a study in rural Uttar Pradesh found agricultural labourers to have the highest fertility whereas when the husband's occupational category is service the fertility level is the lowest.

Age at Marriage and Fertility

As can be seen in table 13 the average number of children ever born per ever married woman is greater when the wife marries at a younger age, particularly below 18 years and the average number of children ever born per ever married woman decreases as her age at marriage increases. This is prevalent in all population groups for both the caste groups of Kumaun and the Bhotia tribal groups.

A similar trend is seen when the husband's age at marriage is considered. When husbands marry before 21 years the average number of children ever born per ever married woman tend

Table 13: Average Number of Children born per ever married woman by Age at Marriage (Wife) among Kumauni Caste Groups and Bhotia Tribal Groups of Uttarakhand

Group	Age Groups (in years)			
	X-18	18-21	21+	Mean Age
I.Kumauni Caste Groups				
Brahmins	4.94	3.19	2.16	17.05
Rajputs	4.30	2.42	1.00	15.98
Scheduled Castes	4.51	2.62	1.00	14.78
Kumauni (Total)	4.53	2.80	1.87	15.87
II.Bhotia Tribal Groups				
Marchas	4.48	2.67	2.25	16.73
Juhars	4.16	2.63	3.75	15.36
Dharchulas	4.06	2.82	4.00	16.39
Bhotias (Total)	4.21	2.70	2.92	16.01
Total	4.42	2.76	2.36	15.95

to be more than when the age of marriage for husbands is higher (Table 14). Accordingly for both the husband and wife the age at marriage has a negative impact on fertility i.e. the higher the age at marriage the lower the fertility.

A woman's age at marriage affects her fertility performance, since marriage marks the beginning of the reproductive life of a couple. It is also seen that in general the more educated

Table 14: Average Number of Children born per ever married women by Age at Marriage (Husband) among the Kumauni Caste Groups and Bhotia Tribal Groups of Uttarakhand

Group	Age groups (in year)			
	X-21	21-25	25+	Mean Age
I.Kumauni Caste Groups				
Brahmins	5.19	4.18	3.22	24.01
Rajputs	4.28	3.48	3.80	22.16
Scheduled Castes	4.42	3.87	4.35	22.03
Kumauni (Total)	4.50	3.81	3.72	22.66
II.Bhotia Tribal Groups				
Marchas	5.22	2.97	3.81	23.97
Juhars	4.32	3.68	3.42	22.80
Dharchulas	4.00	3.66	3.46	23.79
Bhotias (Total)	4.45	3.46	3.55	23.37
Total	4.49	3.67	3.65	22.92

woman and the woman belonging to the upper castes marry at a later age. Pandey et al. (1987) found that in rural Uttar Pradesh fertility for women who marry at a earlier age is more. Choudhury's study in Bangladesh (1984) revealed that the most important factor explaining fertility behaviour in Bangladesh is age at mar-

riage. The higher the age at marriage, the lower the fertility. According to the 1981 census the age at marriage in India for females is 18.3 years whereas for Uttar Pradesh it is 16.7 years and for the hill region it is 18.2 years.

Status of Women and Fertility

Dyson and Moore (1983) emphasized the relationship between fertility and women's autonomy in India. According to them fertility varies as a negative function of women's autonomy defined as the capacity to manipulate one's personal environment. Women in South India have a greater control over their lives and hence are in a better position to limit their own fertility if they so desire than the women in North India.

The measurement of women's status is recognized to be a highly complex issue. Yet whether assessed in terms of health, education or employment, inequities by gender is prevalent in the Indian subcontinent. Due to the difficulty in measuring all aspects of women's status female education is considered to be the best indicator of women's status.

A UN study on the status of women in Pakistan included an analysis of the women's levels of education on fertility in the recent past. Fertility is negatively related to educational achievement, with the greater effects observed among women with post primary education. The differences are mainly attributable to variation in marriage pattern by education. The study concludes that educated women particularly those with post primary education do display different attitudes and behaviour from those of women with no education. The former are more likely to marry late, to have worked before marriage, to use contraception, to breastfeed for shorter durations, to desire few children and to have strong preferences in educating their children particularly daughters. The contrast is greatest in urban areas. It recommends improving the situation of women particularly in rural areas where the position of females is weakest (UN, 1993).

The one constraint for limiting childbearing was the need for male children and it was here that women's education, age at marriage and marriage distance if not other aspects of women's position, evidently make a difference. Educated women, women who married at higher ages and

who came from nearer the village were more willing to limit childbearing in the absence of sons (Carol Vlassoff, 1991).

According to many authors the contrast in patriarchy and the position of women in north and south India are important determinants of fertility and vital rates. Basu, A.M. (1993) has stressed the role of region and culture in determining fertility levels and the nature of fertility change. Both for the northern and southern part of the country the family is predominantly patrilineal, patrilocal and patriarchal. However, in the north a village is an exogamous unit. In the south intra-kin marriages (especially between cross cousins and between a girl and her maternal uncle) are permitted, as are marriages within a village. This permits a bride to retain contact with and avail support of her natal kin. Furthermore, Basu has borrowed Kolenda's phrasing for the description of patriliney in North and South India. The northern region is characterised by "strong patriliney" whereas in much of the south there is "reluctant patriliney".

According to Malhotra et al. (1995) regional diversity in fertility rates appear to covary with female autonomy, age at marriage, dowry and bride price practices, female labour force participation and other aspects of family and gender relations. Regression analysis including spatial auto-correlation made them conclude that patriarchy exerts a major influence on regional variation in fertility. Dimensions of patriarchy studies were sex ratio of mortality (F/M), female share of literates, proportion married at 15-19 (F), female share of labour force participation and area under rice cultivation. Their results showed that fertility is lower in areas with a higher share of female literates and female participants in the labour force, later marriage, and rice cultivation. Social and economic development indicators also have substantial and significant effects on fertility. However literacy and child mortality indicators are more powerful in explaining the variation in fertility than are the economic indicators.

Jain (1985) studying the regional variation of fertility in India by multiple regression demonstrates that conditions conducive to fertility decline include high adult female literacy, low infant mortality, high contraceptive use and

high female age at marriage. According to him, the pace of fertility decline in the future could depend upon the pace of infant mortality decline, enhancement of female education, and improvements in family planning programme.

Dreze et al. (1996) also emphasized on the role of women's agency and empowerment in reducing mortality, fertility and gender inequality. As far as determinants of fertility was considered none of the variables relating to general level of development and modernisation is statistically significant. By contrast, female literacy and female labour force participation appear to be crucial determinants of the total fertility rate. To quote Dreze et al. (1996) "The message seems to be that some variables relating to women's agency (in this case, female literacy) often play a much more important role in demographic outcome than variables relating to the general level of development."

In the present study certain indicators of women's position or status show that there is a strong relationship between women's position and fertility. Some of the indicators studied are women's age at marriage and education. The impact of education and other socio-economic variables particularly women's position on the fertility patterns of a population group is clearly highlighted in this study on the caste groups of Kumaun and Bhotia tribal groups.

The fertility rates and ratios for the Kumauni caste groups and Bhotia tribal groups is lower than the rates prevalent in the state of Uttar Pradesh and shows the difference in the demographic profile of Uttarakhand and the state of Uttar Pradesh. The state of Uttar Pradesh is demographically speaking the most backward state in India with the highest fertility rates in India. Being a vast state it can be divided into five regions one of them being Uttarakhand or the hilly region. Uttarakhand by virtue of its topography occupies a distinct ecological niche. Besides this environmental difference Uttarakhand is developmentally speaking far ahead of Uttar Pradesh. Its infrastructure (communications, health and educational facilities) is better than Uttar Pradesh as a result it has a population that has higher literacy rates. Consequently the use of contraceptives is also more in the hill region. The hill region is also characterised by small land holdings, resulting in a

sizable proportion of the population looking for alternative employment opportunities other than agriculture. A number of them opt for the service sector causing a lot of migration particularly among the male population. All these factors have contributed to the prevalent fertility rates in the hill region.

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