

Ecology, Population Dynamics Among Transhumants of Himalayas : A Case Study of Gaddis of Himachal Pradesh

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ABSTRACT This study presents population dynamics in a transhumant population - Gaddis, who travel from one ecological zone to another. Due to heavy snowfall for about three to four months during winter, in Bharmour Tehsil, the Gaddis generally migrate to the lower hills and plains along with their flocks of sheep and goats. This transhumant way of life nurtured by ecological factors has affected the population structure. The high mortality statistics are in agreement with the hypothesis that the Gaddis are pre-transitional in their demographic status, where as the fertility indicators strike a discordant note. The low fertility rate can be explained by their habitat and transhumant way of life, which acts as a involuntary and prolonged abstinence. There are no social guidelines for the fertility goals as such, but the ecological factors and human settlement patterns have paved the way for the outbreak of the diseases. socio-cultural and economic factors have heightened their incubation and implications and reinforced their virulence. Both curative and preventive measures are not satisfactory. Unfortunately medical facilities are scarce and not available in many areas and people are accused of not accepting these meagre medical facilities.

For all our cultural complexity, we must solve the same ecological problems as other species in order to survive and reproduce. Heredity and environment both play their part in the survival of human race. Natural fertility varies in different populations. In each society, there is population regulation and the ensuing factors that drive fertility change. The social organisation of human reproduction is a fundamental part of the human condition. It has been noted that fertility varies across societies in which there is no evidence of conscious birth control. Some demographic parameters such as fertility, mortality, infant mortality are affected by many biological factors. The main ones are sterility, post-partum anovulatory periods, which are influenced by nutrition, age at menarche, menopause, lactation/breast-feeding, postpartum amenorrhea etc. Indirect parameters that affect fertility are foetal wastage, infant mortality etc. Though reproduction is a biological phenomenon, levels in fertility can be influenced by socially controlled norms

and practices e.g. sex taboos during nursing. Various studies have been carried out among different populations pin pointing the causative factors for population dynamics. This study presents population dynamics in a transhumant population, who travel from one ecological zone to another. Due to heavy snowfall for about three to four months during winter, the Gaddis generally migrate to the lower hills and plains along with their flocks of sheep and goats. This transhumant way of life nurtured by ecological factors has affected the population structure. The population in the Bharmour Tehsil, Chamba District, Himachal Pradesh has been stable in the area for quite a long time. It has not been dominated or strongly influenced by the Muslims, Gorkhas, Tibetans or British. There have been no recent changes in the technology of economy great enough to bring about rapid changes in social organisation. The area remained comparatively isolated till the 7th century. Although the physical environment is discouraging, Bharmour

saw a large influx of the Gaddis around the 7th and 8th centuries. The Gaddis caste is a result of the union of Rajputs, Khattris and Thakurs over several hundred years. Historical events suggest that they came from Lahore and Delhi. Whatever the origin of these groups, they now form a single caste. Immigrants into Bharmour area adopted the local customs, caste, kinship, marriage and religion—thus indicating that ecological adaptations mould the social relations to adapt to the local conditions. The local inhabitants draw a distinction between the three castes: The Brahmans, the Rajputs (formed by the union of Rajputs, Khattris, Thakurs or Ranas over several hundred years); and the Scheduled Castes. The term Gaddis is a caste term in a Bharmour, but there is some confusion now-a-days as Brahmans and Scheduled Castes are also calling themselves Gaddis, because the Scheduled Castes and Scheduled Tribes are entitled to financial benefits. Gaddis have become a tribe by circumstances and not due to any particular natural characteristics. Anthropologically, the Gaddis can hardly be called a tribe. They have been declared as a tribe mainly for the purpose of development in view of their social and economic backwardness. The Gaddis are Hindus and worship Lord Shiva, Devi Durga and other minor gods.

BHARMOUR TEHSIL

Location

The Bharmour *Tehsil* lies approximately between the north latitudes 32°-11' and 32°-41' and the east longitudes 76°-22' and 76°-53'. The lowest altitude is about 1340 metres and the highest about 5000 metres above sea level. The eastern boundary connects the Kangra District and Lahaul-Spiti District. On the west, most of the boundary line runs along the Chamba *Tehsil* and a small portion of the eastern boundary, touching projection of the Churah *Tehsil*. In the north, the sub-division

is bounded mostly by the Pangi *Tehsil*, with a bit touching the Kulu and Lahaul Districts and another bit adjoining the Churah *Tehsil*. The entire southern side borders on the Kangra District (Fig. 1)

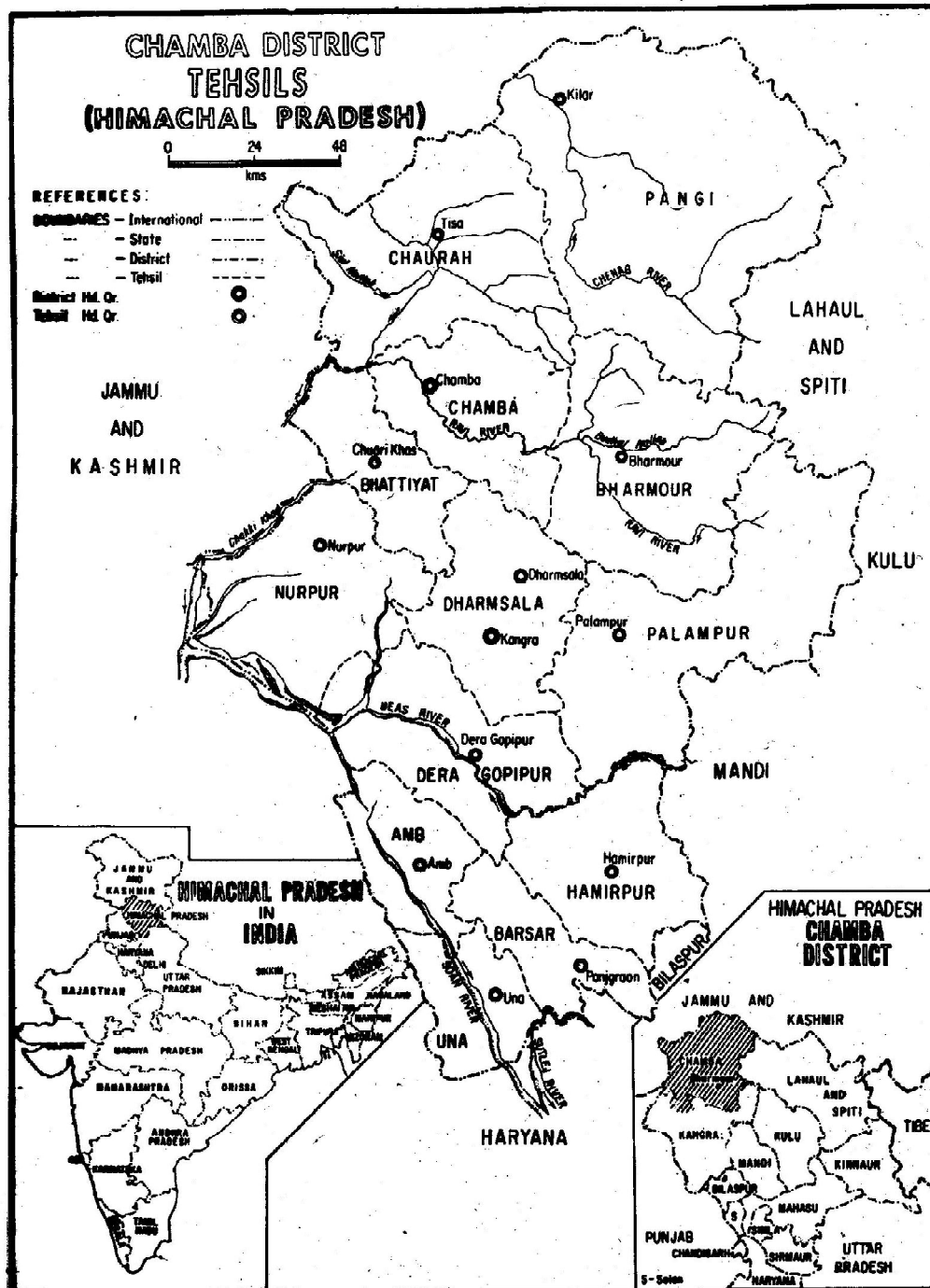
This valley of the Ravi is enclosed on the south by the Lofty Dhaula Dhar, on the north by the Pir Panjal or Pangi Range, on the east by an extension of the Dhaula Dhar which ultimately meets the Pir Panjal near the Rohtang Pass. The valley extends towards the west via Chamba town. The river Ravi in this section flows in the east-west section.

Altitude

The Bharmour *Tehsil* is remarkably mountainous, level and flat pieces of land are an exception to be met with. Cultivation ranges approximately between 1500 metres and 3700 metres. The slope is considerable for the greater part, and in many places it is too steep for average agriculture. Because of this, in the rainy seasons, the good soil cover is lost and soil conservation becomes a real hazard. Land sliding is a common feature in this area. The demarcated forests occur between 1850 metres and 2450 metres. The forests are often intersected with rocks and cliffs.

Climate

Depending upon the altitude, the climate varies a good deal. Taken as a whole, the climate is temperate with well marked seasons. The winter lasts from December to February (both inclusive) and is characterised by snowfall, which is generally heavy and descends lower in the valleys. Higher still, the semi-Arctic conditions prevail along the main ranges and from November to March the passes are blocked with snow. The temperature begins to increase rapidly after the middle of April and the rise continues till the break of rains in July. The annual average rainfall in Bharmour valley is 1264.4 mm.



Agriculture and allied occupations such as sheep rearing, weaving and spinning of wool, etc., are the main occupations of the Gaddis. As the slopes are very steep and the terrain hilly, at higher altitudes soil is very poor and stony and is not fit for agriculture. So the size of the fields is very small and the food produced here is not sufficient for the subsistence of the people. To compensate for demographic pressures and to increase food production, clearing of vegetation cover to avail of more land for agriculture, has been a continuing process for long. Terraces are poorly cut and steep slopes are used which cause land slips, resulting in total loss of good soil cover. In spite of the fact that all the cultivable land has been brought under the plough, the population cannot live on agriculture alone. Agriculture technology is extremely simple and time consuming. The Gaddis have a pre-wheel culture in which the human back lifts and moves every thing. The only non-human power so far utilised is that of animals in ploughing and thrashing, and of water mills for grinding. Agriculture work in Bharmour is very arduous. Adult labour is insufficient as men are on pastoral duties. Men and women are busy throughout the year. Their life is harsh and unrewarding. The hillsides are extremely steep and rocky so that communications are still primitive; almost all travel is done on foot. Almost every thing is carried on the human back. Though agriculture is the mainstay of the people, the food produced is not enough for the entire year. To compensate for the deficit food requirements, the people have to look for other avenues of income. So sheep and goat rearing is common in this area. The upper ranges of the Bharmour mountains are noteworthy for their large, lush meadows. However, these pastures are only seasonal; the Gaddis cannot rely on them for the year-round sustenance. Consequently, the pattern of transhumance is developed to utilise the mountain area in its productive season, while relying on the other areas the rest of the year. The

Gaddis utilise the summer pastures of the surrounding mountains and winter pastures of the Kangra Hills. Thus, the Gaddis of Bharmour are able to support a human and animal population of sufficient size by means of agriculture and herding.

It cannot however be said that the environment alone drives them out of Bharmour during winter; the economic reality is also responsible for it. There are families which do not have enough land or do not rear enough sheep and goats to fulfil their economic needs throughout the year. They have to look for odd jobs in the lower hills, where they migrate. They work on daily wages as road labourers, wood cutters, etc., and their women and children work as domestic help, thus earning their livelihood for the winter months. Apart from this, wool and woollen products need some way of disposal which is not possible if they are stagnant locally. Inadequate transportation plays a significant role in arresting the development.

The Bharmour *Tehsil* with an area of 1818.3 sq. km. has 251 villages; Out of which 112 are inhabited with 267 average number of persons per inhabited village. The whole area is divided into 26 *Panchayat* circles (Fig. 2) of about 51 sq. km. and an average population of 1040. The total cropped area is quite small in comparison to the total geographic area. Of the total cropped area, the area grown more than once is only 24.39 per cent. Out of the total geographical area, the forest is 11.3 per cent; the land under permanent pasture and other grazing land is 85.1 per cent. The net area sown is 2.3 per cent.

The villages in Bharmour *Tehsil* are congested without any proper drainage system. The natural slope of the villages provides the drainage for the outlet of the waste-water. Refuse is not thrown on the streets as there is no sweeper caste in the *Tehsil*. Instead, the refuse is collected and taken to fields where it is used as manure. There are no public or private latrines in the villages. The Gaddis go to nearby fields to answer to call of nature. The villages lack pure drinking water facilities.



In Bharmour the terrain being difficult the ways and means of communication are few. There are no motorable roads. The jeepable road is up to Bharmour village, *Tehsil* head quarters. All the travel is on foot and everything has to be carried on the human back. Villages are approachable by the bridle path. People use suspension bridges, *Trangaries* (A *Trangri* is made by placing two logs of wood across the stream. The upper surface is covered with flat stones and a workable crossing path is made), ropes to cross the rivers. Ways and means of communication are so poor, that only eight villages have bus stops.

The socio-cultural conditions of people in a community have a strong impact on health. Health systems do not operate in isolation, and so they should not be evaluated as such. It is clear that preventive and curative effects will be more effective, while other social and economic factors are supportive. Literacy, food production, transport, trade patterns, employment-opportunities, and the like can all be conducive to better health if properly adjusted to and properly articulated. These factors affect mortality through nutrition, sanitation and pure water supply. The socio-economic condition of the people does create differentials in access to these basic items. During the study it was only possible to assess the economic conditions roughly, as people were reluctant to furnish the desired information. Statistical sources of information were rather limited and unreliable.

Population of Bharmour Tehsil

According to the Census of 1981, the Bharmour *Tehsil* is inhabited by 29944 persons, (in 1971, they were 27067- District Census Hand Book, District Chamba 1971) out of which 3975 are Scheduled Castes and 24639 Scheduled Tribes. The density of population per square kilometre is 16 (Tables 1 and 2). Sex-wise distribution of population

is males 16012 and females 13932. The percentage of the female population to the total population is 46.5 and the number of females per 1000 males is 870 (Table 3). The literacy rate is rather low. Out of the total population 6737 persons are literate (5479 males and 1258 females). Only 22.50 per cent of the total population is literate (Table 4). The number of literate males per 1000 males is 342, while the number of literate females is still less; it is 90 per 1000 females. The rate of population growth in Bharmour *Tehsil* in 1961- 71 and 1971-81 is quite low as compared to Chamba, Himachal Pradesh and India (Table 4) (District Census Hand Book District Chamba, 1981).

Table 1 : Area and population of Bharmour *Tehsil*, Chamba District, Himachal Pradesh

Year	Area sq.km.	Popu- lation	Density per sq. km.
1981	1818.3	29944	16
1971	1818.3	27067	15

Table 2 : Number of Scheduled Castes and Scheduled Tribes in Bharmour *Tehsil*, Chamba District, Himachal Pradesh

Year	Popu- lation	Scheduled Caste (S.C.)	Scheduled Tribes (S.T.)	Percentage of S.C./S.T. in total population
1981	29944	3975	24639	97.18
1971	27067	3599	19809	86.48

Table 3 : Sex-wise distribution of population in Bharmour *Tehsil*, Chamba District, Himachal Pradesh

Year	Population		Percentage of female populations to total population	No. of females per 1000 males
	Male	Female		
1981	16012	13932	46.5	870
1971	14367	12700	46.9	884

Table 4 : Decennial growth rate of population of Bharmour Tehsil, Chamba District, Himachal Pradesh (H.P.) and India

Census Year	Populations of Bharmour	Decennial growth rate			
		Bharmour	Chamba	H.P.	India
1951	19379		0.08		13.31
1961	25625	32.23	23.72	21.78	21.51
1971	27067	5.63	16.34	23.04	24.80
1981	29944	10.63	23.86	23.71	25.00

In the course of study, information regarding 472 family units of different caste groups in all the five valleys of the Bharmour Tehsil was collected (Fig. 3). The total number of individuals in these families is 2854 giving the average size of the family as 6.0. As a region, Bharmour was isolated for much of the time. Isolation of a region, community or individual promotes economic self-sufficiency. It is equally true that self-sufficiency can promote isolation by making it unnecessary to seek elsewhere for goods or assistance, even

Table 5 : Literate persons in Bharmour Tehsil, Chamba District, Himachal Pradesh

Year	Literate Persons			Literate percentage in total population	No. of Literate	
	Male	Female	Total		Male per 1000 Males	Female per 1000 Females
1981	5479	1258	6737	20.50	342	90
1971	2621	230	2851	10.53	182	18

The socio-cultural system as found in the Bharmour Tehsil is a reflection of the way in which the Gaddis have, by tradition, adapted to a mountainous, rugged environment through agriculture and pastoralism. Nuclear family households are the norm in the Bharmour Tehsil which seems related to the prevailing house style. The villages are congested and there is little room for expansion. They are located on steep slopes and houses are not systematically planned. In Bharmour, the basic family group which emerges as a legally independent, more or less self-sufficient unit will here be called the nuclear family. This may be described in a preliminary way as a man, his wife and children. A daughter leaves it when she marries and joins her husband's nuclear family.

Table 6 shows the number of households (394) collected includes all the three castes in the Bharmour Tehsil from five valleys along with the number of joint families, nuclear families and the number of families in joint families.

after facilities for communication have improved. Economic self-sufficiency is also a function of inadequate man-power in the form of specialists or landless labour. Regional isolation is today largely a matter of choice, although this attitude has probably arisen as the result of self-sufficiency that was once required. The earlier isolation of the region was primarily due to terrain, inaccessibility and lack of reason for people to travel there. Within the area there has also been isolation, although not to the extent that there has been regional isolation. Local isolation has been due to altitude, climate and terrain. As altitude increases, hamlets become smaller, less in number and more widely dispersed. Above 2100 metres, villages are isolated for much of the winter and during a few weeks in the summer when the rains are especially heavy. Most of the people have little need to go outside their own village, except during fairs and festivals. Because of all these factors, the Tehsil has been spared serious epidemics.

As stated earlier, the nuclear families predominate the Gaddi society. Geographical

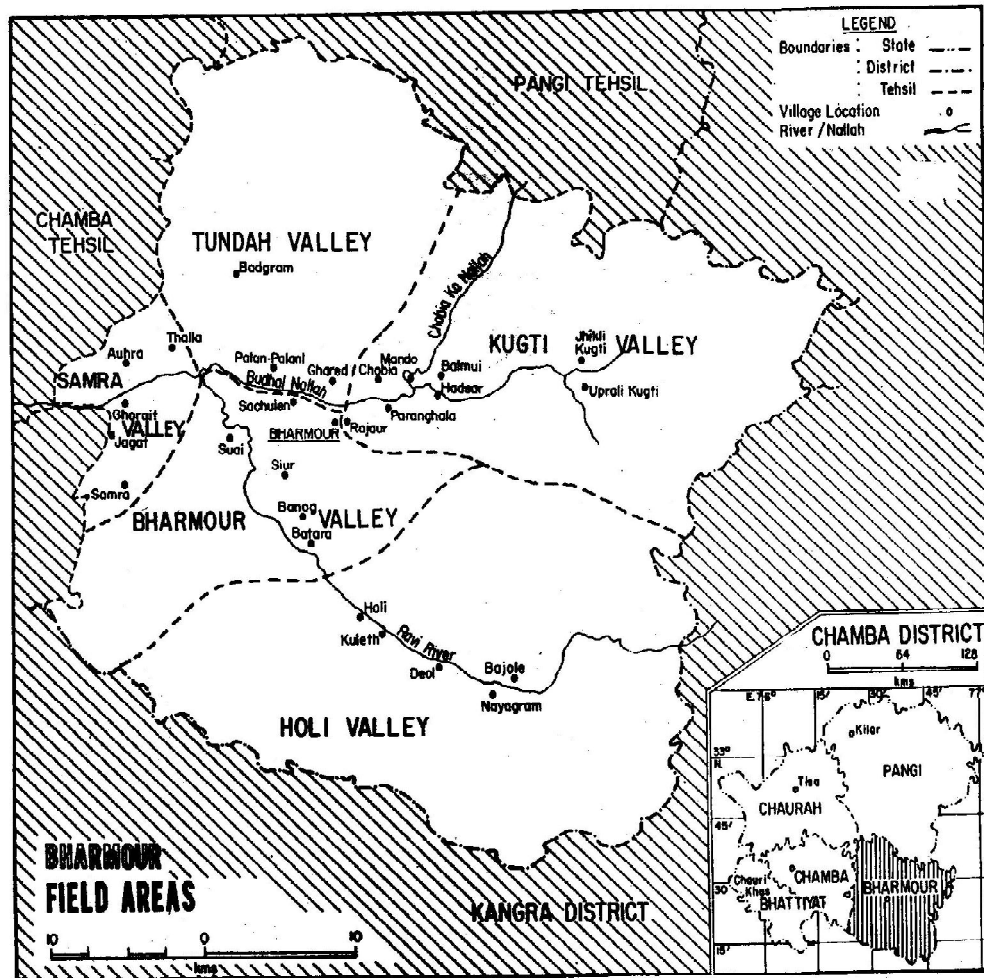


Fig. 3

Table 6 : Distribution of type of families among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

Population	Number of households	No. of nuclear families	Number of joint families		Total number of units	Total number of eligible couples
			Joint families	Nuclear families		
Brahmans	128	90	38	62	152	135
Rajputs	178	142	36	66	208	163
Scheduled Castes	88	68	20	44	112	79
Gaddis (Total)	394	300	94	170	472	377

mobility, nurtured by transhumance, reinforces the prominence of the nuclear family. Joint living is ideal, but the divergence of interests and activities between the brothers and their wives usually surpasses the compromising limit. Partition is, therefore, a normal occurrence. In most households the husband and wife can efficiently do all the work, although it is not easy during the period when there are young children who must be constantly watched by the mother until an older child is able to do it for her. However, because of the many different activities required to take care of specialised fields, a relatively large labour pool must be available along with some means of dividing up and coordinating the various tasks. A nuclear family has neither the size nor the organisation for this. There is no denying the fact that the joint extended family has its economic advantages, provided the family can increase its land holding in proportion to its size. But the increased return does not appear to be enough to counteract the pressure and forces that tend to pull the family apart. Lacking hired labour, co-operation between families and *Barton* (Obligatory Assistance)- obligations have become the compensating factors through which households communicate socially and a stable labour force is ensured when a man is in need.

POPULATION COMPOSITION

Age-sex composition of a population provides an important component for demographic analysis. It bears the reflection

of fertility, mortality and migration of the past. Further-more, the age-sex structure also influences the present and future birth, death and migration pattern of a community. From the age-sex composition policy makers can have an idea about the labour force population, school age population, voting population, and old age and young age dependency ratios.

Sex-Composition

The classification of a population according to sex generally influences the form and tempo of life in a community. The balance between the sexes is an important aspect of population structure. Many economic and social relationships are closely related to the balance or disparity between the number of males and females. Sex composition may be studied with reference to the sex ratio. The various other population parameters which as occupation structure, migration rate etc. are also influenced by the ratios between the two sexes. The sex ratio of a region may also be affected by the development activities of the region.

Two basic measures are used here to study the sex-composition of the population of Bharmour - (i) the sex-ratio and (ii) masculinity proportion. The sex-ratio and masculinity proportion among various population groups of Bharmour have been shown in the table 7.

Sex Ratio among the Gaddis of Bharmour is very low, it ranges between 850 and 890. The Brahmans have a sex-ratio of 890, Rajputs 870 and Scheduled Castes 850. For the Gaddis

Table 7 : Sex-ratio and masculinity proportion among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

Population	Sex ratio (pf/pm)	Masculinity proportion
Brahmans	890	52.91
Rajputs	870	53.48
Scheduled Castes	850	54.05
Gaddis (Total)	870	53.48

pm = Population of males, pf = Population of females

(Total) it is 870 (Table 7). The value of the sex-ratio indicates that there is a considerable excess of males in this population. Among the Gaddis of Bharmour, high fertility is valued and the position of women is quite high. The comparatively high position of women in the Gaddi society is the result of her economic value to the family. During the summer migrations when the men are away with their flocks, the women stay back and tend the fields and are sole incharge of the children's socialisation. During winter migration when men are away again, they work as domestic servants once they reach their destination (the lower hills), thus earning more money for the family. In addition to this, during the migration, while they do not directly look after the sheep and goats, they look after their husbands and cook for them. The economic value that women have in the Gaddi way of life gives them an important and irreplaceable position. So the reason for the low ratio cannot be ascribed to the undercaring of women. It could be a chance occurrence or the rigours of the terrain has taken its toll.

The sex-ratio in most developing regions is low. For example, Sri Lanka (1971), Pakistan (1972), Bangladesh (1974) the sex-ratios are 945, 881 and 925, respectively (UN, 1975). For India in 1981, it was 933, while for Kerala its was 1032.

One of the main reasons for differentials in the sex ratio is the differences in mortality patterns observed in different populations. From the time of birth a female child in India

is at a disadvantage and the discrimination against females continues throughout their life. The high degree of maternal mortality is due to a variety of reasons; some of them are excessive child-bearing, discrimination in giving proper medical attention to female children etc. (Natrajan, 1971; Ramabhadran and Swamy, 1972; Dandekar, 1975.)

The sex-ratio is higher among the developed nations and the cause of this is more natural. In the United States (1975) the Infant Mortality Rate (IMR) for males was 17.9 and for females 14.2; and in Japan (1977) it was 9.9 and 7.8 for males and females, respectively (UN, 1978). In the case of the male child as he grows older and reaches adulthood and old age the various psychological and social stresses, like bread-winning, stresses of job, stresses of social commitments, retirement etc. take toll of the emotional and physical health (Madigan, 1957, 1968; Conrad 1983).

In case of the Gaddis, the sex-ratio (870) is less than the sex-ratio for India (933). The Gaddis show results similar to that of any other community in a developing country in which the literacy level is low. In most of the families, they don't send the female children to schools. they even deny them proper medical attention. Unless their condition is serious; they don't take female children to a hospital. For male children, maximum care and medical attention is given and a strong male preference is observed. Despite all this, the women have economic importance though their status in the society is not at all impressive and their role in decision-making is also very limited. These may be the reasons for the low sex ratio among the Gaddis.

Masculinity Proportion

Masculinity proportion is another measure of sex composition in a population. It is just the percentage of males in a population. Since the sex-ratio is uniformly low among the Gaddis of Bharmour, the masculinity proportion

is above 50. Among the Brahmans it is 52.9, among Rajputs 53.5 and among Scheduled Castes it is 54.0. When we compare the masculinity proportion with that of India and Kerala (51.73 and 49.21, respectively), it is higher than India's and Kerala's.

Age Composition

The Age Composition of a population is a good indicator of the type of population under study. If a population is a developed one the proportion of people in the higher age groups will be more, otherwise the reverse would apply, i.e., if the proportion of people in the younger age groups is more, then the population is a developing one, which is generally the case in India. For India the percentage of population in the 0-14 age group is as high as 40 per cent. In the present study, Age-specific distribution of population among various caste groups of Bharmour indicates a young age structure and a developing population. Among the various caste groups of Bharmour the proportion of population in the 0-14 age group ranges between 39 to 45.0 per cent (Table 8). Among the Brahmans and Rajputs it is 39.8 per cent and 39.7 per cent, almost equal to India's percentage of 40. Among the Scheduled Castes it is as high as 45 per cent. For the Gaddi group (Total) the percentage is 41.0, a clear indicator of high fertility.

As opposed to the population in the 0-14 age groups, that in the 65 and above is very low, which indicates a high mortality or low survival to old age. In India the percentage is high i.e., 6.49 per cent whereas in Nepal and Bhutan these are 3.25 and 4.42 respectively, which are high as compared to the Gaddis. It is 4.0 per cent, 3.3 per cent and 2.7 per cent among the Brahmans, Rajputs and Scheduled Castes, respectively.

Dependency Ratios

(i) Young Age Dependency (YAD)

Age Dependency Ratio among the Gaddis of Bharmour is 75.18. The highest YAD is seen among the Scheduled Castes, 86.0 (Table 9). Among the Brahmans and Rajputs it is 70.82 and 69.65, respectively. For India the YAD is 73.32 (computed from the Census of India 1981). When the population in the 0-14 age group is so high, the YAD tends to be high because the population in the working age of 15-64 reduces.

(ii) Old Age Dependency (OAD)

The Old Age Dependency Ratio is low as the population in the age group 65 and above is low. The survival to old age is not high in this population.

Among the Gaddis, the percentage of population above 65 is low, thus reducing the old age dependency. The problems of aging

Table 8 : Age-specific distribution among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

Population	Age Groups (in years)								
	0-14			15-64			65+		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Brahmans	39.80	39.77	39.80	55.50	56.97	56.20	4.70	3.26	4.00
Rajputs	40.00	39.31	39.70	56.20	57.93	57.00	3.80	2.76	3.30
Scheduled Castes	45.00	44.94	45.00	51.90	52.82	52.30	3.10	2.24	2.70
Gaddis (Total)	41.60	41.30	41.50	54.53	55.94	55.20	3.87	2.76	3.30

Table 9 : Dependency ratios and index of aging among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

Population	Young age dependency ratio (YAD)	Old age dependency ratio (OAD)	Total dependency ratio (TDR)	Index of aging
Brahmans	70.82	7.12	77.94	10.05
Rajputs	69.65	5.79	75.44	8.31
Scheduled Castes	86.00	5.16	91.16	6.00
Gaddis (Total)	75.18	5.98	81.16	7.95

population are almost non-existent, as the survival rate to older ages is low, it is 7.12 for the Brahmans, 5.79 for Rajputs and 5.15 for Scheduled Castes (Table 9). The Indian OAD is 12.03 and that for Kerala 7.89. This indicates a low survival rate to older ages.

India has a young age structure in which children aged 0-14 years comprise 39 per cent of the total population. The age group 15-64 years constitutes 53-96 per cent, while the population aged 65+ years and above is 6.49 per cent of the total population. The difference between the male and female percentages is small.

Among Gaddis, the population in the 0-14 age group is 41.0 per cent, thus showing a young age dependency ratio of 75.18 per cent indicating a young age structure. For the age 65 and above, it is only 3.7 per cent. In the age group 15-64 the percentage is quite high. Gaddis show a tendency similar to any other backward state of India. The low old age dependency 5.98 among Gaddis is probably due to high mortality rates till a few decades back. The total dependency ratio depends on the child dependency ratios and the old age dependency ratio, which is quite high among Gaddis.

NUPTIALITY INDICATORS

Age at Marriage

Marriage, as we know is a socially recognised institution which grants a couple the

liberty to cohabit and share the economic, reproductive and child-rearing functions of a family. The mean age at marriage indicates the average time of family formation. Generally, though not universally, it is only within the confines of a marriage that a woman is initiated into childbirth in most societies. Therefore, age at marriage is a very important demographic and health characteristic. One of the first persons to recognise age at marriage as an important factor in population growth was Malthus. He believed that the 'positive checks' such as wars, sickness and famine affect mortality, while 'preventive checks' such as delayed marriage and permanent celibacy affect fertility (Malthus, 1926). Age at marriage, though in itself a factor for influencing population growth, is also an effect of socio-economic status, education, urbanization, status of women etc. (Srikantan, 1977; Zacharia, 1981; Caldwell et al., 1983; Dyson and Moore, 1983).

As compared to other countries, India has a lower age at marriage and a higher fertility. In India, marriage is an important institution, because of the stigma attached to unwed mothers. On the whole, in India, marriage has been early for women as compared to the practice in other developing nations. Needless to say, developed nations have a higher age at marriage (Fernando, 1982). Mahua (1979) states that in East Asia early marriage is an exception and total fertility is low. Udry and Cliquet (1982) show that in most Asian countries

Table 10 : Percentage of women in reproductive age groups and married women in those age groups among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

Population	Population of married women					
	W15-19	W15-19(m)	W20-24	W20-24(m)	W15-49	W15-49(m)
Gaddis. H.P.	156	11.67	142	56.33	687	54.88

age at marriage has gone up. With this increase, the fertility has declined as in the case of Korea and Taiwan.

In India, earlier the trend was to marry off a girl before she attained menarche or immediately with the attainment, but this was legally abolished by the Sharada Act in 1929. However, this has been no deterrent to believers in early marriage. Now the legal age for girls has been raised to 18 years. Regarding the effect of age at marriage, the National Sample Survey (1960-61) shows that the number of children born decline systematically with higher ages at marriage. This has been corroborated by a study by Majumdar (1969).

In most societies marriage is an important factor in fertility because begetting a progeny is socially accepted only after marriage. However in many societies fertility is more valued and a pregnant girl has more chances of marriage since she has proved her capability as a fertile women. In India, the percentage of married women in the reproductive age groups is as high as 80.00. Among Gaddis, the percentage of married women in the reproductive age groups is 54.88 (Table 10).

Age at marriage among the Gaddi Brahmans is slightly lower (17.8) than among the Rajputs

and Scheduled Castes (18.3 and 18.4, respectively). Among the Gaddi sample age at marriage is 18.2 which is almost equal to India's 18.32, but lower than Kerala's 21.85 (Table 10).

Nuptiality patterns are considered to be important determinants of fertility. It is not only the timing and tempo of the first marriage but also the extent of broken marriages such as widowhood, divorce and separation which constitute significant intermediate variables affecting the time span of the reproductive process and indirectly fertility behaviour (Davis and Blake, 1956). But these factors do not have a bearing on Gaddi fertility. Among the Gaddis the instability of marriages does not affect fertility patterns as women's economic ability and consequent social position has resulted in special institutional privileges that are bestowed on them. To mention only a few (a) In case of the birth of child after the husband's death, irrespective of the time gap, the child if it is born in the husband's house has full inheritance rights; (b) In case the child is born after the husband's death and away from the husband's house, it gets a share of the property from the woman's father or brother and in case of remarriage the child

Table 11 : Mean age at menarche, age at menopause, reproductive span and age at marriage (In years) among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

Population	Age at menarche	Age at menopause	Reproductive span	Age of marriage	
				Female	Male
Brahmans	14.21	44.10	29.92	17.81	22.40
Rajputs	13.92	44.81	30.92	18.32	22.65
Scheduled Castes	14.00	44.32	30.31	18.42	22.21
Gaddis (Total)	14.01	44.41	30.41	18.22	24.42

is entitled to inheritance rights from her new husband. The Gaddis practice fraternal widow inheritance.

BIOLOGICAL FACTORS

Age at Menarche

Age at menarche is the marker of the reproductive period in females. This is the first sign of a woman's attainment of reproductive age. An enumeration of average age at menarche of girls of 24 different countries as presented by Shah (1958) gives the range of 10-18 years. The average age at menarche in a hot climate is reported to be 13 years, in temperate zones 14.3 years and in cold countries 15.8 years. Over the years the age on onset has come down (Tanner et al., 1965). Apparently the onset of menarche starts with the attainment of a critical body weight of 48 kg (Frisch, 1974). This body weight, over the years, has been attained at an earlier age than before, probably because of better nutritional status and consciousness of good health.

Though physically and theoretically a female attains the reproductive age with the attainment of menarche, she is not biologically capable of reproduction for a couple of years after that (Bongaarts, 1975). Age at menarche may in many societies determine the age at marriage, because earlier in many societies a girl was supposed to be married before or immediately after the attainment of menarche (Mandelbaum, 1974). It has many social implications. Indirectly it may determine the age at first birth. Earlier menarche may induce earlier pregnancy and child birth (Freedman et al., 1981).

Age at menarche among the Gaddi Caste groups is almost similar 14.2, 13.9 and 14.0 for the Brahmans, Rajputs and Scheduled Castes respectively (Table 11).

Age at Menopause among Gaddis is however a little less (44.40). This does not show too much of a deviation from the norm.

SOCIO-CULTURAL FACTORS

Family and Economic Status

Several studies have shown negative as well as positive correlation between economic development and demographic behaviour of a community. Omran (1980) found that fertility did not correlate well with measures of economic development (GNP per capita and energy consumption), social development (per cent literate, per cent urban, labour force in agriculture), and health indicators (population per physician, energy consumption). Nagi (1984) found no association between fertility levels and national scores based on education, life expectancy and non-agricultural labour-force.

The ecological conditions in the Bharmour *Tehsil* have several effects on the economic life of the Gaddis. Agriculture production is reduced by the shorter season, low temperature, high altitude and smallness of the lands holdings. The small size of the land holdings is the result of the nature of the tract, steepness of the slope, the fragmentation of land on break-up of a joint family. Historically speaking, all the land belongs to the *Rajah* of Chamba who would rent out small fields to different families. A person was given the right to only as much land as he and his family could personally cultivate. This type of distribution has prevented the emergence of any significant group of large land holders. To compensate for the agriculture deficit the Gaddis raise large flocks of sheep and goat. The lush mountain meadows and grazing grounds in the area facilitate the raising of sheep and goat. Accumulation of snow in winter months prevents the year-round sustenance of large flocks. Consequently the pattern of transhumance is followed. Severe limitation on the land available for cultivation, combined with the low margin of productivity and a lack of market for exporting local products has prevented the emergency of either fulltime specialists or landless labourers. The economy of the Gaddis of

Bharmour is agropastoral. Although agriculture provides the bulk of the staple food, the Gaddis give major importance to sheep and goat rearing. From this source they obtain additional food in the form of meat and milk and wool for clothing. The crops in Bharmour are grown for one's own consumption. The costs of cultivation incurred within the village are generally paid in kind. After one's own needs and obligations are provided for, some of the remaining crops like *Rong* and *Mash* are sold for cash to the merchants of Chamba. In addition, cash enters the village economy through the sale of raw wool and woollen clothes, from wages and salaries earned outside the village and from governmental funds such as housing and pitloom subsidies etc. The

other secondary traditional pursuits are collecting minor forest produce, various kinds of household industries such as spinning and weaving, tailoring and beekeeping, and specialised occupations such as carpentry, iron-smithery, medicine, religious and para-religious activities. More recently, the increase in mercantile and government activity has created new sources of income in transport, road building, construction, whole-selling and retailing. Horticulture, while not yet significant, may become a major source of income in the coming years.

When we describe in terms as general as these, the economy emerges as one typical of a peasant society. It was very difficult to obtain information regarding economic matters.

Table 12 : Occupation-wise distribution among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

S. No.	Occupation		Brahmans		Rajputs		Scheduled Castes		Gaddis (Total)	
	Main	Subsidiary	M	F	M	F	M	F	M	F
1.	Agriculture	Sheep Breeding, Spinning and Weaving	25.0	14.3	46.0	20.2	18.7	6.3	32.8	14.9
2.	Agriculture	Sheep Breeding, Labour, Spinning and Weaving	1.4	—	7.6	5.1	47.3	8.9	15.7	4.4
3.	Blacksmithy	Agriculture, Spinning and Weaving	—	—	—	—	10.7	1.8	2.7	0.4
4.	Shop-keeping	Agriculture, Spinning and Weaving	3.6	—	1.0	—	—	—	1.6	—
5.	Sheep Breeding	Agriculture, Spinning and Weaving	2.1	—	11.6	—	1.8	—	6.2	—
6.	Service	Agriculture, Spinning and Weaving	1.4	—	3.5	—	0.9	—	2.2	—
7.	Agriculture	Labour, Spinning and Weaving	0.7	—	1.0	3.0	2.7	23.2	1.3	7.1
8.	Agriculture	Gharat (Watermill), Labour, Spinning and Weaving	0.7	—	1.5	—	—	—	0.9	—
9.	Agriculture	Shopkeeping, Spinning and Weaving	0.7	—	4.0	—	—	—	2.0	—
10.	Agriculture	Mule driving, Spinning and Weaving	—	—	1.0	—	2.7	—	1.1	—
11.	Agriculture	Tailoring, Spinning and Weaving	3.6	4.3	—	5.1	—	—	1.1	3.6
12.	Silversmithy	Agriculture, Spinning and Weaving	—	—	—	—	1.8	0.9	0.4	0.2
13.	Carpentry	Agriculture, Spinning and Weaving	—	—	1.0	—	—	—	0.4	—
14.	Agriculture	Carpentry, Spinning and Weaving	—	—	1.0	—	—	—	0.4	—
15.	Agriculture	Business	1.4	—	1.0	—	—	—	0.9	—
16.	Sheep Breeding	Labour, Spinning and Weaving	1.4	—	2.5	—	1.8	—	2.0	—
17.	Agriculture	Bee-keeping, Spinning and Weaving	2.1	4.3	2.0	5.1	1.8	—	2.0	3.6
18.	Agriculture	Priest, Spinning and Weaving	42.9	—	—	—	—	—	13.3	—
19.	Nil		13.1	77.1	14.7	61.6	10.0	59.0	12.9	65.8

M = Male F = Female

Villagers were suspicious and reluctant to answer questions about land ownership, production, consumption and other sources of income. Even the *Patwari's* land records were not reliable. Consequently, assessments have been made regarding such matters.

For most of the castes of the Bharmour *Tehsil*, the connection between caste and occupation is not strong. The people who cease to pursue their traditional occupation either become farmers, earn money through animal husbandry or find government jobs. Except for agriculture, people make no effort to invade the traditional occupations for other castes (e.g., Blacksmiths, Goldsmiths and Carpenters). The Gaddis pursue an array of activities but still stay at the subsistence level of economy. Many of them subsist on their produce and barter for other essential commodities. Money is not the usual form of exchange. Therefore the maximum number of people come under the bracket of "no income" in monetary terms. However, it is important for the villager to have cash to pay his land revenue, to get salt for the sheep and goats, to purchase consumer goods from the Chamba or Kangra markets. There are no potters and cobblers in Bharmour. The Gaddis have to buy pots and shoes. As mentioned earlier, cash enters the village economy through the sale of leftover agricultural commodities, raw wool and woollen clothes, from wages and salaries earned outside the village. But the number of such people is few. Table 12 gives occupation-

wise distribution among various castes groups of the Bharmour *Tehsil*.

Table 13 : Crude and general activity rate among various population groups of Gaddis of Bharmour *Tehsil*, Chamba District, Himachal Pradesh

Population	Crude activity rate (CAR)	General activity rate (GAR)
Brahmans	25.40	44.68
Rajputs	28.72	46.50
Scheduled Castes	29.50	48.47
Gaddis (Total)	27.43	45.46

From table 13, it is observed that 93.53 per cent Scheduled Castes 71.72 per cent Brahmans and 61.47 per cent Rajputs come under the income group of less than Rs. 5000. The Rajputs are better off than both the Scheduled Castes and the Brahmans. However only 1.43 per cent Rajputs are under the income bracket of Rs. 20000 and 25000.

For the Gaddis (Total), 35.21, per cent are with no income, 38.21 per cent with less than Rs. 5000, 12.24 per cent with less than Rs. 10000, 9.3 per cent with less than Rs. 15000, 4.21 per cent with less than Rs. 20000 and only 0.17 per cent with less than 25000.

The Crude Activity Rate and General Activity rate are quite low in this population. The CAR among the Brahmans, Rajputs and Scheduled castes are 25.40, 28.72 and 29.50, respectively (Table 14).

Table 14 : Income-wise distribution (percentage) among Gaddis of Bharmour *Tehsil*, Chamba District, Himachal Pradesh

Population	Income					
	Below Rs. 5000	5001 to 10000	10001 to 15000	15001 to 20000	20001 to 25000	25001 & above
Brahmans	71.7	15.4	10.5	2.3	—	—
Rajputs	61.5	18.3	14.5	4.3	1.4	—
Scheduled Castes	93.5	5.2	1.2	—	—	—
Total	73.5	12.2	9.3	4.2	0.7	—

Education

Among socio-cultural factors, education¹ is observed as the most influential factor in differentiating people's social and demographic behaviour. Very often social scientists use education as a socio-economic indicator.

Among the Gaddis of Bharmour, the literacy rate is 24.6 per cent. The male literacy rate is 34.3 and the female literacy rate is 12.2 per cent. Among the Scheduled Caste males the illiteracy is as high as 72.8 per cent followed by Rajput males with 64.3 per cent and Brahman males with 61.2 per cent. The illiteracy among females of all the three groups is very high—92.3, 82.6 and 81.3 per cent, respectively for the Scheduled Castes, Rajputs and Brahmans (Table 15). The highest percentage of people are educated up to primary school 12.2 per cent. The Gaddis show the lowest literacy rate, 24.6, as compared to Himachal Pradesh's 42.48 per cent, and Kerala's 70.42 per cent. It is even less than India's literacy rate of 36.07.

In the erstwhile hill state of Chamba of which Bharmour forms a part, adequate facilities were not available to the people and were

almost non-existent for the education of women. Whatever school did exist were generally housed in dingy, dilapidated buildings. There was hardly any equipment and they were poorly staffed. The Gaddis are transhumants and the means of communications were little, so the education of the children was not possible. The literacy rate was very low. It was a gigantic task to organise an education programme in this area. Because of the difficult terrain and the rigorous climate, trained teachers were not attracted to this area. It was necessary to appoint teachers from outside by providing incentives in the form of extra pay, residential and medical facilities etc.

In spite of the efforts put in by the government for spreading education, the education facilities have only touched the fringe of the population. The people are still shy of sending their children to school because of a subsistence economy and non-availability of labour. As there is a shortage of labour in the area, parents need the help of the children in minor agricultural operations like weeding, thrashing, grazing of cattle, minor forest produce collection etc.

The schools are not in the vicinity of the villages, and the students have to walk to reach

Table 15 : Specific literacy (in percentage) among Gaddis of Bharmour Tehsil, Chamba District, Himachal Pradesh

Population	Sex	Illiterate	Literate	Primary	Middle	High	Graduation
Brahmans	M	61.2	38.8	12.8	15.3	8.7	2.0
	F	81.3	19.7	12.1	5.4	2.2	—
Rajputs	M	64.3	35.7	14.7	12.6	7.4	1.0
	F	82.6	17.4	10.7	4.8	1.9	—
Scheduled Caste	M	72.8	21.2	15.2	4.2	1.8	—
	F	92.3	7.7	7.7	—	—	—
Gaddis (Total)	M	66.7	34.3	14.0	12.0	7.3	1.0
	F	87.8	12.2	7.6	3.4	1.2	—

M = Male F = Female

1. A person who can both read and write with understanding in any language is to be taken as literate. A person who can merely read out and cannot write, is not literate. It is not necessary that a person who is literate should have received any formal education or should have passed any minimum educational standard.

them. Thirty per cent of the school-going children have to walk more than four kilometers to the school. As the terrain is hilly and difficult, much time is consumed in coming and going to school.

At home the parents also require their help in domestic matters, so very little time is left for studying. This acts as a big handicap in the education of children. All the villages are not electrified in the Bharmour Tehsil, and most of the people cannot buy kerosene for burning the lamps. They usually burn *Jagri* at night and the children cannot read in this light.

In addition to this, the people are afraid to send their children to schools because of the fear of emigration. According to local people, education always encourages emigration i.e., they want to go out of the village to the nearby city and work there in some office. This results in the reduction of the working force.

Education is however very necessary for rousing interest among people for improving their economic conditions and for creating a healthy and clean environment to live in. It is through education alone that radical changes in the economic and social life can be brought about.

Status of Women

The status of women is an important factor affecting the demographic character of a community as women are discriminated against and their accessibility to various welfare services such as education, public health and employment etc. is limited. In a society where women are mainly concerned with domestic affairs and raising children, not only would the economic development of that society be retarded but its fertility would also be high. Subordination of women to men, lack of communication between husband and wife, limited female access to medical facilities, education and employment opportunities, act as obstacles to over-all development.

The United Nation has defined the status of women as the "conjunction of position a woman occupies as a worker, student, wife, mother..., of the power and prestige attached to these positions, and of the rights and duties she is expected to exercise" (U.N., 1975). "To what extent do women, compared with men,

have access to knowledge, to economic resources and to political power, and what degree of personal autonomy do these resources permit in the process of decision-making and choice at crucial point in the life cycle?" (Ibid).

The low status of women derives from a lack of control over material or social resources and from a lack of choice in the unfolding of one's destiny. A single measure cannot be used to assess the status of women' rather "a multi-dimensional cluster of variables" is required to indicate their status. Status is not a fixed, rigid concept, it changes over time. Women occupy different position in the social structure as they pass through the life cycle, and the very basis upon which the community ascribes power, privilege and prestige also changes.

The status of women can be ascertained by the educational achievements of women, legal rights and status given to them, employment opportunities and demographic characteristics of women in socio-cultural terms.

Mason (1984) points out that the status of women has three distinct and not necessarily overlapping, dimensions—prestige, power and autonomy—that need to be measured separately. Caldwell and Caldwell (1983) has defined the autonomy as the ability to make decision about education, employment and health care. Studies have shown that marriage payments and residence pattern also affect the status of women. Where marriage is exogamous and residence is neolocal, new bride is completely cut off from all female networks: She is thus, *vis-a-vis* her in-laws, in a position similar to that of household servant. In most of India, marriage is accompanied by the payment of a dowry, which makes it a heavy economic burden for parents to have many daughters and may constitute an important factor in the devaluation of daughters.

It has been argued that in societies in which the status of women is low, fertility is high. The link between lower status and high fertility/poor health is believed to operate in two mutually reinforcing ways. First, lower status

means restricted access to education and employment, two major determinants of improved health and lower fertility. Second, a women's legal and economic dependence, limits her alternatives to childbearing, to produce more sons whom she can influence and rely on for support. This has been shown by many studies in South Asia. Cain (1984) found high fertility in patriarchal societies.

It has already been pointed out that literacy rate among the Gaddis of Bharmour is low being 12.2 per cent, as against India's female literacy rate of 24.82 per cent. Girls are not sent to school as they are needed at home to look after the small children or to do other odd jobs at homes.

The sex-ratio 870 among Gaddis is low. The low sex-ratio indicates that there is excess of males in this population. As regards, legal rights daughters have no rights to land, only few items are given at the time of marriage.

As mentioned earlier, the ecological conditions in Bharmour, have resulted in the subsistence economy of the area. Agricultural production has been limited because of the scarcity of cultivable land, shorter working season, severe cold and snow, absence of irrigation, mechanised tools and restricted ways of communication. To compensate for the agriculture deficit, people have to depend on pastoralism. Pastoralism requires that the life approaches of the people be adjusted to the requisites of the animal; that is, movement to pastures at high altitudes in summer and to low in winter. People have to remain mobile. This type of economic cycle and division of labour in the area has given an important role to the women. The economic role has undoubtedly affected the social position of women. There is a cultural similarity among the several castes in Bharmour, as women from the different castes have the same economic role to play, necessitated by the demands of the environment. Economic activities of the women include all agricultural activities (except ploughing), looking after the house, children

and cattle. When men are away for herding (sheep and goats) it is the sole responsibility of women to look after the house and the agricultural works which are necessary for survival in these parts. Although the Gaddis are patrilineal and patrilocal, yet due to the various factors listed, the family assumes a mother-centredness with the children. Men are out for pastoral activities, so the socialisation of children automatically becomes the mother's business. The Gaddi women are very strong and courageous in the handling of environmental imperatives as can be demonstrated in the trekking and work pattern under the severe limitations of the harsh environment. The economic value that women have in the Gaddi way of life has given them an important and irreplaceable position. The cultural acceptance of the fact of their raised status has given them a voice in household affairs that is almost equal to that of their husbands. This in turn, is reflected in culturally sanctioned statuses and roles *i.e.*, rights, duties, obligations in respect of pre-pubertal, post-pubertal, unmarried, married and post-married states.

However, there are certain domains in which men continue to dominate, as is culturally required. Moreover, community authority still is in the hands of men. There is a kind of duality observed here. Men dominate in public and community affairs and continue to play the role of the head of the family and bread winner. Women due to division of labour, enjoy special economic power, greater say in family life, great deal of social freedom and several of their actions are condoned/tolerated which would not be the case if their economic importance were not so great.

This has been a very important factor in the fertility behaviour of a society. Traditionally, in most societies of the world, women have tried to enhance their status in the society by having more children, which was the only way they could have any semblance of recognition (Blake, 1967; Nag, 1968; Bossen, 1974; Blumberg, 1976).