CHANGING SITUATION FROM HUNTING-GATHERING TO FOOD PRODUCTION: TWO SELECTED TRIBAL GROUPS OF INDIA

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BACKGROUND

In India, prehistoric sites are large in number and the yielded materials are enormous. Prehistoric stone tools supply information on technological skills, exploitation of tool-making materials, utilization of food resources, life styles, and above all the presence of early hominids. The broad cultural chronology for prehistoric times is reconstructed on the basis of artifactual data. Hence is made the definition of the Palaeolithic and Neolithic cultural periods. A discrete distinction is found between the populations groups of these two periods, primarily on the basis of economic pursuits.

Hunting and gathering was the major form of economy for the Palaeolithic hominids. The new economic trait of agriculture which heralds the Neolithic signified changes in other dimensions of culture. But direct information on the demographic features of the two populations is seldom available. As a result, only conjectures are made, and even here the data are incomplete and much below the level of minimum significance.

Attempts have been made to reconstruct aspects of prehistoric life and culture using data from tribal groups of present day India (Misra 1974; Nagar 1982, 1983; Murty 1981; Rao *et. al.* 1980; Raju 1988; Bhaskar 1990). All these works are oriented towards an ethnoarchaeological dimension. A synthetic study of ethnoarchaeology in the Indian context has been presented by Dhavlikar (1982). Away from the Indian scene similar problems, both in theoretical and practical terms, have been dealt with by many scholars (Sollas 1924; Asher 1961; Lee and DeVore 1968; Binford 1964, 1968; Jochim 1976; Gould 1978, 1980; Kabo 1985; Testart 1988). But nowhere has serious effort yet been paid to demographic aspects. This work is perhaps the first endeavour in the direction of so-far little known facts about Indian tribal demography.

In the present work two east Indian tribal groups have been selected, the Kharias and the Santals. Today the Kharias are no longer strictly hunter-gatherers, having passed through cultural transformations, probably due to compulsion. As a result, besides hunting and gathering they also follow other forms of economic activity, including

Indo-Pacific Prehistory Assn. Bulletin 10, 1991:173-183 (P. Bellwood ed., *Indo-Pacific Prehistory 1990*, Vol 1)
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agriculture, in order to survive. They may be termed marginal hunter-gatherers, perhaps a deviated form of economy from an original fully-fledged stage of hunting-gathering (Roy *et al.* 1937; Das 1931; Sinha 1984).

The Santals are dependent on agriculture. Hunting and gathering was recorded by earlier observers in addition to agriculture (Chattopadhyay 1946, 1949; Biswas 1956; Datta Majumdar 1956) but such activities are only found now as vestiges, as expressions of ritual. The differing economic conditions of the Kharias and the Santal have given rise to discrete characteristics in terms of habitations, division of labour and demography.

In terms of economic activities the Kharias and Santals may be compared to Palaeolithic and Neolithic cultures respectively. These equations are not absolute but they may have a bearing on an understanding of prehistoric demography in India. The regions where the Kharias and Santals are living today were also occupied by early hominids, as is evident from the stone tools and other artifacts recovered (Ghosh 1970). The Kharias live broadly in the Subarnarekha basin which drains part of the Chotanagpur plateau. In this region there existed succesive Palaeolithic technologies; the Pebble Core, Flake, and Flake-Blade elements, followed by the Blade-Bladelet tradition. From one technological unit to its successor, economic activities evolved in terms of selection and economical use of lithic raw materials, technology of fabrication, and specialized utilization. The Kharias do not use stone for tools today, but depend on wood, bamboo and other organic materials, together with iron obtained from the local market.

The Santal situation is somewhat different. One of the two Santal populations studied lives in the Tarapheni river basin, a tributary of the Kasai. Like the Subarnarekha basin both Palaeolithic and Neolithic sites are present here. The Kharias who live in this region are marginal hunter-gatherers and do not match the Santals in terms of agricultural skills and connected economic activities. Both Kharias and Santals are able to coexist despite their diverse cultures and different economic activities. Contact does not always lead to changes in the forms and contents of cultural traits.

A total of eight Kharia villages were studied. These are Kharia colony (an agglomeration of three small hamlets called Paora, Gohandi and Chenjora), Darisai, Ghutia, Kesarpur, Khariadih, Narsinghpur, Pirrabad and Haludbani. All these villages are situated in the Subarnarekha basin. Two Santal villages, Chotokhurshi and Bonsole, were also taken for study. The former village is within the area of Kharia villages in the Subarnarekna basin. The second village is situated in the Tarapheni valley. On the high banks of the Subarnarekha, there are a number of Palaeolithic sites, indicating the fact that hunter-gatherers used to live in this area for a very long period of time. The area where Bonsole is situated has also yielded quite a large number of both Palaeolithic and Neolithic sites.

METHODOLOGY OF THE STUDY

General information about the Kharia and Santal villages selected for study was first collected. Village censuses were recorded for name, sex and age of all individuals and place of birth to detect migration patterns. Clan affiliation was also recorded, together

with marital status and age at marriage. In the case of occupations, both primary and secondary levels were recorded. For measuring energy output and division of labour, the major work undertaken by each individual was also recorded.

Both hunting-gathering groups and agriculturalists today possess domestic animals. Types of animals and their respective numbers were recorded together with information about their uses and their longevity. Information was also collected on the types of tools used, their numbers and functions, materials and life-spans. It is proposed that there is a fundamental correlation between the range of tool types present and the size of the population. On the basis of this correlation an extrapolation may be formulated for the population sizes of the prehistoric populations of the same region.

DATA AND RESULTS

Census analysis was carried out for each village. The total number of Santal households and their average populations are shown in Table 1, and the same data are given for the Kharia in Table 2. Adding Kharias and Santals together the total population sample is 1084 persons and the total family sample is 246.

	No. of Households	Total Population	Average No. of People per Family
Bonsole	75	392	5.23
Choto Khurshi	30	159	5.30
Total	105	551	5.26

TABLE 1: SANTAL POPULATION DISTRIBUTION BY VILLAGE

One of the main foci of the present undertaking was specifically on those demographic features which may give rise to information on fertility, birth rates, marriage patterns and death rates (Barclay 1970; Thompson and Lewis 1978). All the above types of data are expected to generate ideas about the population dynamics of both the groups under consideration.

The total population of the Kharia villages under survey is 533, with 277 (51.97%) males and 256 (48.03%) females (Table 4), distributed in 141 families in eight villages. The average number of people per family is 3.78. The total population of the Santal villages studied is 551, with 272 (49.36%) males and 279 (50.64%) females, distributed among 105 families in two villages. The average number of persons per Santal family is 5.26%. From these basic data it can be seen that the hunter-gatherers tend to smaller family groups than the agriculturists.

When the numbers of persons in families are considered in terms of percentages (Table 3 and Fig. 1), it is found that the Kharia have greater percentages of families with one to four members than the Santals, who have greater percentages with five or more members. One exceptional Santal family has 17 members.

From the data on sex and age in 5 year intervals (Table 4 and Fig. 2) it can be seen that maximum ages are greater amongst the Santals, who occasionally attain ages of 81-85 years. Within the age group of 0-5 years the percentages are much higher for Kharias (18.01%) than for Santals (9.80%). The same occurs with the next age group of 6-10 years; 12.20% among the Kharia and 11.98% for the Santals.

	No. of Households	Total Population	Average No. of People per Family
Kharia colony	34	140	4.12
Darisai	11	49	4.45
Ghutia	17	68	4.00
Kesarpur	21	72	3.43
Khariadih	17	88	3.23
Narsinghpur	9	34	3.77
Pirrabad	20	71	3.55
Haludbani	12	44	3.67
Total	141	533	3.78

TABLE 2: KHARIA POPULATION DISTRIBUTION BY VILLAGE

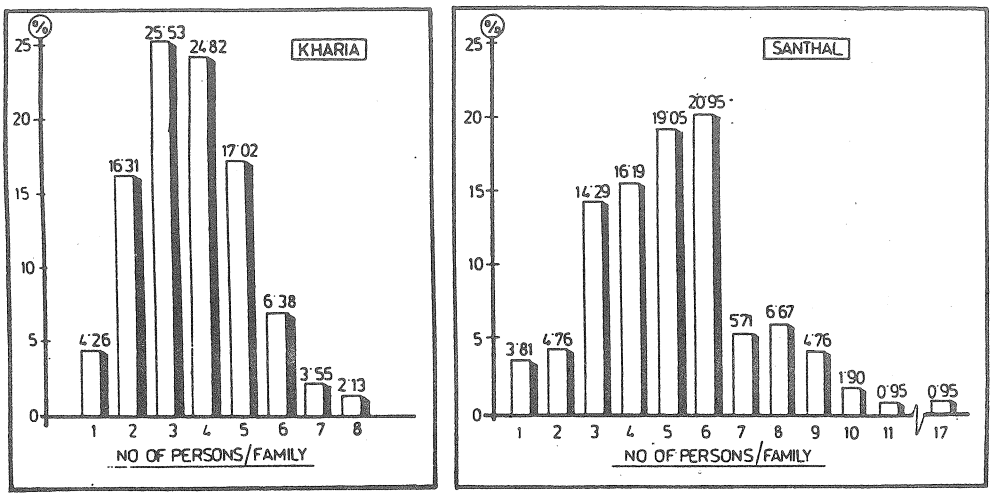

FIGURE 1: KHARIA AND SANTAL: DISTRIBUTION OF FAMILY SIZES

In the 11-15 year division the Santals have higher percentages (9.62%) than the Kharias (only 4.69%). This shows that the death rate of children between 11 and 15 years is greater among the Kharias than the Santals. In the next three divisions (16-20, 21-25 and 26-30 years) the Kharias again have higher percentages than the Santal, whereas from 30 years of age onwards the situation is reversed, with higher percentages for Santals. Through the last ten age groups (31-80 years) the percentages drop quickly

among the Kharias. More old people are present among the Santals, and 55 years is practically the terminal end of a Kharia's life. These results may be accounted for in terms of availability of food resources and the long-term demands on the human body in terms of labour and stress. In fact, above the age of 50 years the Kharias become dependent upon their younger generations.

There is a conspicuous difference in the sex ratios of the two populations. In the case of the Santals, the ratio between males and females is 272:279, with a dominance of females by 2.57%. In the case of the Kharias the sex ratio is 277:256, females being fewer in numbers than males by 7.58%. Variability of this kind is hard to explain, but it appears that in a stabilized (Santal) economy the proportion of females is more than in an unstabilized (Kharia) one.

No. of Persons per Family	Kharia		Santal	
	n	%	n	%
1	6	4.26	4	3.81
2	23	16.31	5	4.76
3	36	25.53	15	14.29
4	35	24.82	17	16.19
5	24	17.02	20	19.05
6	9	6.38	22	20.95
7	5	3.55	6	5.71
8	3	2.13	7	6.67
9	-		5	4.76
10	-		2	1.90
11	-		1	0.95
12-16	-		-	0.0
17	-		1	0.95
	141		105	

TABLE 3: KHARIA AND SANTAL; NUMBER OF PERSONS PER FAMILY

When male-female ratios are compared for different age groups of the Kharia population (Table 4, Fig. 2) it can be seen that females are fewer than males in the 0-15, 26-35, 46-50, 51-55, 61-70 and 76-80 year divisions. On the other hand, percentages of females are higher than for males in the 16-25, 36-45, 56-60 and 71-75 year divisions. It is true that in any population the sex ratio can be expected to vary on a random basis in each age group, but in this case the base level population of females is appreciably less than for males. Compared to the Santal population, for the Kharias it can only be said that in recent times there has been a sudden drop in economic condition, giving rise to child and female mortality. This is possibly due in part to malnutrition caused by deforestation and economic incompatibility, emphasised by exploitation by and competition with other neighbouring groups. Recent catastrophies caused by pollution cannot be ignored as another major factor.

Among the Santals, analysis on the basis of age groups shows that up to 10 years the percentage of children in the population is quite high (Table 3). For 11-15 years it comes

Age group in years		Kharia Male	Famale	Total	Santal Male	Female	Total
0 - 5	n	54	42	96	21	33	54
	%	10.13	7.88	18.01	3.81	5.99	9.80
6 - 10	n	38	27	65	36	30	66
	%	7.13	5.07	12.20	6.53	5.44	11.98
11 - 15	n	15	10	25	25	28	53
	%	2.81	1.88	4.69	4.54	5.08	9.62
16 - 20	n	17	36	53	25	26	51
	%	3.19	6.75	9.94	4.54	4.72	9.26
21 - 25	n	29	50	79	31	28	59
	%	5.44	9.38	14.82	5.63	5.08	10.71
26 - 30	n	48	31	79	33	30	63
	%	9.00	5.82	14.82	5.99	5.44	11.43
31 - 35	n	25	13	38	21	20	41
	%	4.69	2.44	7.13	3.81	3.63	7.44
36 - 40	n	15	17	32	19	17	36
	%	2.81	3.19	6.00	3.45	3.09	6.53
41 - 45	n	11	13	24	12	16	28
	%	2.06	2.44	4.50	2.18	2.90	5.08
46 - 50	n	10	9	19	13	11	24
	%	1.88	1.68	3.56	2.36	2.00	4.36
51 - 55	n	8	4	12	9	7	16
	%	1.50	0.75	2.25	1.63	1.27	2.90
56 - 60	n	2	3	5	7	11	18
	%	0.38	0.56	0.94	1.27	2.00	3.27
61 - 65	n	2	0	2	5	9	14
	%	0.38		0.38	0.91	1.63	2.54
66 - 70	n	1	0	1	8	8	16
	%	0.19		0.19	1.45	1.45	2.90
71 - 75	n	0	1	1	3	1	4
	%		0.19	0.19	0.54	0.18	0.73
76 - 80	n	2	0	2.	3	3	6
	%	0.38		0.38	0.54	0.54	1.09
81 - 85	n	0	0	0	1	1	2
	%				0.18	0.18	0.36
	n	277	256	533	270	279	551
	%	51.97	48.03		49.36	50.64	

TABLE 4: DISTRIBUTION OF THE KHARIA AND SANTAL POPULATIONS BY AGE GROUP AND GENDER

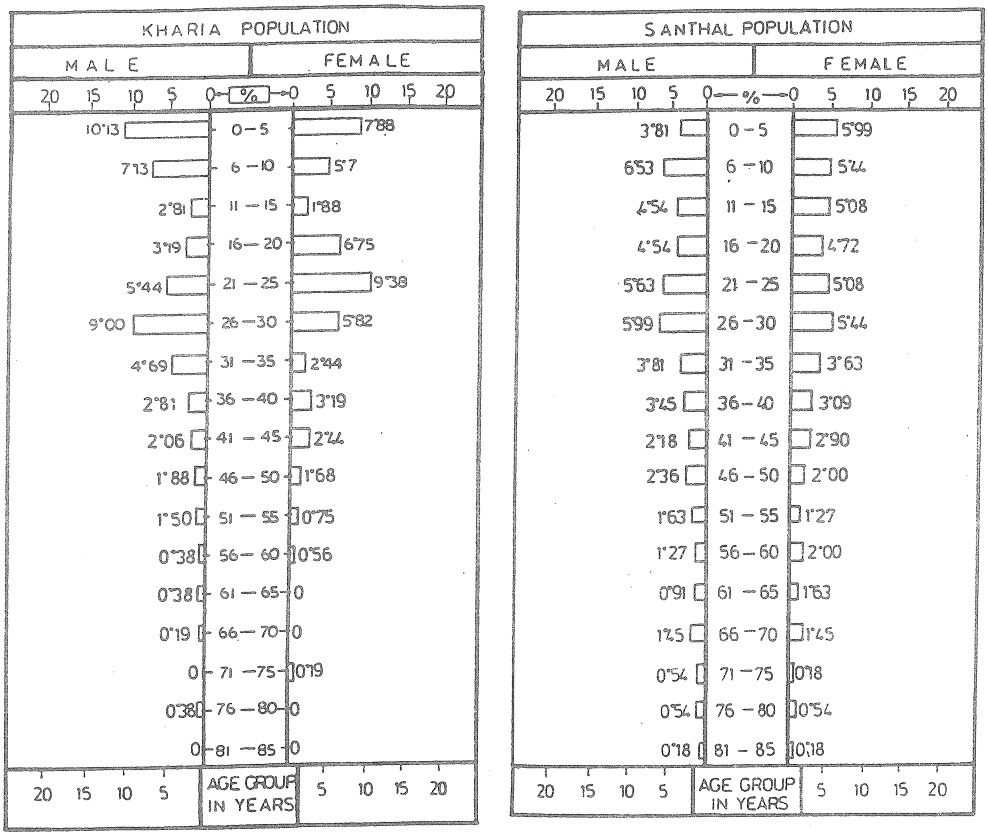

FIGURE 2: POPULATION PYRAMIDS FOR THE KHARIA AND SANTAL POPULATIONS

down a little (9.62%), but rises again between 21 and 30 years. After 30 years the percentages drops gradually, though there are minor fluctuations.

When the male-female ratios are examined for the total Santal population it can be seen that females are fewer in the 6-10, 21-40, 46-55 and 71-75 year age groups. Percentages of females are higher in the 0-5, 11-20, 41-45 and 56-65 year age groups, but percentages of male and female are the same in the 66-70, 76-80 and 81-85 year age groups. Generally, among the Santals it can be seen that proportional numbers of children under 20 years of age are quite low. This is due either to a high child mortality rate or to the effects of family planning programmes.

DOMESTIC ANIMALS

Data on domestic animals (Table 5) show that the numbers possessed by the Santals are much higher (1430) than for the Kharias (715). Seven animal types are domesticated by both groups, these being cows, bullocks, goats, pigs, dogs, hens and ducks. The Kharia

Domestic Animals	Kharia n	Kharia %	Santal n	Santal %
Bullocks	88	12.31	155	10.84
Cows	12	1.68	96	6.71
Goats	105	14.69	184	12.87
Pigs	4	0.56	21	1.47
Hens	426	59.58	725	50.70
Dogs	74	10.35	43	3.01
Sheep	0		24	1.68
Buffaloes (male)	0		12	0.84
Ducks	6	0.84	2	0.14
Parrots	0		6	0.42
Pigeons	0		160	11.19
Cats	0		2	0.14
Total	715		1430	

TABLE 5: DOMESTIC ANIMALS OWNED BY KHARIA AND SANTAL POPULATIONS

Tools	Kharia n	Kharia %	Santal n	Santal %
Ploughs	47	5.34	105	7.00
Yokes	40	0.57	101	6.73
Ladders	22	2.50	52	3.47
Sickles	334	40.83	307	20.47
Hoes	140	15.91	136	9.07
Iron digging sticks	81	9.20	71	4.73
Axes	148	16.82	124	8.27
Batali	13	1.48	68	4.53
Katari	0		12	4.80
Barsi	9	1.02	66	4.40
Chanikata	0		72	4.80
Picks	28	3.18	51	3.40
Saws	0		30	2.00
Agar	0		24	1.60
Bhomor	0		22	1.47
Bank	0		92	6.13
Hammers	13	1.48	23	1.53
Knives	0		71	4.73
Bullock carts	0		10	0.67
Randa	0		3	0.20
Pakhura (Banghlia)	5	0.57	0	
Total	880	100.00	1500	100.00

TABLE 6: TOOL OWNERSHIP IN THE KHARIA AND SANTAL POPULATIONS

have a greater percentage of hens than the Santals, and also relatively more goats, bullocks and dogs. But the possession of cows is higher among the Santals (6.71) than the Kharias (1.68%), and likewise pigs. Sheep, male buffaloes, parrots, cats and pigeons are kept only by the Santals.

TOOLS USED FOR ECONOMIC ACTIVITIES

Data on tools used for economic purpose show that the Santals have many more than the Kharias (Table 6). Nine tool types are common to both the Kharias and Santals, these being ploughs, sickles, bows, axes, iron digging sticks, picks, chisels *(batali)*, hammers and fishhooks. The Kharias have proportionally more sickles, hoes, iron digging sticks and axes than the Santals, whereas the Santals have proportionally more ploughs, chisels (*batali*) and fishhooks. The wide-edged chisel (*pakhura*) is found only among the Kharias. The tool types used only by the Santals are yokes, ladders, drills (*bhomor*), scrapers (*randa*), *bank*, knives and bullock carts.

Tools	Kharia		Santal	
	n	%	n	%
Bows	165	8.30	158	7.22
Arrows	975	49.04	1138	52.01
Tangi	12	0.60	39	1.78
Swords	1	0.05	4	0.18
Bhojali	2	0.10	2	0.09
Ballam	3	0.15	17	0.78
Wooden sticks	210	10.56	247	11.29
Ghughi	148	7.44	46	2.10
Pata	146	7.35	148	6.76
Ghuni	0		36	1.65
Baskets	166	8.35	107	4.89
Buckets	153	7.70	123	5.62
Fishing nets	5	0.25	13	0.59
Fishing rods	2	0.10	110	5.01
Total	1988	100.00	2188	100.00

TABLE 7: OWNERSHIP OF HUNTING AND FISHING TOOLS AMONGST THE KHARIA AND SANTALS

Data on tools used for hunting and fishing (Table 7) again show that the Santals possess more than the Kharias. All, however, are used by both groups, except for fish traps (*ghuni*) which are used only by the Santals. The Kharia have relatively more *ghugi, pata,* baskets and buckets (all used in fishing) but the Santals have more fishing rods and nets.

The differences in the proportional importance of tools types in the two communities indicate differences in economic activities, as well as a dependence on separate stages of technology both in manufacturing and utilization.

CONCLUSION

The population pyramid for the Santals is almost regular in terms of decrease of population with increasing age. The Kharia have a pyramid of more irregular shape (Fig. 1) which may reflect susceptibility to minor shifts of environmental conditions. The differences between the two groups may throw some light on the differential constitution of Palaeolithic hunter-gatherers and Neolithic agriculturalists, although obviously only in very broad terms.

In the demographic analysis and results a number of factors may be presumed to be interrelated. Food resources and environmental conditions are related to each other. Changes in demography are brought partly about by deficits or surpluses of food. This observation is most apt for the Kharias who are dependent on the less stable group of resources. Such constraints are less for the Santals, who depend on traditional methods of food production.

Cultural traits of both material and social kinds are of great relevance in the sector of economy. The development of culture brings about economic security. This has a close relationship with biological traits in varying degree. Efficient and better tools are made with improvements in technology and the level of economy is correspondingly elevated, giving rise to an accumulation and possession of a greater quantum of food. Life espectancy thereby increases, which assures an increase in and stabilization of population. As a matter of fact, the economy has close connection with culture and biology and improvements in both sectors largely depend on the total economy.

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