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Socio-Cultural Variation and Selection Intensity Among the Oraon of Assam

Sarthak Sengupta[1] and Arundhati Gogoi Phukan[2]

1. Department of Anthropology, North Eastern Hill University, Shillong 793 014, Meghalaya, India
2. Omiya Kumar Das Institute of Social Change and Development, Guwahati 781 001, Assam, India

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ABSTRACT Selection potential based on differential fertility and mortality has been computed for Oraons of Dibrugath District, Assam. Total index of selection is acting with relatively greater intensity among Christian Oraons compared to their Hindu counterparts. The index is much lower in ex-tea Oraon labourers than those who still work in tea plantation as labourers.

INTRODUCTION

Natural selection is one of the major evolutionary forces that acts on population causing gradual modification by bringing about changes in the genetic make up. Spuhler (1973) has suggested that selection operates at three different levels - total or individual selection, phenotypical selection and genotypical selection. Population geneticists regarded selection as a genetical phenomenon that has been operating in all human populations through differential fertility and mortality and which in turn helps to measure the *'fitness'* of a particular population in a particular environment. Here *'fitness'* means 'the reproductive capacities of an individual or class of individuals in terms of numbers of offspring they contribute to the next generation' (Spuhler, 1973).

In order to estimate the total selection intensity, Crow (1958) devised an index which was later on improvised by Johnston and Kensinger (1971) to measure the maximum potential rate of change through differential mortality and fertility in a population. There would be no change in the genetic make up of a population through selection, if the computed value of the index comes to zero (Livingstone and Spuhler, 1965).

The total potential opportunity for genetic selection in human population and its components due to fertility and mortality had been widely used to study variations among population groups/sub-groups inhabiting diverse physical and/or socio-cultural environments (Spuhler, 1962; Morton, 1970). Several studies conducted in different regions of the world indicate influence of a variety of socio-cultural factors on the total selection intensity and its components.

Salzano (1963) suggested that the variation in the relative contribution of the fertility component to the total index of selection may indicate the degree of influence of culture, behaviour and such other factors on the fitness of populations. The total selection intensity remains high in industrial population because of high differential fertility relatively low pre-adult mortality (Spuhler, 1962).

In India, few studies show micro-variations among ethnic groups/sub-groups of population (Gupta, 1980; Debnath and Sen, 1983). A few studies demonstrate the effect, particularly two major socio-cultural factors *viz.*, religion and rural-urban residence (habitat) on the index. The index is observed to vary between subgroups distinguishable by occupation and degree of urban contact (Basu and Mukhopadhay, 1980; Padmanabham, 1985; Sengupta and Chakravarty, 1996); economic status (Bharati, 1981); religion (Mukhopadhay, 1989; Bhasin and Kshatriya, 1990).

In view of this, in the present note an attempt has been made to examine the possibility of variation among the Oraon of Assam in respect of index of opportunity for section (I) and its fertility (I_f) and mortality (I_m) component, in

relation to religion (Hindu and Christian Oraon) and habitat (Oraons living in the tea garden *line* and ex-tea labour *bastees*).

In Assam, the tea plantation labourer were recruited for job on term basis for a period of 3-5 years. In the initial years, very few labourers renewed their job in plantations after the expiry of the bonded period. During that time in Assam abundant land was lying vacant covered with thick jungles. They preferred to stay free from severs bondage of plantation management and opted for setting in the virgin land of Assam. Many labourers deserted plantation job also due to inhuman and tyrannic behaviour of the plantation management. Within a very short period, a large number of waste land was occupied by time-expired labourers and deserters. Now, they are popularly called as ex-tea garden labourers despite the fact that most of them have already passed 2-3 generations since they left the tea-gardens.

MATERIAL AND METHOD

The Oraon are a Dravidian speaking population who migrated from Chotonagpur plateau to Assam as early in the middle of the nineteenth century mostly as tea garden labourers. In Assam majority of them identified themselves as Hindu (*Sansari*), while Oraons subscribing to Christian faith are also considerable in number. Though the Hindu and Christian Oraons live side by side, the interaction between these two segments seem to be very limited in their day to day life as well as in socio-religious celebrations. The Hindu Oraons have been found to avoid interdining and matrimonial alliances with the Christian counterpart.

The study samples were collected from few tea gardens namely Basmatia, Hatiali, Kailaspur, Lengrai, Nandanban, Temafco tea estates and a number of ex-tea garden Oraon settlements namely Basapathar, Dihinghula, Siringhula and Bamunikuriha gaon in Madarkhat and Tengakhat Circle under Dibrugarh district, Assam.

The Oraon sample drawn from tea gardens are relatively more exposed to and benefited by the modern facilities provided by Plantation Labour Act (1951) and which are usually available in urban centres. On the other hand, their ex-tea labour counterparts living in *bastees* (villages) in typical rural situation do not enjoy such benefit through any statutory measures.

For the computation of selection intensity, the fertility and mortality data from 220 Oraon mothers who had completed their reproductive life span (*i.e.* aged 45 years and above) were only considered. Index of selection intensity has been calculated after Crow (1958) and also from early embryonic stage (Johnston and Kensinger, 1971) which separates the index due to mortality into pre-natal and post-natal components.

Women whose husbands are alive and have at least one child are only interviewed. Difficulties were experience in the assessment of age in case of few elderly women. In such cases age was estimated with reference to some important local events and also with the help of other persons in the household/village. Similarly, the information given by the mothers were cross-checked and varified from their respective husbands or/and elderly women of the household to minimize chances of recall lapses in informations. In the present study, the abortion cases reported are those of spontaneous abortion only.

The present data on Oraon has also been compared with other populations of north eastern India, obtained by others.

RESULTS AND DISCUSSION

There are wide variations between the Oraon sub-samples of both tea garden and ex-tea labour settlements. The data presented in table 1 shows that the average number of live births per married women aged 45+ years is comparatively higher among the Hindu Oraon than the Christian Oraons. The variance of fertility on the other hand, is higher among the Christian Oraon than their Hindu counterparts. Proportion

Table 1 : Demographic variables used in calculating selection potential

S. No.	Particulars	Tea Garden Oraon			Ex-tea Garden Oraon			Oraon		
		Hindu	Christian	Pooled	Hindu	Christian	Pooled	Hindu	Christian	Pooled
1.	No. of women interviewed (aged 45 yrs and above)	72	50	122	52	46	98	124	96	220
2.	No. of reported pregnancy	477	279	756	353	314	667	830	593	1423
3.	No. of live births	440	250	690	320	283	602	760	532	1292
4.	No. of embryonic death	37	30	67	33	32	55	70	62	132
5.	No. of premature death (*i.e.* upto 15 yrs of age)	51	14	65	26	25	51	77	39	116
6.	Proportion of survivors from 15 yrs of age and above	389	236	625	294	257	551	683	493	1176
7.	Mean live births per women	6.11	5.00	5.66	6.15	6.13	6.14	6.13	5.54	5.87
8.	Variance (SD2) in the number of live births	3.8611	4.6096	4.6108	3.9810	4.7730	4.3588	3.9567	4.9579	4.5265

of premature death is much higher among the Hindu Oraon compared to Christian Oraons working in tea gardens. The two sub-samples of ex-tea garden labourers have almost identical proportions with regard to embryonic and premature deaths.

The indices of total selection for the Oraon have been computed and presented in table 2. It is evident that irrespective of methodology (Crow, 1958; Johnston and Kensinger, 1971), the index of total selection is found to be higher among the Oraon working in tea gardens of Assam. Thus, selection pressure is more in tea garden Oraons than that in ex-tea garden Oraon labour sub-samples. It is also apparent that irrespective of habitat, Christian have higher values compared to Hindus with respect to the index of opportunity for selection (I) as well as its fertility (I_f) components. Furthermore, both Hindu and Christian Oraons of tea gardens have higher values compared to the ex-tea Oraon labours with respect to I and I_f. While the values of I_m for the Hindu Oraon of tea garden is higher than that of their ex-tea labour counterparts, the ex-tea Christian Oraon labourers have higher I_m value compared to Christian Oraon of tea gardens. Irrespective of habitat, while in the Hindu Oraon, the mortality component of selection is marginally higher than its fertility component, the fertility component is much higher and contribute more towards the total opportunity for selection among the Christian Oraon.

The present findings indicate that selection is acting with a very low intensity among the Oraon of Assam. The result show that the index of total opportunity for selection (I) is more towards the lower level of the range of the Indian population which varies from 0.24 to 2.25

Table 2 : Selection intensities in Oraons of Assam

Group/Habitat	Religion	Based on Livebirths (Crow, 1958)			Based on early embryonic stage (Johnston & Kensinger, 1971)			
		I_m	I_f	I	I_{ew}	I_{ev}	I_f	I
Tea Garden Oraon	Hindu	0.1311	0.1034	0.2481	0.0841	0.1311	0.1034	0.3430
	Christian	0.0593	1.1843	0.2545	0.1199	0.0593	0.1843	0.4040
	Pooled	0.1040	0.1439	0.2629	0.0971	0.1040	1.1439	0.3851
Ex-Tea Garden Oraon	Hindu	0.0884	0.1053	0.2030	0.1031	0.0884	0.1053	0.3270
	Christian	0.0973	0.1270	0.2367	0.1135	0.0973	0.1270	0.3770
	Pooled	0.0926	0.1156	0.2188	0.1080	0.0925	0.1156	0.3504
Oraons of Assam	Hindu	0.1127	0.1053	0.2299	0.0921	0.1127	0.1053	0.3432
	Christian	0.0791	0.1615	0.2534	0.1166	0.0791	0.1615	0.3991
	Pooled	0.0987	0.1314	0.2431	0.1022	0.0987	0.1314	0.3699

(Reddy and Lakshmanudu, 1979 ; Rao and Choudhury, 1986). The index of selection due to fertility (I_f) in the Oraon is, however, slightly lower than the minimal Indian level (0.17 to 0.83). It is also apparent that the index reported from the Singpho of Arunachal Pradesh (Padmanabham and Jaswal, 1982) is the highest while the lowest is observed for Punjabi Sonar of Shillong (Jaswal and Duttachoudhury, 1989).

The index of total selection intensity among the Oraon is comparatively lower than those found in other populations of north eastern India (see Sengupta and Gogoi, 1995 for detail). This indicates a very weak pressure of natural selection among the Oraon population. The index in the Boro-Kachari (Guha and Mukherjee, 1990) and rural Ahom (Sengupta and Chakravarty, 1996) are almost the same as found among the Oraon of the present study.

From the above findings, it may be suggested that among the Oraon, I_m, I_f and I differ in relation to two major socio-cultural factors, *viz.*, religion and habitat. It further appears that although the index of opportunity for selection is sensitive to socio-cultural factors under consideration, its mortality and fertility components are differently sensitive to these factors.

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