

Selection Intensity Among Khonds of Andhra Pradesh

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ABSTRACT The index of opportunity of selection among Khonds is computed on the basis of reproductive history of mothers with completed fertility career and the results were compared with the available data on other tribal populations of Andhra Pradesh. The index of selection intensity (I) among Khonds is observed to be similar to the condition in Sugalis of Andhra Pradesh. Selection Intensity among Khonds is found to be lower when compared with Raj Gond, Pardhan, Hill Kolam, Manne Kolam, Chenchu and Yanadi tribes of Andhra Pradesh. This could be attributed to the availability of health care facility, better nutrition and socio-economic conditions and biogenetic factors considering the size of the population. The state of demographic dynamics reveals that the Khond is passing through better demographic transition

INTRODUCTION

Population components are considered important not only in studying the population structure and trends but also in measuring micro evolutionary dynamics. Two major forces of natural selection, differential fertility and mortality are responsible for changes in the gene frequencies in a population and selection intensity is a measure of the fitness of a population as expressed by the on going patterns of differential fertility and mortality combined in a particular manner. Cavalli-Sforza and Bodmer (1971) suggested that index of total selection (I) might be considered as an index of 'opportunity for selection'.

The index of opportunity for selection measures the maximum potential rate of change by selection, where zero indicates no change (Livingston and Spuhler, 1965). An indirect method for computing the index of total selection based on the maximum amount of differential fertility and mortality in a population was formulated by Crow (1958) and modified by Johnston and Kensinger (1971) to incorporate the embryonic mortality component.

The present study is conducted on Khond, a primitive tribal group of Visakhapatnam district, Andhra Pradesh. The purpose of the study is to investigate the micro variations with respect to Crow's (1958) index of opportunity of selection and modified method of Johnston and Kensinger (1971) among this primitive tribe.

MATERIAL AND METHODS

Khond is an important primitive tribal group

found predominantly in the agency tracts of Visakhapatnam district, Andhra Pradesh. They are called Kodulu or Samanthulu in the agency tracts of Visakhapatnam. They mainly depend on Podu cultivation. The population of Khond in the ITDA (Paderu) sub-plan area is reported to be 51,293 (1998). They are divided into four sub-tribes viz., Jatapu Khond, Desai Khond, Dungria Khond and KutiaKhond. The present investigation is conducted on Kutia Khond. They are further divided into a number of totemic clans.

The material for the present study consists of 242 Khond households drawn from 12 sample villages of Chintapalli mandal, Visakhapatnam district, Andhra Pradesh. The women who have completed their fertility career were considered for the calculation of the selection intensity estimates. In the present study, married women of 40 yrs. and above were taken into consideration for the sake of comparison with other Indian published data

RESULTS AND DISCUSSION

The index of opportunity of selection according to Crow (1958) and Crow's modified method of Johnston and Kensinger (1971) are shown in Table 1. The index of selection due to fertility is slightly higher than index of selection due to child mortality. The prenatal mortality selection index is much low. The average number of children per couple is larger than the variance in the number of children and hence resulted in moderate selection. Selection due to fertility (0.372) is slightly higher than selection due to mortality (0.325) components. The index of

Table 1: Parameters used for the study of opportunity for Natural selection

Number of mothers aged 40 years and over	41
Number of Pregnancies	175
Number of Live births (N)	151
Mean of Live births	3.68
Variance of Live births (V _l)	1.37
Number of survivors to reproductive age (14 years)	114
Number of embryonic deaths	24
Number of premature deaths (14 years)	37
Proportion of survivors to reproductive age (P _s)	0.7549
Proportion of premature deaths (P _d)	0.2450
Proportion of embryonic deaths (P _e)	0.1589
Proportion of survivors to birth (P _b)	0.8628
Index of selection due to pre-natal mortality (I _{me})	0.1590
Index of selection due to child mortality (I _{mc})	0.3246
Index of selection due to fertility (I _f)	0.3722
Index of selection due to mortality (I _m)	0.3245
I_f / P_s	0.4930
$I_f / P_b, P_s$	0.2441
I_{mc} / P_b	0.3762
<i>Index of opportunity of selection (I):</i>	
Crow's method:	0.6137
Johnston and Kensinger method:	1.1066

selection intensity calculated by Crow's method (0.614) and modified method (1.107) also suggest operation of selection both due to fertility and mortality components. In both methods the fertility component has been found to be higher than the mortality component, hence, the selection is operating more through differential fertility than mortality.

The index of selection intensity in tribal populations of India ranges from 0.61 in Sugalis (Reddy and Reddy, 1991) to 2.25 in Kotas (Basu, 1972). Crow's index of Opportunity for natural selection among Khonds is observed to be similar to the condition observed in Sugalis of Andhra Pradesh (Reddy and Reddy, 1991). Crow's index of selection intensity among Khonds is observed to be lower than Kolam (0.728; Murthy and Ramesh, 1978) and Chenchu (0.370; Sirajuddin and Basu, 1984) of Andhra Pradesh.

The potential selection in different tribal populations of India is based on live birth fertility of women. The mean number of live births is observed to vary between 3.68 and 5.03 among tribal populations of Andhra Pradesh. Lowest

mean numbers of live births were observed among Khonds compared to the available data on tribal populations of Andhra Pradesh. The proportion of surviving children is observed to be high among Khonds (0.863) when compared to the condition in Sugalis of Andhra Pradesh (0.727; Reddy and Reddy, 1991). Among Khonds, selection due to fertility is higher (0.755) when compared to selection due to mortality (0.325). The proportion of surviving children among Khonds is comparatively high when compared to the proportion of deaths. However, the near similarity of I_m and I_f reported among Khonds may be attributed to relatively improved health care facilities, nutrition, socio-economic conditions and biogenetic factors. This implies that the Khond is passing through better phase of demographic transition.

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