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A Genetic Study of the Khynriam of Meghalaya, North-East India

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INTRODUCTION

The Khynriam are one of the sub-groups of the Khasi population, inhabiting mostly the upland region of the Khasi Hills in Meghalaya. Other Khasi Subgroups include the War, Pnar, Bhoi and Lyngngam. Some bio-anthropological studies have revealed that each of these Khasi sub-groups tends to deviate from one another in respect of certain genetic markers and anthropo-metric characters (Das, 1968, 1978, 1979, 1981; Ahmed et al., 1997). Recently, studies have revealed that among the War Khasi there is a high tendency towards village endogamy (Khongsdier and Ghosh, 1994, 1996). It has been suggested that such a trend of social and genetical implications may also exist in all subgroups of the Khasi population (Khongsdier, 1996). Keeping this point in view, this brief communication was based on the study carried out among the Khynriam of Nongpyndeng village in West Khasi Hills district of Meghalaya, concerning some genetic traits and mating patterns of the population.

MATERIALS AND METHODS

Data for the present study among the Khynriam tribe were collected from the area mentioned above. No attempt was made to apply any statistical sampling technique for the selection of the present sample at both village and individual levels. However, an effort was made to avoid as far as possible collecting data from closely related individuals. For ABO and Rh(D) groupings a total of 100 blood samples were collected. PTC tasting ability was tested among 31 male and 39 female subjects and for colour blindedness 100 (43 male and 57 females) subjects were screened.

Blood groupings were done following the standard slide method suggested by Lawler and Lawler (1951) and Bhatia (1977). The taste sensitivity to phenylthiocarbamide (PTC) in different threshold levels was determined by serial dilution method of Harris and Kalmus (1949). Ishihara (1960) colour plates numbered 1-38 were used in adequate daylight for the detection of red-green colour blindness.

RESULTS AND DISCUSSION

Results are presented in table 1. The test of goodness of fit indicates that there is a significant deviation from genetic equilibrium within this population in respect of the ABO blood group system ($\chi^2_{(1)} = 5.03$, df = 1, $P < 0.05$). Also, the present findings are found to be significantly different ($\chi^2_{(3)} = 9.83$, df = 3, $P < 0.05$) from those reported by Das (1968) for the Khynriam of East Khasi Hills district (O = 49 %, A = 29.2 %, B = 18.7 % and AB = 3.1 %). In comparison with the other Khasi sub-groups (Das, 1968, 1978), the Khynriam of the present study are found to be closer to the Bhoi, but deviate significantly from the Pnar ($\chi^2_{(3)} = 17.22$, df = 3, $P<0.001$) and War ($\chi^2_{(3)} = 12.32$, df = 3, $P < .001$). With respect to the Rh(D) blood groups, it can be seen from table 1 that none of the individuals selected in the present sample tested negative, a common observation among the Mongoloid populations. Similarly with the exception of one case in males (2.33%) no colour blind individual was detected in the present study. As for the ability to taste PTC, the frequency of tasters was 78.57% and non-tasters 21.43%. It was observed that the frequency of non-tasters was higher in males (29.03%) than in females (15.38%), though this difference was not statistically significant ($\chi^2_{(1)} = 1.98$, $P>0.05$). Like in the case of the ABO blood groups, the Khynriam of the present study are found to be significantly different ($\chi^2_{(3)} = 4.78$, df = 3, $P < 0.05$) from those reported by Das (1978). They are, however, closer to the Bhoi and Pnar Khasi sub-groups.

The present findings demonstrate that the Khasi population as whole is not a homogeneous one from the genetic point of view. In other words, the present study seems to confirm the earlier observation made by Das (1968, 1978,

Table 1: Phenotypic and allele frequency distribution of four genetic markers among the Khynriam of Meghalaya

Genetic marker	*Phenotype*	*Observed Number*	*Allele Frequencies*
ABO Blood groups	O	42 (42.00)	$O = 0.6188$
	A	27 (27.00)	$A = 0.2150$
	B	19 (19.00)	$B = 0.1662$
	AB	12 (12.00)	
Rh(D) Blood groups	Rh+	100 (100.00)	
(n = 100)	Rh-	0 (0.00)	
PTC tasting ability			
Male (n = 31)	Tasters	22 (70.97)	$T = 0.4612$
	Non-tasters	9 (29.03)	$t = 0.5388$
Female (n= 39)	Tasters	33 (84.62)	$T = 0.6078$
	Non-tasters	6 (15.38)	$t = 0.3922$
Total (n = 70)	Tasters	55 (78.57)	$T = 0.5373$
	Non-tasters	15 (21.43)	$t = 0.4629$
Colour blindness			
Male (n = 43)	Normal	42 (97.67)	
	Colour blind	1 (2.33)	
Female (n = 57)	Normal	57 (100.00)	
	Colour blind	0 (0.00)	
Total (n = 100)	Normal	99 (99.00)	

Figures in paranthesis are percentages.

1981) that the four Khasi sub-groups viz., Khynriam, Pnar, Bhoi and War, are distinct from one another in respect of genetic markers and anthropometric variables. Besides, it is likely that each of these sub-groups is further divided into several endogamous units, taking into consideration the differences observed between the present findings and those reported by Das (1968, 1978) for the same population.

Table 2 shows the frequency of marriages between the Khynriam of the present study and other Khynriam inhabiting in West Khasi Hills and East Khasi Hills districts as well as other Khasi sub-groups and/or other non-Khasi populations. It is found that village endogamy is not as low as that reported for the War Khasi (Khongsdier and Ghosh, 1994, 1996). Perhaps, it is due to the fact that the Khynriam of the present study inhabit in a semi-urban setting of the West Khasi Hills district of Meghalaya. It further shows that most of the marriages (87.43%) took place with the Khynriam of West Khasi Hills district while the frequency of marriages with the Khynriam of East Khasi Hills district is only 5.71 %. On the other hand, the inter-marriage with other Khasi sub-groups and/or populations is very low (8.86 %). Considering these results, it does look as if there were considerable genetic differences within the Khynriam population. In fact, it can also be made out from table 1 that this population is not in genetic equilibrium with respect to the ABO blood group system, thereby indicating the active operation of certain evolutionary forces. Therefore, it warrants further in-depth studies with more sample size along with several genetic markers like serum proteins and red cell enzymes, etc. to have a better understanding of the genetic structure of this hill tribal population from North-East India.

Table 2: Frequency of marriages within and outside the population (n = 175)

Marriage	*Number observed*
Marriages within the village	82 (46.86)
Marriages outside the village	93 (53.14)
Marriages with the Khynriam of West Khasi Hills district	153 (87.43)
Marriages with the Khynriam of East Khasi Hills district	10 (5.71)
Marriages with other Khasi sub-groups	12 (8.86)

Figures in paranthesis are percentages.

KEY WORDS Khynriam Khasi, Population subdivisions, Genetic markers, Meghalaya.

ABSTRACT The present note is based on limited genetic markers and mating patterns among the Khynriam, one of the Khasi sub-groups of Meghalaya, North-East India. It indicates that the Khasi population is not a homogeneous one and it is likely that this population is divided into several endogamous units.

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