

## Opportunity of Selection in the Kheza of Phek District, Nagaland

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**KEY WORDS** Fertility. Foetal Loss. Mortality. Selection Intensity. Kheza. Nagaland.

**ABSTRACT** The index of total opportunity for selection with its components, fertility and mortality, has been reported for the Kheza of Phek district, Nagaland. The present data have also been compared with other populations of North East India.

### INTRODUCTION

The Chakhesang is an acronym, formed out of three numerically small tribes-Chakhuma (Chakro), Khezama and Sangtam of Nagaland and adopted prefixes of tribal names - 'Cha' from Chakhuma, 'khe' from Khezama and 'sang' from Sangtam, an example of process of fusion. Chronologically the name of the tribe was adopted since 1948. In the past the former two populations described by the then British administrators as Eastern Angamis, as they follows several customs and cultures of the Angami. They have marriage relations also with them. In the present paper, we shall examine the intensity of natural selection only in the Kheza - one of the constituent sub-tribe of Chakhesang of Nagaland. The Kheza shows strong Mongoloid racial affinity. Though agriculture is their primary occupation, many of them are also involved in teaching, trade, petty business, etc.

### MATERIAL AND METHOD

The demographic data necessary for calculating the indices of selection intensity were collected from Khezhakeno village in Pfitsero subdivision, Phek district of Nagaland and comprised pregnancy outcome (conception, live-birth), reproductive wastages (miscarriage, still-birth) and information on mortality (infant, child, juvenile mortality) of 88 ever-married Kheza women aged 40 years and above, who has atleast one child, and all these information collected through indepth interview. Proper care was taken not to include related individuals in the sample. Age of few informants were estimated with reference to

some local events and information obtained were cross-checked at different stages of interview to minimise the chance of recall lapses. The abortion cases reported in the present study are those of spontaneous abortions only.

### RESULTS AND DISCUSSION

Data used in present study were collected from ever-married Kheza women of Khezhakeno village, who had almost completed their reproductive life span. These women had altogether 815 pregnancies, out of which 692 resulted in live-births and number of pre-natal loss in them (miscarriage, still-birth) is 123 ( $P_{\text{nl}} = 0.1509$ ). Incidence of premature offspring mortality (died before 0.1965. The average number of live-birth ( $\bar{X}$ ) per woman is  $7.86 \pm 0.34$  with a variance ( $V$ ) 10.18. The proportion of survivors ( $P_s$ ) in them is 0.8035.

The index according to improvised method (Johnston and Kensinger, 1971) shows considerable higher value than that of the value obtained through the original one (Crow, 1958). It is evident that (Table 1) opportunity for selection in them operates mainly through differential mortality and contribution of post-natal mortality is much higher than pre-natal (embryonic) mortality. The index in the Kheza ( $I = 0.4497$ ) indicates a very weak pressure of natural selection and the value is more towards the lower level of the range displayed by the Indian population following Crow's (1958) method, which varies from 0.24 to 2.25 (Reddy and Lakshmanudu, 1979); Rao and Choudhury, 1986). The index of selection due to fertility ( $I_f$ ) in them (0.1648) is also just on the borderline of the minimal Indian level (0.17 to 0.83).

Index of selection intensity calculated following Crow (1958) in the Gallong of Arunachal Pradesh ( $I = 1.07$ ; Chakrabarty and Ahmed, 1989) is reported as the highest while the lowest is observed in the Ahom of Assam ( $I = 0.2180$ ;

Table 1: Indices of selection intensity in Kheza

Formula/method	$I_m$	$I_{m'}$	$I_{m''}$	$I_f$	$I$
Crow, (1958)	0.2446	-	-	0.1648	0.4997
Johnston & Kensinger, (1971)	-	0.1777	0.2446	0.1648	0.7073

Sengupta and Chakrabarty, 1998). In general, in these populations, the index of selection due to mortality is higher than the fertility component. The exception to its it noticed in Ahom (Sengupta and Chakrabarty, 1998), Boro Kachari (Guha and Mukherjee, 1990), Oraon (Sengupta and Gogoi Phookan, 1997) and Sayeed Muslim (Sengupta and Begum, 1998) of Assam ; Khamti (Choudhury, unpublished) of Arunachal Pradesh ; and Pnar (Banerjee et al., 1994) of Meghalaya.

Index of fertility ( $I_f$ ) in North East India population ranges from 0.095 (Purum of Manipur, Dasgupta et al., 1985) to 0.4060 (Singpho of Arunachal Pradesh, Padmanabham, and Jaswal, 1982), while the index of mortality ( $I_m$ ) varies from 0.0830 (Ahom of Assam, Sengupta and Chakrabarty, 1998) to 0.7500 (Gallong of Arunachal Pradesh, Chakrabarty and Ahmed, 1989). Index of selection due to embryonic mortality ( $I_{m'}$ ) is much lower in Khamti (0.0050, Sarkar et al., 1994) and Sonowal (0.0535, Sengupta and Kalita, 1996) of Assam ; Hajong (0.0320, Barua, 1983) of Meghalaya, while it is relatively high in Pnar (0.2016, Koingsdier, 1990) of Meghalaya. However, these values may be under estimates because of recall lapses. Further, the index of selection due to child mortality ( $I_{m''}$ ) among the Ahom (0.0830, Sengupta and Chakrabarty, 1997) and Oraon of Assam (0.0987, Sengupta and Gogoi Phookan, 1997) is much lower than those found among the Jaintia (0.456, Deka, 1989) and the Hajong (0.4430, Barua, 1983) of Meghalaya. The index is thus observed to vary between population groups distinguishable by occupation, degree of urban contact, economic conditions etc.

Spuhler (1963) has suggested that socio-economic factors, particularly economic conditions, effect the index of total selection intensity. Available data from North East India reveals moderately high total selection intensity in the people of Arunachal Pradesh (ranges from 0.7100 to 1.0700) mainly due to high mean live-births and high mortality, relatively weak pressure of it in

populations of Assam (0.2180 to 0.8700) and Manipur (0.312 to 0.377), while in people of Meghalaya (0.4012 to 0.6380) and Nagaland (0.4497) the index ranges in between.

## REFERENCES

- Banerjee, M., Choudhury, D. and Adak, D. : Opportunity of selection in the Pnar of Jaintia hills district, Meghalaya. pp 196-201. In *Tribes of North East India*, Sarthak Sengupta (Ed.), Gyan Publishing House, New Delhi (1994).
- Barua, S. : The Hajong of Meghalaya : A bio-demographic study. *Human Science*, **32** : 190-200 (1983).
- Chakrabarty, S. and Ahmed, S.H. : Body dimensions, fertility and selection in a section of the Gallong with endemic hypothyroidism and congenital defects of the central nervous system. pp. 1-5. In *Genetical Demography of Indian Populations*, K.S. Singh (Ed.) : Anthropological Survey of India, Calcutta (1989).
- Crow, J.F. : Some possibilities for measuring selection intensities in man. *Hum. Biol.*, **30** : 1-13 (1958).
- Dasgupta, B.K., Basu, A., Roy Choudhury, B. and Gupta, P. : *Purum (Chote) Revisited*, Anthropological Survey of India, Calcutta (1985).
- Deka, A. : Reproductive performance and selection among the Jaintias of village Saphai. pp. 6-11. In *Genetical Demography of India Populations*, K.S. Singh (Ed.), Anthropological Survey of India, Calcutta (1989).
- Guha, A. and Mukherjee, D.P. : Influence of cultural traditions and social movements on the genetic structure of the Boro Kachari population. *J. Ind. Anthropol. Soc.*, **25** : 73-81 (1990).
- Johnston, F.F. and Kensinger, K.M. : Fertility and mortality differentials and their implications for micro-evolutionary change among the Cashinahua. *Hum. Biol.*, **43** : 356-364 (1971).
- Padmanabham, P.B. S.V. and Jaswal, I.J.S. : A demographic study of the Apatanis. *Proc. Seminar on Biological and Cultural Variation of the People of North East India*, Anthropol. Deptt., Gauhati University, Guwahati (1982).
- Rao, K.R. and Choudhury, D. : Indices of selection intensity among four sub-groups of Telis in Vidarbha region, Maharashtra. *Human Science*, **35** : 328-333 (1986).
- Reddy, P.C. and Lakshmanudu, M. : Indices of opportunity of selection in Mala, Madiga and other Indian populations. *J. Ind. Anthropol. Soc.*, **14** : 245-252 (1979).
- Sarkar, N.C., Barua, S. and Varte, R.T. : Opportunity of selection in the Khamti of Lakhimpur district, Assam, India. *J. Hum. Ecol.*, **5** : 217-220 (1994).
- Sengupta, S. and Begum, S. : Index of opportunity for natural selection among the Sayed Muslim of Assam. *J. Hum. Ecol.*, **9** : 95-97 (1998).
- Sengupta, S. and Chakrabarty, K. : Selection intensity in the Ahoms of Assam. *J. Hum. Ecol.*, **9** : 83-85 (1998).
- Sengupta, S. and Gogoi Phookan, A. : Socio-cultural variation and selection intensity among the Oraon of Assam. *J. Hum. Ecol.*, **8** : 153-156 (1997).
- Spuhler, J. N. : The scope of natural selection in man. In *Genetic Selection in Man*, W.J. Schull (Ed.), University of Michigan Press, Michigan (1963).