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# A Study of Hair Whorl on Occiput of Bodo Kachari of Kokrajhar in Assam, India

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**KEY WORDS** Hair Whorl. Occiput. Tribe. Bodo Kachari. Assam.

**ABSTRACT** The head hair whorls among the Bodo Kacharis of Kokrajhar district in Assam has been studied. The results show that the clockwise whorl dominate over anticlockwise whorl and single whorl is more common as compared to double whorl in both males and females. A comparison is made with tribes and castes of North East India and Bodo Kacharis show intermediate position among groups with Mongoloid and Caucasoid affinities.

## INTRODUCTION

The whorls generally occur near the occiput of the head either in clockwise or anticlockwise direction but the latter is less common. Small number of persons may have two whorls. According to Gates (1961) a very few people have with three or more whorls on head hair. In 1936 Nahse, however, reported that double crown and forehead whorls are generally noticed among idiots than in common people. Bernstein (1925), emphasized that the two phenotypic variation, *i.e,* the clockwise and anticlockwise of a single whorl are controlled by a pair of autosomal alleles and the former is the dominant phenotype. Spuhler (1951) has reported that a reduced penetrance for the dominant allele (A) causes the clockwise whorl. So that in the homozygous (AA) and the heterozygous (Aa) genotypic combinations, it is usually associated with a clockwise phenotype. The whorls are, generally, genetically determined character. Paul (1969) reported that head hair whorl occurs predominantly on the right side of the mid sagittal plane of any person. There is no significant age and sex association of the whorl in the phenotypic distribution.

On this particular trait, in North East India, a few studied have so far been made among Pati Rabha (Das, 1956), Rajbanshi, Kachari (Das, 1959), Suri (Das and Deka, 1960), Miri (Sharma, 1961), Kalita (Das and Das, 1967), Ahom, Wancho (Dutta, 1980, 1983), Kaibarta (Sengupta and Das, 1986) and Kaibarta (Nath and Devi, 1998).

The Bodo Kacharis living in the district of Kokrajhar followed by the northern belt of undivided Darrang and Kamrup districts of Assam is a branch of the Great Bodo Groups of Indo-Mongoloid family falling within the Assam Burmese linguistic section. Hermanns includes the Bodos and their allied tribes in the term 'Indo-Tibetans' while Chatterjee identified them as 'Indo-Mongoloid'. However, the Bodo Kacharis of Assam are ethnically Mongoloid group of people. The Bodo Kacharis occupy the largest position among the Scheduled Tribes of Assam.

## MATERIALS AND METHODS

The sample comprising of 176 individuals of which 120 males and 56 females was collected from various hamlets in Kokrajhar district of Assam in 1984-1985. Due care was taken in the field to exclude related individuals. Chi-square and Co-efficient of Divergence has been calculated to determine the variation as well as biological distance among the compared groups of North East India.

## RESULTS AND DISCUSSION

The frequency distribution of occipital hair whorl of the Bodo Kacharis in Assam is shown in table 1. It is observed that the single clockwise whorl is more common than the single anticlockwise whorl (72.16% *vs* 18.75%) and the single whorl is well marked as compared to the double whorl (90.91% *vs* 9.09%).

Considering the sex it is seen that the single

**Table 1: Frequency of occipital hair whorl in Bodo Kacharis of Kokrajhar in Assam**

| *Sex* | *n* | | *Single whorl* | | *Double whorl* | | |
|---|---|---|---|---|---|---|---|
| | | | + | – | ++ | – – | +– |
| Male | 120 | No. | 87 | 22 | 7 | 1 | 3 |
| | | % | 72.50 | 18.33 | 5.83 | 0.83 | 2.50 |
| Female | 56 | No. | 40 | 11 | 2 | 2 | 1 |
| | | % | 71.43 | 19.64 | 3.57 | 3.57 | 1.79 |
| Total | 176 | No. | 127 | 33 | 9 | 3 | 4 |
| | | % | 72.16 | 18.75 | 5.11 | 1.71 | 2.27 |

$\chi^2_{(4)} = 2.184,\ 0.80 > P > 0.70$

whorl is frequent than the double whorl in females as compared to males (91.07% vs 90.83%). On the other hand, the single clockwise whorl is frequent in males as compared to females (72.50% vs 71.43%), while the anticlockwise whorl is marked in females than the males (19.64% vs 18.33%). However, the Chi-square test shows statistically non-significant differences between males and females among the Bodo Kacharis ($\chi^2_{(4)} = 2.184,\ 0.80 > P > 0.70$).

It has been observed from North East India that the frequency of single clockwise hair whorl is high among Bodo Kacharis as compared to Ahom (46.30%; Das and Pakrasi, 1967), Wancho (62.10%; Dutta, 1983), Suri (63.81% ; Das and Deka, 1960), Pati Rabha (67.70%; Das, 1956), Rajbanshi (69.00%; Das, 1959), Kaibarta (69.39%; Nath and Devi, 1998) and Kachari (70.60%; Das, 1959) but low when compared with Kaibarta (72.00; Sengupta and Das, 1986),

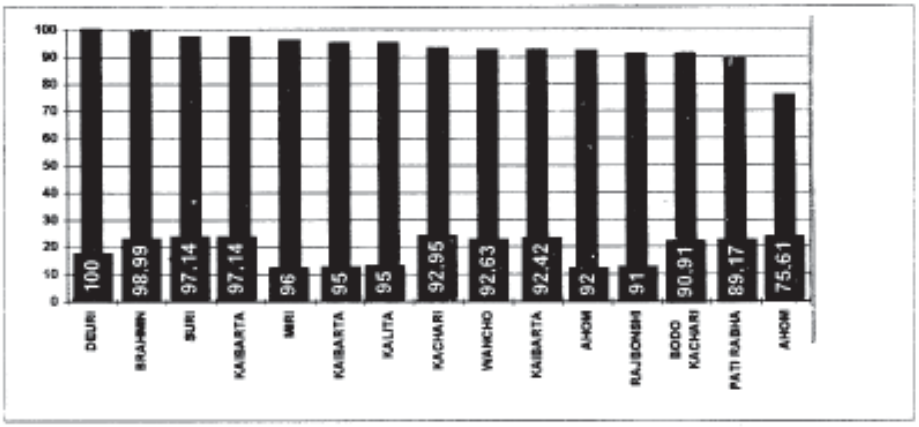


**Fig. 1. Frequency distribution of single and double whorls of various populations**

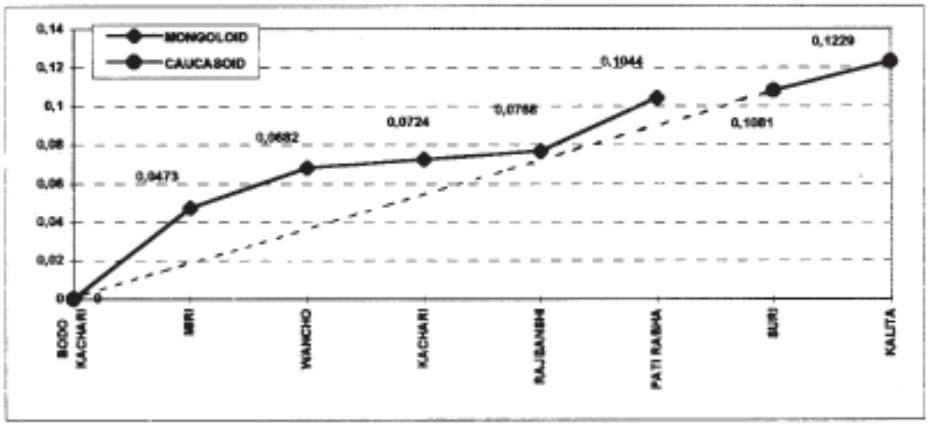


**Fig. 2. Biological distances among groups with Mongoloid and Caucasoid affinities**

Kalita (75.00%; Das and Das, 1967), Ahom (76.00%; Dutta, 1980), Brahmin (80.10%; Sengupta, 1981), Deuri (82.00%; Sharma, 1967) and Miri (86.00%; Sharma, 1961).

Statistically no significant differences, however, are observed when the present sample is compared with groups of Mongoloid and Caucasoid affinities, viz., Kachari ($\chi^2_{(4)} = 5.278$, $0.30 > P > 0.20$), Pati Rabha ($\chi^2_{(4)} = 6.008$, $0.20 > P > 0.10$), Miri ($\chi^2_{(4)} = 6.351$, $0.20 > P > 0.10$), Kaibarta ($\chi^2_{(4)} = 3.06$, $0.70 > P > 0.50$), Rajbanshi ($\chi^2_{(4)} = 6.518$, $0.20 > P > 0.10$), Kaibarta ($\chi^2_{(4)} = 5.616$, $0.30 > P > 0.20$), Kalita ($\chi^2_{(4)} = 6.646$, $0.20 > P > 0.10$), Ahom ($\chi^2_{(4)} = 6.571$, $0.20 > P > 0.10$) and Kaibarta ($\chi^2_{(4)} = 6.531$, $0.20 > P > 0.10$), except Wancho ($\chi^2_{(4)} = 8.484$, $0.05 > P > 0.02$), Suri ($\chi^2_{(4)} = 10.737$, $0.05 > P > 0.02$) and Ahom ($\chi^2_{(4)} = 24.827$, $> P > 0.001$). It reveals that the occurrences of different types of occipital hair whorls in Bodo Kacharis are not only differ from Caucasoid groups but also it differ from the Mongoloid groups, so, the Bodo Kacharis are showing intermediate position among Caucasoid and Mongoloid groups.

A comparative statement regarding single and double whorls reported from various studies among different populations in North East India have been appended in figure 1. It reveals that the single whorl is high among the Bodo Kacharis as compared to Pati Rabha (89.17%; Das, 1956) and Ahom (75.61%; Das and Pakrasi, 1967) but low when compared with other reported groups, where the Deuris show the highest frequency (100.00%; Sharma, 1967).

To find out the statistical similarities and dissimilarities among the eight ethnic groups within Mongoloid and Caucasoid population groups, biological distance have been calculated using the method Co-efficient of Divergence, as used by Najjer (1978), and the results are plotted in figure 2. It reveals that the present sample is more closer to Mongoloid groups, *viz.*, Miri (0.0473), Wancho (0.0682), Kachari (0.0724), Rajbanshi (0.0768) and Pati Rabha (0.1044) as compared to Caucasoid groups, *viz.*, Suri (0.1081) and Kalita (0.1229). It shows that the differences are reflected in each case due to phenotypic expression. Summing up from the above results the Bodo Kacharis are more closer to groups with the Mongoloid affinities than those with the Caucasoid affinities.

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