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A STUDY ON DISTRIBUTION OF MORPHOLOGICAL, BEHAVIORAL AND SEROLOGICAL TRAITS IN THREE ENDOGAMOUS GROUPS OF SCHEDULED CASTES IN JAMMU AND KASHMIR

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ABSTRACT

In the present study the distribution of morphogenetic, behavioural and serological traits have been reported among three schedule castes viz. Bhagat, Mahasha and Batwal of Jammu and Kashmir. For the purpose, a survey was conducted and frequencies of different traits were calculated. It was observed that the frequency distribution of various traits among the studied populations shows the homogeneous distribution and intercaste difference among all the traits was found to be statistically non-significant.

Key Words: *Morphogenetic Traits, Behavioural Traits, Serological Traits Schedule Castes, Jammu And Kashmir*

INTRODUCTION

The Indian subcontinent is inhabited by people of great diversity, different creeds and customs creating multiple societies. There are about 3000 castes in India, some have genesis in tribal stock while others are occupational, linguistic, religious, territorial and so forth. Such a diverse population of India offers a great opportunity to study genetic variability. The various morphological and behavioral characters can be utilized profitably to investigate genetic variation within and among human populations (Boyd, 1950) though the mode of inheritance of all these characters is still rather unclear. Many populations in India have been investigated for their morphogenetic profile in order to understand the interpopulation relationships and variations (Seth *et al.*, 1969, Chattopadhyay 1970, Kalia and Gupta 1978, Singh *et al.*, 1979 and Balgir 1982). In the present study an attempt has been made to find out the distribution of various morphogenetic traits viz. ear lobe attachment, mid phalangeal hairs, handedness, hand clasping, arm folding, leg folding, eye colour, hair colour, blood group and Rh factor in three schedule castes viz. Bhagat, Mahashas and Batwal of Jammu and Kashmir.

MATERIALS AND METHODS

The data for morphological, behavioural and serological traits from three endogamous groups of scheduled caste viz. Bhagat, Mahashas and Batwal were collected from subjects residing in different areas of Jammu district of Jammu and Kashmir. For each endogamous group about 100 unrelated individuals were randomly sampled. The following traits were investigated:

Morphological traits: Ear lobe attachment, mid phalangeal hairs, Eye colour and Hair colour

Behavioural traits: Handedness, Hand clasping, Arm folding and Leg folding

Serological traits: Blood group and Rh factor.

These traits were investigated by following standard technique of Weiner and Lourie (1969). The red blood cells were typed for two different blood group systems ABO and Rh (D) following standard serological techniques. Tests with antisera Anti A Anti B and Anti D were performed by conventional slide method.

RESULTS

Ear Lobe

The highest incidence of free ear lobes was observed. Mahasha possessed high frequency of free ear lobes (63.66%) and lowest frequency was found among Bhagat (53.33%). The overall inter caste difference was

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calculated to be statistically non-significant ($1.0 > p < 0.5$) which showed homogeneous distribution of the trait.

Mid Phalangeal Hair

After analyzing the frequency of the distribution of mid digital hairs among Bhagat, Batwal and Mahasha non-significant frequency distribution was found (2.75%) showing the homogeneous distribution of trait.. Out of 300 total individuals among all caaste groups 51% possessed mid digital hair. Bhagat showed high incidence of mid digital hair (63.33%) and in Mahasha and Batwal mid digital hair were 46.66% and 43.33% respectively ($\chi^2 = 1.680$; $df=2$; $1.0 > p < 0.5$).

Eye Color

The frequency of black eye colour was found to be highest and ranges from 63.33% to 30% being highest among Bhagat 63.33% and lowest in Mahasha 30%. The intercaste value of χ^2 between Bhagat and Batwal were found to be statistically significant and the overall intercaste difference showed heterogenous distribution of the trait.

Hand Clasp

R type of hand clasping was calculated to be more prominent being highest in Mahasha (73.33%) and lowest in Bhagat (56.66%) however, the overall variability of hand clasping was found to be statistically non significant ($\chi^2 = 2.805$; $df=2$; $1.0 > p < 0.5$)

Arm Folding

The frequency of L type arm folding was found to be higher than R-type except Mahasha which were having incidence of R type arm folding 70%. The intercaste frequency distribution were calculated significant between Bhagat and Mahasha and Mahasha and Batwal and the overall intercaste frequency was non significant ($\chi^2 = 5.96$; $df=2$; $1.0 > p < 0.5$).

Handedness

All the population under study showed high frequency of R type handedness. Out of 300 individual, 66% individual had high incidence of this trait. High frequency of R type handedness was calculated in Batwal 90% and lowest in Mahasha 60% population. The overall frequency distribution was statistically significant showing heterogeneity of the trait ($\chi^2 = 7.83$; $df=2$; $1.0 > p < 0.5$).

Hair Colour

Analyzing three populations groups viz. Bhagat, Mahasha, and Batwal showed high frequency of dark hair colour. All the group combination except Mahasha and Batwal showed non significant distribution. Higher incidence of dark hair color was determined in Batwal 66.66% and lowest in Mahasha 36.66%.

The overall intercaste difference showed heterogeneous distribution of the trait ($\chi^2 = 6.001$; $df=2$; $1.0 > p < 0.5$).

Leg Folding

The frequency of R type leg folding was found to be higher than L-type. It was highest in Bhagat 60% and lowest in Mahasha 43.63%. The intercaste χ^2 value among all the groups were found to be statistically non significant (1.674) thus indicating homogeneous distribution

Blood Groups

The percentile frequency of ABO blood among three groups were presented and appeared that blood group O occurred in highest frequency. The highest frequency O blood group was found in Bhagat 53.33%. Blood group AB appeared less in number. The overall intercaste difference in frequencies distribution was significant showing heterogenous distribution of ABO blood group among all the populations ($\chi^2 = 17.51$; $df=2$; $1.0 > p < 0.5$).

Further analysis of data about Rhesus factor reveals high incidence of occurrence of Rh⁺ factor than Rh⁻.

The overall intercaste group difference was statistically non significant ($\chi^2 = 2.693$; $df=2$; $1.0 > p < 0.5$).

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DISCUSSION

The present analysis of data on ear lobe revealed high incidence of free ear lobe (53.33%-63.33%) and homogeneity of the trait. Similar kind of study was done by Bhowmik (1970) on adult male Hindus and Muslims that showed homogeneous distribution of this trait. Kalia and Gupta (1978) had observed higher incidence of free ear lobes (73.84%). The frequency of free ear lobes was found to be in the range of 56% to 74% in five endogamous groups of Haryana by Yadav *et al.*, (2000).

Parmar *et al.*, (1968) showed higher incidence of the presence of mid phalangeal hair in Gorkha population as a whole 33.60% and the overall frequency distribution was found to be non significant. In the present study the presence of mid phalangeal hair was also found to be non significant.

R type hand clasping was found to be prominent, highest in Mahasha 73.33% and there was heterogeneous distribution of this trait. Freier *et al.*, (1966) in the study of African Negro also found high frequency of R type hand clasping. Further Mahapatra (1973) while studying various castes of Orissa and Bengal observed the same. Yadav *et al.*, (1994) observed non significant frequency distribution of the trait in the study of eleven endogamous groups of Haryana. Bhasin and Khanna (1994) showed high frequency of R type hand clasping in Dograsramdasia (69.73%).

The present study on eye colour showed high frequency of black eye color distribution. Its frequency was found to be highest in Bhagat (63.33%) and showed heterogeneous distribution. There were variations in arm folding as observed in present study. Mostly L type arm folding occurred in high frequency and its highest frequency 60% observed in Batwal. Similarly Fiere and Almeida (1966) found 55% frequency distribution of R trait in African Negroes. High incidence of L type arm folding was studied in Baniya population (68.60% in males and 64.22% in females) by Singh *et al.*, (1979). Yadav *et al.*, (1994) in the study of 11 endogamous groups of Haryana found heterogeneous distribution of this trait. Moreover Bhasin and Khanna (1994) found high incidence of R type arm folding in Bodh (65.89%) in the study of several groups of Jammu and Kashmir.

All the population in the present study showed high frequency distribution of R-type handedness which is highest (90%) in Batwal and lowest in Mahasha (60%) and the overall intercaste frequency distribution of the trait was found to be heterogeneous. Yadav *et al.*, (2000) studied five endogenous groups of Haryana and found heterogeneous distribution for handedness.

Leg folding in present study was mostly R type. It ranges from 60% to 43% in Bhagat and Batwal respectively. The trait was homogeneous in distribution. Yadav *et al.*, (1994) had also showed homogenous distribution of this trait in 11 endogamous groups of Haryana.

While studying the blood group distribution in the present study it was found that blood group O occurred more frequently. It was highest in Bhagat 53% and lowest in Mahasha 22.66% and Rhesus factor appeared in maximum frequency 93.33% being highest in Batwal 80%. Deb and Shukla (1972) studied Yadav, Pasi and Chamar of Uttar Pradesh and found higher frequency of O blood group. Nwaopora *et al.*, (2008) study ABO blood group in Ekpoma Nigeria and observed high incidence of O blood Group (97%). Mansi (2008) observed high frequency of Rh⁺ (97.47%), greater than present study. Ahuja and Sidhu (1981) also observed higher frequency of O blood group.

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