

## DISTRIBUTION OF MORPHOLOGICAL AND BEHAVIORAL TRAITS AMONG THE FOUR ENDOGAMOUS GROUPS OF HARYANA

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### ABSTRACT

In the present work, the distribution of morphological trait (ear lobe attachment) and behavioral traits (hand clasping, arm folding, leg folding and handedness) has been reported among four endogamous groups of Haryana viz., Garg, Bansaal, Singla and Mittal. Among these all traits ear lobe attachment, Hand clasping, arm folding and leg folding showed significant differences ( $0.05 < P$ ) and heterogeneous distribution. Handedness is found to be non significant and homogeneous in distribution. The frequency range of the traits fall within the range recorded earlier in the population of north-west India except higher range of frequency in hand clasping.

**Keywords:** *Morphological, Behavioral, Endogamous, Haryana*

### INTRODUCTION

Variation among the population in north India provides a unique opportunity to study the morphogenetic and behavioral traits among the various endogamous groups living in different geographical and ecological conditions of the region. Many populations in India have been studied for their morphogenetic and behavioral traits to understand the interrelationship of populations and variations (Das and Sengupta, 2003; Chadha and Sandhu, 2013; Pandey *et. al.*, 2013; Kawadkar *et. al.*, 2022). Very limited studies are available on morphological and behavioral traits in Haryana in comparison to other northwest populations (Malik *et. al.*, 1988; Yadav and Gupta, 1992; Yadav *et. al.*, 1994; 1997a; 1997b; 1998; 2000; 2001; Yadav and Singh, 2002; Chhikara and Yadav, 2013). Therefore, present study was planned to make enquiries about the various traits among the selected four endogamous groups of Haryana viz: Garg, Bansal, Singla and Mittal.

### MATERIALS AND METHODS

Garg, Bansal, Singla and Mittal are the gotras of Bania. Trade business, Money lending, Marketing and dealing in the field of architecture and building etc. are the major economic source of income for them. Various traits ear lobe attachment, Hand clasping, arm folding, leg folding and handedness were observed by visiting to the resident area of the groups.

These traits were investigated by following the standard technique of Weiner and Lourie (1969).

### RESULTS AND DISCUSSION

#### **Ear Lobe Attachment**

The frequency of attached ear lobes varied from 11% in Singla to 49% in Mittal (Table 1). The inter-gotra differences were found to be significant among Singla-Mittal, Bansal- Mittal, Garg- Mittal, Garg – Singla and Bansal-Singla (Table 3). The frequency range of this trait for other populations of northwest India has been recorded as 7.47% in Gujjar (Malhotra, 1976), 22.83% in Badhiya Muslims of Purnia, Bihar (Pandey *et. al.*, 2013) to 74% in Jain (Yadav *et. al.*, 2000). Thus the range recorded in present study fits well within the recorded observations earlier. There was a significant difference of the trait among the four endogamous groups under consideration. The distribution was heterogeneous (Table 2).

### **Hand Clasping**

The incidence of R – type hand clasping was higher than L- type in all groups (Table 1). The frequency of R – type was highest in Singla (81%) and lowest in Mittal (60%). The inter-gotra differences were found to be significant among Singla-Mittal, Garg-singla, and Bansal- Singla (table 4). The frequency range of this trait for other population of North-West India has been recorded as 40% in Rajput (Bhasin *et. al.*, 1986) to 79% in Jain (Yadav *et. al.*, 2000). The range recorded in present survey was in agreement with earlier report. There was a significant difference of the trait among the four endogamous groups discussed in this study. The distribution was heterogeneous (Table 2).

### **Arm folding**

The incidence of R-type arm folding was higher than L-type in all groups except in Mittal (Table 1). The frequency of R-type was highest in Singla (69%) and lowest in Mittal (44%). The inter-gotra differences were found to be significant among Bansal-Singla, Garg-Bansal, and Garg-Mittal (Table 5). The frequency range of this trait for other population of Northwest India has been recorded as 31.90% in Gaddi (Bhasin *et. al.*, 1986) to 78% in Jain (Yadav *et. al.*, 2000). The range recorded in present study fits well within the range recorded earlier. There was a significant difference of the trait among the four endogamous groups under observation. The distribution was heterogeneous (Table 2).

### **Leg folding**

The incidence of R-type leg folding was higher than L-type in all groups (Table 1). The frequency of R-type was highest in Mittal (81%) and lowest in Bansal (57%). The inter-gotra differences were found to be significant among Garg-Mittal, Singla-Mittal and Bansal-Mittal (Table 6). The frequency range of this trait for other population of Northwest India has been recorded as 53% in Sunar (Yadav *et. al.*, 1997a) to 93.58% in Ror (Yadav *et. al.*, 1994). The range recorded in present study fits well within the range recorded earlier. There was a significant difference of the trait among the four endogamous groups under observation. The distribution was heterogeneous (Table 2).

### **Handedness**

The right handed people were prominent in all gotras groups (Table 1). The frequency of R-type was highest in Singla (91%) and lowest in Bansal (82%). The inter-gotras differences were found to be non significant among Singla-Mittal, Bansal-Mittal, Garg-Mittal, Garg-Singla, Garg-Bansal and Bansal – Singla (Table 7). The frequency range of this trait for other populations of Northwest India has been recorded as 83% in Sunar (Yadav *et. al.*, 1997a) to 100% in Ahir and Chamar (Malhotra, 1976). The range recorded in present study fits well within the range recorded earlier. There was a non significant difference of the trait among the four endogamous groups under observation. The distribution was homogeneous (Table 2).

**Table 1: Frequency distribution of various traits among the four endogamous groups of Haryana**

Group	Total Number	Ear lobe attached	Hand Clasping (R-type)	Arm Folding (R-type)	Leg Folding (R-type)	Handedness (R-type)
Garg	100	24	67	67	61	85
Singla	100	11	81	69	69	91
Bansal	100	26	64	52	57	82
Mittal	100	49	60	44	81	89

**Table 2: chi-square values for total group differences in traits studied.**

Trait	Chi-square value	Degree of freedom	Remarks	Distribution
Ear lobe attachment	37.557	3	Significant	Heterogeneous
Hand Clasping	11.470	3	Significant	Heterogeneous
Arm-folding	17.815	3	Significant	Heterogeneous
Leg-folding	15.194	3	Significant	Heterogeneous
Handedness	4.242	3	Non-Significant	Homogeneous

**Table 3: Intergotra differences for the trait ear lobe attachment**

Group	Chi-square value	Degree of freedom	Remarks
Garg-Bansal	0.640	1	Non-Significant
Garg-Singla	5.686	1	Significant
Garg-Mittal	13.480	1	Significant
Bansal-Singla	5.590	1	Significant
Bansal-Mittal	28.212	1	Significant
Singla-Mittal	60.166	1	Significant

**Table 4: Intergotra differences for the trait Hand Clasp**

Group	Chi-square value	Degree of freedom	Remarks
Garg-Bansal	0.198	1	Non-Significant
Garg-Singla	3.900	1	Significant
Garg-Mittal	1.054	1	Non-Significant
Bansal-Singla	7.246	1	Significant
Bansal-Mittal	0.338	1	Non-Significant
Singla-Mittal	7.764	1	Significant

**Table 5: Intergotra differences for the trait Arm folding**

Group	Chi-square value	Degree of freedom	Remarks
Garg-Bansal	4.066	1	Significant
Garg-Singla	0.090	1	Non-Significant
Garg-Mittal	10.706	1	Significant
Bansal-Singla	6.046	1	Significant
Bansal-Mittal	1.280	1	Non-Significant
Singla-Mittal	1.646	1	Non-Significant

**Table 6: Intergotra differences for the trait Leg folding**

Group	Chi-square value	Degree of freedom	Remarks
Garg-Bansal	0.931	1	Non-Significant
Garg-Singla	1.406	1	Non-Significant
Garg-Mittal	9.712	1	Significant
Bansal-Singla	3.086	1	Non-Significant
Bansal-Mittal	13.462	1	Significant
Singla-Mittal	3.840	1	Significant

**Table 7: Intergotra differences for the trait Handedness**

Group	Chi-square value	Degree of freedom	Remarks
Garg-Bansal	0.324	1	Non-Significant
Garg-Singla	2.704	1	Non-Significant
Garg-Mittal	0.704	1	Non-Significant
Bansal-Singla	3.468	1	Non-Significant
Bansal-Mittal	2.974	1	Non-Significant
Singla-Mittal	0.222	1	Non-Significant

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