

Finger and Palm Prints of The Deori of Assam

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ABSTRACT Finger and palmar dermatoglyphic patterns have been analyzed in 100 Deori (50 males, 50 females) individuals living in the Dibrugarh district of Assam, India.

INTRODUCTION

The Deori is a plain scheduled tribe of Assam. Traditionally they were engaged in priestly activities of the Chutiyas, a numerically dominant Mongoloid population of upper Assam. Nowadays, they however, prefer to identify themselves as 'Gimasaya', meaning 'the children of the Sun and Moon'. The Deori tribe comprise of four territorial groups - the Dibongiya, the Tengaponiya, the Borgoniya and the Patorgoniya. At present concentration of the population is observed in parts of North Lakhimpur, Dibrugarh, Tinsukia, Sibsagar, Jorhat and Shonitpur districts of Assam. The present study deals only with the Tengaponiya section of the population.

SUBJECTS AND METHODS

In the present study, bilateral inked finger prints and palmar prints of 100 unrelated Deori individuals (50 males and 50 females) collected from Kolowloa village, Dibrugarh have been analyzed. The identification of finger and palmar patterns have been evaluated utilizing the standard methodology of Cummins and Midlo (1961). In case of finger ridge count, the general rules given by Holt (1949) were followed. The classification of modal types of the C line are those of Plato (1970). Palmar flexion crease pattern were analysed using the method proposed by Bali and Choube (1971). Statistical

comparisons were carried out using chi-square contingency tables and student's t test.

RESULTS AND DISCUSSION

Among Deori, ulnar loops are more frequent pattern followed by whorls (Table 1). The oc-

Table 1 : Pattern type of fingers in Deori

Sex	Hand	Whorl	Loop		Arch	
			Ulnar	Radial	Simple	Tented
Male (N=50)	Right	27.80	19.20	1.00	1.40	0.60
	Left	24.80	21.80	1.00	1.60	0.80
	R + L	52.60	41.00	2.00	3.00	1.40
Female (N=50)	Right	21.00	25.80	0.60	2.20	0.40
	Left	17.80	27.40	0.60	3.60	0.60
	R + L	38.80	53.20	1.20	5.80	1.00

currence of arch although very low however, simple arches are more frequent than tented arches. The frequency of whorl are highest in digit I, while loops in digit V. Radial loop occurs only in digit II. Dextral dominance of whorl and sinistral dominance of loop and arch pattern are quite apparent. The frequency of whorl is notably low in females, whereas incidence of loops and arches are comparatively lower in males in comparison to females. The present data show a whorl-loop ratio approximating 55:45 in males and 42:58 in females. In both sex, bimanual variation with regard to the trait reveals a close degree of similarity (χ^2 value of male = 1.82; female = 3.44, d.f. = 2). However the males deviate statistically significantly from the females in this regard (χ^2 value = 19.68, d.f. = 2).

Furuhata's index and index of pattern intensity is higher in right hand and the value is considerably higher in males than females (Table 2). On the other hand Dankmeijer's index and arch-loop index of Poll occur more in the left

Table 2 : Finger pattern indices in Deori

Indices	Hand	Male	Female	M + F
Furuhata's index	Right	137.62	79.54	104.72
	Left	108.77	63.57	97.75
	R + L	122.33	71.32	93.85
Dankmeijer's index	Right	7.19	12.38	9.43
	Left	9.68	23.59	15.49
	R + L	8.37	17.52	12.25
Pattern intensity index	Right	7.58	6.84	14.42
	Left	7.24	6.36	13.60
	R + L	14.82	13.20	14.01
Poll's index	Right	9.90	9.85	9.87
	Left	10.53	15.00	15.14
	R + L	10.23	12.50	11.50

hand and seen to increase in females than the males.

In general the left hand is more monomorphic than right hand and exhibit more monomorphism in loop than in whorls (Table 3).

Table 3 : Monomorphic hands in Deori

Sex	Hand	Monomorphic			Total monomorphic hand
		Whorl	Loop	Arch	
Male	Right	20.00	2.00	2.00	12.00
	Left	12.00	18.00	0.00	
	R + L	32.00	20.00	2.00	
Female	Right	10.00	14.00	0.00	14.00
	Left	6.00	20.00	0.00	
	R + L	16.00	34.00	0.00	

Monomorphism to arch is very limited and the total monomorphic hand in female is higher than the male.

The total finger ridge count of male is 153.90 ± 6.70 and that of female being 136.60 ± 5.75 . Right hand in female (71.60 ± 5.26) tend to have more ridges than the left (64.80 ± 2.94), while it is just reverse in case of male (right = 76.60 ± 3.42 ; left = 77.00 ± 3.48). Significance test for bimanual variation (t value for male = 0.08; female = 1.13) are statistically non significant. However, there is statistically significant differences between the sexes (t value = 1.97, d.f. = 120, $0.05 > p > 0.01$).

Among Deori, the most common combination of palmar main line is 9.7.5.- (Table 4). In them, the type 11.9.7.- and 7.5.5.- occurs in maximum in right palm. Type 9.7.5.- shows

Table 4 : Palmar main line formule in Deori

Sex	Hand	11.9.7.-	9.7.5.-	7.5.5.-
Male (N = 50)	Right	24.00	18.00	24.00
	Left	10.00	24.00	10.00
	R + L	17.00	21.00	17.00
Female (N = 50)	Right	14.00	26.00	24.00
	Left	6.00	24.00	14.00
	R + L	10.00	25.00	19.00

sinistral dominance in male, while it dominates dextrally in females. The female also show higher occurrence of 9.7.5.- and 7.5.5.- whereas 11.9.7.- is relatively common in male. Significant bimanual asymmetry recorded only in Deori male ($\chi^2 = 8.88$) but not in female ($\chi^2 = 5.14$). There is however non-significant differences between the sexes ($\chi^2 = 2.30$) in respect of this trait.

Qualitative aspect of palmar main line C show that the radial and proximal type is invariably high on right hand, whereas ulnar type observed to be associated more with the left palm (Table 5). Deori males show their dominance in radial type over females and females exhibit higher value than males as regards ulnar, proximal

Table 5 : Modal type of palmar main line C in Deori

Sex	Hand	Ulnar	Radial	Proximal	Absent
Male (N=50)	Right	60.80	36.00	2.00	2.00
	Left	80.00	16.00	2.00	2.00
	R + L	70.00	26.00	2.00	2.00
Female (N=50)	Right	68.00	22.00	4.00	6.00
	Left	80.00	18.00	0.00	2.00
	R + L	74.00	20.00	2.00	4.00

and absent category. However, no statistically significant bilateral (χ^2 for male = 5.23; female = 3.68) and bisexual ($\chi^2 = 1.54$) differences were found in any case.

The mean of the total a-b ridge count show comparatively higher mean value in male (71.90 ± 1.64) than the female (71.80 ± 1.34). However, the variation between the sexes is not statistically significant (t value = 0.05).

It is evident from table 6 that the double radial base crease (DRBC) is the most common types followed by tripple radial base crease (TRBC), while single radial base crease (SRBC) is significantly low in both the sexes.

Table 6 : Palmar flexion crease in Deori

Sex	Hand	SRBC	DRBC	TRBC
Male (N=50)	Right	0.00	84.00	16.00
	Left	2.00	86.00	12.00
	R + L	1.00	85.00	14.00
Female (N=50)	Right	4.00	72.00	24.00
	Left	4.00	76.00	20.00
	R + L	4.00	74.00	22.00

Occurrence of DRBC and SRBC is comparatively higher in left hand but TRBC is dominant in right hand. The male Deori show dominance in DRBC, while it is SRBC and TRBC in case of females. Chi-square values for bimanual difference in each sexes (male = 1.306; female = 0.24) are statistically non-significant. Significant difference also not exists in palmar flexion crease patterns between sexes ($\chi^2 = 4.34$).

Studies conducted earlier had shown that populations of North East India, having Mongoloid ethnic strain tend to have ratio of whorl and loop as 50 : 50 with very low proportion of arches. Among Deori, though the proportion of arches is quite low, but each sex exhibits different ratio of whorl : loop frequency. Arch - whorl index in the present sample are in agreement with Dankmeijer's (1938) classification and

shows close resemblance with the Mongoloid groups. The supposedly (Tiwari, 1952) Mongoloid palmar main line formula 9.7.5.- also occurs with greater frequency among Deori. The present study is also in conformity with Das and Sengupta (1985) who reported higher incidence of ulnar type of palmar C line termination in population groups of North East India having Mongoloid affinity.

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