

## **Digital and Palmar Dermatoglyphic Patterns among the War Jaintia of Nongtalang Village, West Jaintia Hills District, Meghalaya**

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**Abstract:** Digital and palmar Dermatoglyphic patterns were analyzed for 219 war Jaintia individuals (122 males and 97 females) of Nongtalang, west Jaintia hills district Meghalaya. A comparison is made to understand the relationship of this sub-group with the other Mongoloid population of North East India. Significant bimanual and bisexual differences are observed in many digital and palmar characters. Present study on comparison shows that the boy war Jaintia show similarities with the Bhoi and Garo in respect of finger patterns and females with the Pnar. The studied population also show differences with other population compared.

**Keywords:** Dermatoglyphic, finger patterns, Nongtalang, War Jaintia, Meghalaya

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### **I. INTRODUCTION**

Dermatoglyphic has been useful tools in understanding basic questions in biology, medicine, genetics, and evolution, in addition to being the best and most widely used method for personal identification. Battacharjee was one of the first to pioneer Dermatoglyphic research among the Abhor of Assam in North-East India [1]. Studies on dermatoglyphic pattern had been reported from this region by Chakravarty and Mukherjee, Das et al, Deka and Bora and Sengupta among others[2][3][4][5][6]. At present studies are mostly concentrated on collecting data on the distribution of finger and palmar Dermatoglyphic character in all parts of the region. More data are however required to understand their ethnic variations. The present study aims to describe the finger and palmar Dermatoglyphic traits of the war Jaintia of Meghalaya and find out the ethnic position of the studied population to mongoloid affinities of the region. The war Jaintia that falls in the west Jaintia hill district is one of the sub-tribe of Khasi Jaintia of Meghalaya having their own distinct dialect (also called war) which falls under the Mon-Khmer linguistic group. Like all the tribal populations of Meghalaya, they follow a matrilineal system of society and are believed to be the world largest surviving matrilineal culture.

### **II. MATERILAS AND METHODS**

Data for the present study was collected from the war Jaintia individuals of Nongtalang village of west Jaintia hills, Meghalaya. A total number of 219 adults subject was undertaken which comprised of 122 males and 97 females were collected and analyzed the method suggested by Cumins and Midlo [7].

### **III. RESULT AND DISCUSSION**

#### **Finger Patterns**

The Percentage frequencies of Pattern types is presented in Table 1. In both the sex the most common pattern is the ulnar loop. The percentage frequency of occurrence of ulnar loop was higher in males than in females. The ulnar loop is followed by the whorls. The total percentage occurrence of whorls is higher in the right hand in males, however, in females the same is observed in the right hand. The arch pattern frequencies occurrence is higher in males than in females, its frequency is higher in the left hand than in the right hand in both the males and females. The percentage frequency of loops, arches and whorls are found in decreasing order in both the males and females. The bisexual difference between the two sexes is statistically insignificant ( $\chi^2 = 2.59, P > 0.05$ ). The bisexual difference in males is statistically insignificant ( $\chi^2 = 5, p > 0.05$ ), while in females it is found to be significant ( $\chi^2 = 11.67, p < 0.05$ ). The Furuhat's index is 70.71 in males and 63.96 in females. According to Cummins and Mildothe Dankmeijer's index is almost without exception higher in males than in females. The present observation in the present sample where the Dankmeijer's index is found to be 13.81 in males and 11.62 in females, the present intensity index in males and females is 13.38 and 13.30 respectively. It is observed that the three indices are higher in males than in females.

**Table 1:** Percentage frequency distribution of finger patterns among the Nongtalang of Jaintia males and females.

Sex	Side	Whorls		Loop						Arches	
				Ulnar		Radial		Total			
		No.	%	No.	%	No.	%	No.	%	No.	%
Male	R	258	42.28	305	50	15	2.45	320	52.45	32	5.25
	L	220	36.06	345	56.56	11	1.80	316	58.36	34	5.13
	R+L	478	39.17	650	53.28	26	4.25	636	55.45	66	5.19
Female	R	194	40.01	258	53.21	13	2.68	271	55.89	20	4.12
	L	187	34.63	292	60.21	3	0.62	295	60.83	22	4.45
	R+L	381	37.32	550	56.71	16	2.99	566	59.16	42	8.27

**PlamarDermatoglyphics**

The different locations of the axial tirradii are given in table 2. In both the hands of males and females, the axial tri-radii occurs with highest frequency in position t, followed by t' and t'' respectively. Dual formation of axial tri-radii, though rare, have also been observed in all the given position with position t't' showing a higher frequency followed by t't''. However, the occurrence of axial tri-radii has least been observed in position tt''. The bisexual variation to this dermatoglyphic trait is found to be statistically insignificant. The bimanual variation among males also indicates that they are statistically insignificant, whereas, in females the bimanual variation reveals that the difference is statistically significant.

**Table 2:** Different locations of the male and female axial tirradii

Triradius	Male		Female	
	No.	%	No.	%
t	155	63.53	120	61.86
t'	73	29.91	53	27.32
t''	16	6.56	15	7.74
t't'	0	0.00	5	2.57
tt''	0	0.00	1	0.51
<b>Total</b>	244	100.00	194	100.00

Bisexual variation:  $\chi^2 = 2.04$ ,  $df = 5 > 0.05$ , insignificant

Apart from wilder's three mainline formula that is 11-9-7, 9-7-5 and 7-5-5, (wilder 1922) other types of mainline formula found in reasonable proportions in the population that is 9-9-5, 7-5-4 and 7-9-5 have also been reported (Table 3). The most common mainline formula in males 9-7-5, whereas in females, it is 7-5-5. The frequency of mainline formula 9-7-5 is considerably higher in males than in females but in respect of the mainline formula 7-5-5 and 9-7-5 females shows a higher frequency. Interestingly, the frequencies of other mainline formula were found to be comparatively higher in males than in females. The chi-square value indicates that the bisexual variation is statistically insignificant, whereas the bimanual variation is found to be statistically significant in both the males and females.

**Table 3:** Mainline formula in both the sexes

Mainline formula	Male	Female
11-9-7	25	28
9-7-5	88	62
7-5-5	64	71
9-9-5	23	13
7-5-4	7	4
7-9-5	3	8

Bisexual variation  $\chi^2=9.45$ ,  $df=5$ ,  $p>0.05$ , insignificant

Bimanual variation in males  $\chi^2 =32.58$ ,  $df=5$ ,  $p<0.05$ , significant

Bimanual variation in females  $\chi^2=16.08$ ,  $df=5$ ,  $p<0.05$ , significantOf the Modal types of the C-line termination (Table 5), ulnar type is most frequent, the frequency of which is higher on the left hand in both the sexes. The C-line ulnar termination is more frequent in males than in females. With respect to the C-line radial termination, males have higher frequency than the females. The C-line radial termination occurs on the higher frequency on the right hand than in the left hand in both the males and females. With regard to the bisexual and bimanual variations the  $\chi^2$ value indicates that the differences in respect of this dermatoglyphic trait is statistically insignificant.

**Table 4: C-Line Termination in both the sexes**

Sex	Termination type –C		
	Ulnar	Radial	Absent
Male	159	56	29
Female	132	52	19

Bisexual variation:  $\chi^2 = 3.7$ ,  $df = 2$ ,  $p > 0.05$ , insignificant

Bimanual variation in males:  $\chi^2 = 4.84$ ,  $df = 2$ ,  $p > 0.05$ , insignificant

Bimanual variation in females:  $\chi^2 = 1.74$ ,  $df = 2$ ,  $p > 0.05$ , insignificant

The mean  $\pm$  S.E is found to be  $43.48 \pm 0.54$  in males and  $43.81 \pm 0.59$  in females. In both the sexes the ‘atd’ angles have more or less equal frequencies in both the hands. The bisexual and bimanual variation in both the sexes with respect to this Dermatoglyphic trait is found to be statistically insignificant.

**Table 5: Mean ‘atd’ angle**

Sex	MEAN $\pm$ S.E
Male	43.48 $\pm$ 0.54
Female	43.81 $\pm$ 0.59

Bisexual Variation:  $t = 0.41$ ,  $df = 217$ ,  $p > 0.05$ , insignificant

Bimanual variation in males:  $t = 0.41$ ,  $df = 217$ ,  $p > 0.05$  insignificant

Bimanual variation in females:  $t = 0.92$ ,  $df = 217$ ,  $p > 0.05$  insignificant

A comparison with few neighbouring Mongoloid populations of North-east India such as the Mishing, Chutia, Mikir, Lalung, and, Mukherjee, Das and Jami suggest that the War Jaintia males of Nongtalang villages shows similarity with the Bhoi and Garo populations with respect to finger patterns[3],[5],[2][9],[10]. However, the finger patterns of female shows similarity with the Pnars.

#### IV. CONCLUSION

The present study reveals that among the War Jaintia of Nongtalang village of West Jaintia hills the most common pattern is ulnar loops in both the sexes followed by the whorls and arches. The frequency of loops is higher in males than in females. This result is in conformity with that observed by other scholars. The bisexual variation is observed in the pattern frequency, location of the terradii, mainline formula and C-line termination and is found to be statistically insignificant. On comparison with other mongoloid populations of North-East India, it is seen that apart from the Bhoi and Garo, the finger patterns of males are significantly different with all compared populations. The finger pattern of females also reveals significant differences with the rest of the compared populations expect that of pnar.

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