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DIGITAL AND PALMAR
DERMATOGLYPHICS
OF
CHENCHUS

TRIBAL CULTURAL RESEARCH AND TRAINING INSTITUTE
TRIBAL WELFARE DEPARTMENT
GOVERNMENT OF ANDHRA PRADESH
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RESEARCH PAPER NO.

DIGITAL AND PALMAR DERMATOGLYPHICS OF CHENCHUS

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F O R E W O R D

THIS study is one of a series undertaken by the Physical Anthropology Cell of Tribal Cultural Research and Training Institute, Hyderabad. As a first step the food habits, Nutrition Status, Blood Groups, Color Blindness and Dermatoglyphics of 'Chenchu' a primitive hunting and gathering tribe of Andhra Pradesh was undertaken.

I hope that the data provided in this paper on 'Digital & Palmar Dermatoglyphics of Chenchus', which was hitherto not covered will throw light on many useful aspects of the subject for Physical Anthropologists, Geneticists, Forensic Science Laboratories and Police Departments.

Hyderabad.
Dt: 27th March, 1973.

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DIGITAL AND PALMAR DERMATOGLYPHICS OF CHENCHUS

The Chenchus are one of the most primitive tribes of India. Though they are sporadically distributed throughout the State of Andhra Pradesh, a majority of them inhabit the thick forests in the Amarabad plateau of Mahabubnagar District and the Nallamalais in the districts of Kurnool, Prakasam and Guntur of Andhra Pradesh. They lived in isolation for a very long time till the recent construction of roads and extension of several welfare activities in the area, eking their livelihood, by hunting and gathering in the forests. The Lambadis also lived side by side with Chenchus for a very long time but there is no intermixture between these two populations. The Chenchus are medium statured, slender bodied, with dark brown to coppery skin, coarse wavy or curly hair. Their body and beard hair is very scanty. They are classified to belong to the proto-australoid or Veddid stock by several authors (Sarkar, Majumdar etc.).

Material and Methods:

During the course of a diet survey, during ^{the} months of April/May 1972, a random sample of 116 male and 81 female, unrelated Chenchus, from the villages of Mannanur, Banal, Ambagiri and Watwarlapally in the Amarabad plateau; Byrlutigudem, Nagalutygudem, Pecheruvugudem and Pedamantrala villages in Kurnool and Prakasam Districts, were selected for finger and palmar prints.

Finger and Palmar prints were taken on white glazed paper with printers ink as described by Cummins and Midlo. The Analysis of data was also done according to Cummins and Midlo (1961).

R e s u l t s:

The percentage frequencies of different digital patterns of the male and female Chenchus are shown separately in tables 1 (a) and 1 (b).

Table No.1(a)

Percentage frequency of Finger Print patterns in 116 Male individuals of Chenchus

Digits/Hands	Whorls		Loops		Radial		Arches	
	Abs.No.	%	Abs.No.	%	Abs.No.	%	Abs.No.	%
I	Rt.	49	42,241	52.586	0	0.000	6	5.172
	Lt.	38	32.758	61.206	1	0.862	6	5.172
	Rt.+Lt.	87	37.500	56.896	1	0.431	12	5.172
II	Rt.	48	41.379	42.241	6	5.172	13	11.206
	Lt.	38	32.758	48.275	10	8.620	12	10.344
	Rt.+Lt.	86	37.068	45.258	16	6.896	25	10.775
III	Rt.	27	23.275	70.689	2	1.724	5	4.310
	Lt.	40	34.482	56.896	1	0.862	9	7.758
	Rt.+Lt.	67	28.879	63.793	3	1.293	14	6.034
IV	Rt.	57	49.137	48.275	1	0.862	2	1.724
	Lt.	59	50.862	45.689	1	0.862	3	2.586
	Rt.+Lt.	116	50.000	46.982	2	0.962	5	2.155
V	Rt.	27	23.275	74.137	1	0.862	2	1.724
	Lt.	24	20.689	76.724	0	0.000	3	2.586
	Rt.+Lt.	51	21.982	75.431	1	0.431	5	2.155
All Digits	Rt.	208	35.862	57.586	10	1.724	28	4.827
	Lt.	199	34.310	57.758	13	2.241	33	5.689
	Rt.+Lt.	407	35.086	57.672	23	1.982	61	5.258

Percentage Frequency of Finger Print Patterns in 81 Temple Individuals of Chenchus

Digits Hands	Whorls		Loops		Arches		
	Abs.No.	%	Abs.No.	%	Abs.No.	%	
I	Rt.	36	44.444	45	55.555	0	0.000
	Lt.	37	45.679	42	51.851	1	1.234
	Rt+Lt	73	45.061	87	53.703	1	0.617
II	Rt.	34	41.975	36	44.444	4	4.938
	Lt.	34	41.975	36	44.444	4	4.938
	Rt+Lt	68	41.975	72	44.444	8	4.938
III	Rt	19	23.456	59	72.839	2	2.469
	Lt.	24	29.629	54	66.666	1	1.234
	Rt+Lt.	43	26.543	113	69.753	3	1.851
IV	Kt.	43	53.086	37	45.679	1	1.234
	Lt.	40	49.382	41	50.617	0	0.000
	Rt+Lt.	83	51.234	78	48.148	1	0.617
V	Rt.	12	14.814	68	83.950	1	1.234
	Lt.	14	17.283	66	81.481	0	0.000
	Rt+Lt	26	16.049	134	82.716	1	0.617
ALL Digits	Rt.	144	35.555	245	60.493	8	1.975
	Lt.	149	36.790	239	59.012	6	1.481
	Rt+Lt	293	36.172	484	59.753	14	1.728

The analysis shows that loops are more than whorls in both the sexes and that females possess more whorls and ulnar loops than the males. The percentage of arches in males (5.258%) is more than twice that of the females (2.345%). Whorls, loops and arches show unlike configurations on different hands, different digits and different sexes. In males the highest percentages of whorls, ulnar loops and arches were on digit IV, digit V and digit II respectively for both the right and left hands. Loops are more than whorls in the pooled data for all digits. Radial loops are completely absent in the right hand of the I digit. In the case of females also the maximum percentage of; whorls are found in the IV digit of both the right and left hands; ulnar loops on the V digit; radial loops and arches on the II digit as in the case of males. In contrast to the complete absence of radial loops only in the first digit of right hand in the case of males; the I digit of right hand and IV and V digit of left hand show complete absence of loops in the females. The Arches are completely absent in the IV digit on both hands and in the I and V digit of right hand.

TABLE 2(a)

COMPARATIVE OCCURRENCE OF WHORLS AND LOOPS (R + U) IN DIFFERENT DIGITS OF CHENCHUS (MALES 116)

Digits	Right	Left	Right+Left	W/L Ratio
I	L ▷ W	L ▷ W	L ▷ W	1 : 1.528
II	L ▷ W	L ▷ W	L ▷ W	1 : 1.337
III	L ▷ W	L ▷ W	L ▷ W	1 : 2.253
IV	L = W	W ▷ L	W ▷ L	1 : 1.045
V	L ▷ W	L ▷ W	L ▷ W	1 : 3.450

TABLE 2(b)

COMPARATIVE OCCURRENCE OF WHORLS AND LOOPS (R + U) IN DIFFERENT DIGITS OF CHENCHUS (FEMALES 81)

Digits	Right	Left	Rt + Lt	W/L Ratio
I	L ▷ W	L ▷ W	L ▷ W	1 : 1.205
II	L ▷ W	L ▷ W	L ▷ W	1 : 1.176
III	L ▷ W	L ▷ W	L ▷ W	1 : 2.697
IV	W ▷ L	W ▷ L	W ▷ L	1 : 1.050
V	L ▷ W	L ▷ W	L ▷ W	1 : 5.192

The general order of the comparative occurrence of whorls and loops varies in individual digits. In both sexes the prevailing order is L > W on both the right and left hands on digits I, II, III and V. Digit IV shows a deviation from this order in both the sexes. In the males whorls are equal to loops on the right hand, and more than loops on the left hand, while in the case of females whorls are more than loops on the right hand; and loops are slightly more than the whorls on the left hand of this digit. The combined whorl: Loop ratio for digit IV in males is 1 : 1.045; whereas in females it is 1 : 1.050, which are almost equal to one another. This ratio for digits I, II, III and V in males varies between 1 : 1.337 and 3.450 with a mean of 1:2.142; while in the females it varies between 1 : 1.176 and 5.192 with a mean of 1 : 2.567.

PAPILLARY PATTERNS AND INDICES

TABLE - 3

PERCENTAGE OF PAPILLARY PATTERNS AND THEIR INDICES:

Group	Hands	Whorls	Loops		Arches	P.I.I. *	D.I. **	F.I. ***
			Ulnar	Radial				
Chenhus								
Males	Rt+Lt.	35.086	57.672	1.982	5.258	12.9826	14.986	53.815
Females	Rt+Lt.	36.172	59.753	1.728	2.345	13.3825	6.4029	53.836

* Pattern Intensity Index: (Whorls x 2) + Loops/10
 ** Denkmeijer's Index : Arches/Whorls x 100
 *** Furuhatas Index : Whorls/Loops x 100

The Chenchu females show a slightly higher pattern intensity index than males but the difference is not significant. The male Arch/Whorl index (14.986) is more than twice that of females (6.4829) as the males possess more Arches in their hands. The Whorl/Loop index is equal in both the sexes.

TABLE - 4

PAPILLARY PATTERNS OF SOME INDIAN TRIBES

Tribe	Sex	Whorls	Loops	Arches	Indices			Author
					P.I.I.	D.I.	F.I.	
Paniyans	M	57.99	40.72	1.29	15.6	0.777	14.24	Sarkar 1954
Adiyans	M	52.26	42.72	5.03	14.724	9.62	122.33	Sarkar 1954
Vettukuru- ma	M	32.41	61.11	6.48	12.59	19.99	53.03	Sarkar 1954
Kadar	M	59.38	40.10	0.52	15.89	0.875	144.59	Chakravarthi 1958
	F	47.72	51.77	0.51	14.987	1.07	92.97	
Urali	M	53.49	46.51	--	15.349	1.87	115.00	Chakravarthi 1960
	F	44.30	54.43	1.27	14.303	2.87	81.39	
Ulladan	M	31.25	67.28	1.28	12.987	4.09	46.45	Gupta 1965
	F	28.65	68.33	3.00	12.563	10.47	41.93	
Kota	M	42.90	55.00	2.10	14.80	4.80	78.00	Chakravarthi 1961
	F	42.20	54.60	4.20	13.54	10.19	77.73	
Sakara	M	42.43	55.89	1.68	14.07	3.96	99.12	Sarkar cited by Prasada Rao, 1959.
	F	24.72	67.42	7.86	11.68	31.82	36.67	
Saora	M	42.51	54.04	3.72	14.91	8.72	78.66	Prasada Rao 1969

Tribe	Sex	Whorls	Loops	Arches	Indices			Author
					P.I.I.	D.I	F.I	
Khonds	M	41.97	52.89	5.14	13.68	18.12	79.52	Sarkar cited by Prasada Rao 1969.
Khonds of Araku Valley	M	29.08	65.26	5.63	12.95	14.74	62.37	Prasada Rao-1969
Jusangs	M	42.00	56.64	1.36	14.06	3.25	74.15	Sarkar 1954
	F	38.82	57.65	3.54	13.53	9.09	67.34	
Uraon	M	36.6	57.3	6.1	13.05	16.66	63.87	Verma 1952
Lambadi	M	38.31	56.18	5.50	13.28	14.36	68.19	Gupta etal 1961
	F	30.06	62.33	7.61	12.24	25.32	48.23	
Toda	M	44.60	52.40	3.00	14.16	6.73	85.11	Basu 1961
	F	47.73	45.45	5.82	14.29	11.93	107.21	
Chenchus	M	35.086	59.654	5.258	12.98	14.99	58.82	Present Study
	F	30.172	61.481	2.345	13.38	6.48	58.82	

A comparison of the present Chenchu data with other South Indian and a few Orissan tribes shows that:

The male Paniyans, Adiyanas, Kadar, Urali and female Todas possess more whorls than loops. The Vettukuruma (M) Kadar (F), Urali (F) Ulladan (M&F), Kota, Khonds, Lambadi, Toda (M) Jaangs, Uraons and Chenchus possess more loops than whorls as the general order of the papillary patterns.

The male Chenchu papillary patterns and indices show resemblance to Khonds worked by Prasada Rao, while the female Chenchu patterns and indices show resemblance to the Juangs worked by Sarkar. Sarkar (1954) proposed that a whorl:loop ratio of approximately (60 : 40) is characteristic of Vedda or Australoids, which was confirmed by the studies of the finger print data of Australian by (Cummins and Setzler 1951). The Chenchus show a mean ratio of 35.629 : 60.567 which shows a reverse order.

The finger print data of Chenchus shows significant differences from the tribes of Tamilnadu and Kerala, but closely resemble the tribes of Visakhapatnam and Orissa State. However the differences are not statistically significant except in the case of Paniyans (M) and Kadars (F) in respect of Whorls.

Fig. 1(a)
Males = 116

10	4.31																			
9		5.17																		
8		1.862	6.03																	
7		.862		4.31																
6					8.62															
5						6.89														
4							6.89													
3								2.58												
2									7.75											
1										1.72										
0											6.89									
												.862								
													.862							
														12.06						
															3.44					
																3.44				
																	10.34			

Whorls

Loops
Bimanuar

Fig. 2
 Females = 81

Whorls

10	2.46									
9		3.70								
8			3.70							
7				13.57						
6					7.02					
5						8.63				
4							2.234	11.10		
3									2.46	
2									3.70	8.63
1										2.234
0										
∅		1	2	3	4	5	6	7	8	9
							1.234			
									4.93	
										13.57

Inoopa.

Bimannar

Bimanuars:

Heinrich Poll proposed the construction of the bimanuars in which the three patterns could be shown in a triangular pyramid. Figures 1 and 2 show the two bimanuars for the two sexes. They show the highest peak in males at 1st 9 L (12.06%); while the females show two peaks at 7th 3L and 10L each with a percentage of (13.57)

SYMMETRY AND ASYMMETRY IN FINGER PRINTS

The distribution of monomorphic hands among Chenchus is given in table 5. Monomorphic hands occur in 10.775% of males and 10.184% of females.

TABLE - 5

Distribution of Monomorphic Hands

Group	Pattern	Left		Right		Lt + Rt	
		Abs.No.	%	Abs.No.	%	Abs.No.	%
<u>Chenchus</u>							
Males (116)	Whorls	7	6.034	11	9.482	18	7.758
	Loop 'U'	19	16.379	13	11.206	32	15.793
		26	11.206	24	10.344	50	10.775
<u>Females</u>							
(81)	Whorls	3	3.703	3	3.703	6	3.703
	Loop 'U'	12	14.814	15	18.518	27	16.666
		15	9.258	18	11.110	33	10.184

TABLE 6-A

OCCURANCE OF SYMMETRY AND ASYMMETRY AMONG CHENCHUS AS OBSERVED
IN ALL THE FIVE DIGITS

Males (116)

Digits	Symmetry	Asymmetry
I No.	86	30
I %	74.13	25.86
II No.	76	40
II %	65.51	34.48
III No.	92	24
III %	79.31	20.68
IV No.	87	29
IV %	75.00	25.00
V No.	99	17
V %	85.34	14.65
Total No.	440	140
Total %	75.85	24.14

TABLE - 6-B

Females (81)

Digits	Symmetry	Asymmetry
I No.	61	20
I %	75.30	24.69
II No.	47	34
II %	58.02	41.97
III No.	67	14
III %	82.71	17.28
IV No.	63	18
IV %	77.77	22.22
V No.	67	14
V %	82.71	17.28
Total No.	305	100
Total %	75.30	24.69

and asymmetry
 The symmetry/in both the sexes do not show any significant differences.

PALM PRINTS

a) Mainline formulae:

The following table shows the frequencies of different mainline formulae in both the hands of 116 males and 81 female individuals

TABLE No.7

Frequencies of different main line formulae in both hands of Chenchus

Sl. No.	Main line			Formulae		Males 116				Females 81			
	D	C		B	A	Rt	Lt.	Total	%	Rt.	Lt.	Total	%
-1-	2-	3-	4-	5-	6-	7-	8-	9-		10-	11-	12-	13-
1	13	9		7	5	1	1	2	0.862	-	-	-	-
2	11	11		9	5	6	2	8	3.448	2	-	2	1.234
3	11	11		7	5	1	-	1	0.431	1	1	2	1.234
4	11	10		8	4	-	-	-	-	1	-	1	0.617
5	11	10		7	5	-	-	-	-	1	-	1	0.617
6	11	9		11	13	-	-	-	-	-	1	1	0.617
7	11	9		8	5	1	-	1	0.431	3	-	3	1.851
8	11	9		7	11	-	-	-	-	2	-	2	1.234
9	11	9		7	5	39	26	65	28.017	21	17	38	23.456
10	11	9		7	4	3	2	5	2.155	5	5	10	6.172
11	11	7		11	5	-	-	-	-	1	-	1	0.617
12	11	7		10	5	-	1	1	0.431	-	-	-	-

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13
13.	11	7	7	11	-	-	-	-	-	1	1	0.617
14.	11	7	7	5	4	7	11	4.741	5	1	6	3.703
15.	11	7	7	4	-	4	4	1.724	1	2	3	1.851
16.	11	7	5	5	-	1	1	0.431	-	1	1	0.617
17.	11	X	9	5	1	-	1	0.431	-	-	-	-
18.	11	X	7	5	3	2	5	2.155	-	-	-	-
19.	11	X	5	5	-	1	1	0.431	-	-	-	-
20.	10	9	7	5	-	-	-	-	-	3	3	1.851
21.	10	8	7	5	-	-	-	-	-	1	1	0.617
22.	10	7	5	12	-	-	-	-	-	1	1	0.617
23.	9	10	5	5	-	-	-	-	1	-	1	0.617
24.	9	10	5	3	-	-	-	-	-	1	1	0.617
25.	9	9	7	5	-	3	3	1.293	-	1	1	0.617
26.	9	9	5	5	19	14	33	14.224	8	6	14	8.641
27.	9	9	5	4	1	2	3	1.293	1	4	5	3.086
28.	9	9	5	2	-	-	-	-	-	1	1	0.617
29.	9	8	5	5	-	-	-	-	-	1	1	0.617
30.	9	7	8	4	1	-	1	0.431	-	-	-	-
31.	9	7	7	5	1	1	2	0.862	-	1	1	0.617
32.	9	7	5	5	15	16	31	13.362	6	6	12	7.407
33.	9	7	5	4	4	4	8	3.448	3	1	4	2.469
34.	9	7	5	3	-	-	-	-	-	1	1	0.617
35.	9	X	5	5	-	2	2	0.862	-	-	-	-
36.	8	7	5	5	-	-	-	-	-	1	1	0.617
37.	7	9	7	5	2	3	5	2.155	2	1	3	1.851
38.	7	9	5	11	1	1	2	0.862	-	-	-	-
39.	7	9	5	5	1	3	4	1.724	1	-	1	0.617
40.	7	9	5	4	1	1	2	0.862	-	1	1	0.617
41.	7	9	5	3	-	-	-	-	2	1	3	1.851

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
42. 66	7	7	7	5	-	-	-	-	1	-	1	0.617
43.	7	7	5	5	2	6	8	3.448	1	1	2	1.234
44.	7	7	5	4	-	-	-	-	-	1	1	0.617
45.	7	7	5	2	-	-	-	-	-	1	1	0.617
46.	7	5	9	5	1	-	1	0.431	-	-	-	-
47.	7	5	5	5	7	10	17	7.327	3	5	8	4.938
48.	7	5	5	4	1	3	4	1.724	5	8	13	8.024
49.	7	5	5	3	-	-	-	-	1	-	1	0.617
50.	7	5	5	2	-	-	-	-	1	2	3	1.851
51.	7	5	4	3	-	-	-	-	-	1	1	0.617
52.	6	9	7	5	-	-	-	-	1	-	1	0.617
53.	5	10	5	4	-	-	-	-	1	-	1	0.617
54.	5	9	5	5	-	-	-	-	-	1	1	0.617

It is observed from the table that altogether 54 different formulæ occurred in both males and females. The main-line formula 11, 9, 7, 5 occurs in the highest percentage in both the sexes. In males it is found in 28.017% while in females it is 23.456%. The formula 9, 9, 5, 5 occurs in the next highest frequency in both sexes; 14.224% in males and 8.641% in females. The formula 9, 7, 5, 5 occurs in the next highest frequency in both sexes; 13.362% in males and 7.407% in females. The formulæ 7, 5, 5, 5 in females occurs in 8.024% while in males it is only 1.724%. In males the formulæ 7, 5, 5, 5 (7.327%) 11, 7, 7, 5 (4.741%) 9, 7, 5, 4 and 11, 11, 9, 5 (3.448%)

occur in the next highest frequencies. In females the formulae 11, 9, 7, 4 (6.172%); 7, 5, 5, 5, (4.983%) 11, 7, 7, 5 (3.703%) 9, 9, 5, 4 (3.086%) and 9, 7, 5, 4 (2.469%) occur in the next highest frequencies.

Wilder's Main Line Formulae

Table 7(a) gives the incidence of Wilder's three main-line formulae. In the case of males, the formulae 11, 9, 7 - represents the highest frequency (30.17%); followed by the formula 9, 7, 5 - (16.81%); 9, 9, 5 (15.51%).

TABLE No. 7(a)

INCIDENCE OF WILDER'S THREE MAIN LINE FORMULAE

Formulae	Males		Females	
	Abs.No.	%	Abs.No.	%
11 9 7	70	30.17	50	30.86
11 7 7	15	6.46	10	6.17
9 9 5	36	15.51	20	12.34
9 7 5	39	16.81	17	10.49
7 9 5	8	3.44	5	3.08
7 7 5	8	3.44	4	2.46
7 5 5	21	9.05	25	15.43

7, 5, 5 (9.05%) and 11, 7, 7 (6.46%) lastly the formulae 7, 9, 5 and 7, 5, 5 occurs: in 3.44%. While in the case of females the formulae occur in following order 11, 9, 7 in 30.86%; 7, 5, 5 in 15.43%; 9, 9, 5 in 12.34%; 9, 7, 5 in 10.49%; 11, 7, 7 in 6.17%; 7, 9, 5 in 3.08% and lastly 7, 7, 5 in 2.46%

Main Line Index

The main line index is given in table 7(b) for both sexes. It is seen from the table that the main line index for right hand in males is 9.76 while in females it is 9.62; for left hand in males it is 9.20 and in the females it is 8.97. The differences are not significant

TABLE No.7(B)

MAIN LINE INDEX

Plan	Males(116)	Females(81)
Right	9.76	9.62
Left	9.20	8.97

Endings of the Main Lines

The frequency of the different endings of the four main lines D.C.B and A of 232 male and 162 female Chenchu palms is shown in Tables 8(a), 8(b), 8(c) and 8(d).

TABLE No.8(a)

PERCENTAGE FREQUENCIES OF ENDINGS OF FOUR MAIN LINES
LINE-D

Endings	Males No.116						Females No.81					
	Rt	%	Lt	%	RT+Lt	%	Rt	%	Lt	%	RT+Lt	%
5	-	-	-	-	-	-	1	1.23	1	1.23	2	1.23
6	-	-	-	-	-	-	1	1.23	-	-	1	0.61
7	16	13.79	28	24.13	44	18.96	14	17.28	22	27.16	36	22.22
8	-	-	-	-	-	-	-	-	1	1.23	1	0.61
9	31	26.72	39	33.62	70	30.17	21	25.92	24	29.61	45	27.76
10	-	-	-	-	-	-	-	-	5	6.16	5	3.08
11	69	59.48	49	42.24	118	50.86	44	54.32	28	34.56	72	44.44

TABLE No.8(b)
LINE OF C

End-ings	Males						Females					
	Rt.	%	Lt.	%	Rt+Lt	%	Rt.	%	Lt.	%	Rt+Lt	%
5	10	8.62	14	12.07	24	10.34	10	12.34	16	19.75	26	16.04
7	26	22.41	39	33.62	65	28.01	20	24.69	21	25.92	41	25.30
8	-	-	-	-	-	-	1	1.23	2	2.46	3	1.85
9	69	59.48	56	48.27	125	53.88	43	53.08	40	49.38	83	51.23
10	-	-	-	-	-	-	1	1.23	-	-	1	0.61
11	7	6.03	2	1.72	9	3.88	3	3.70	1	1.23	4	2.46
X	4	3.45	5	4.31	9	3.88	3	3.70	1	1.23	4	2.46

TABLE No.8(c)
LINE B

End-ings	Males						Females					
	Rt.	%	Lt.	%	Rt+Lt	%	Rt.	%	Lt.	%	Rt+Lt	%
4	-	-	-	-	-	-	-	-	1	2.23	1	0.61
5	42	36.20	62	53.44	104	44.82	34	41.97	45	55.55	79	48.76
7	64	55.17	51	43.96	115	49.57	40	49.38	34	41.97	74	45.67
8	2	1.72	-	-	2	0.86	4	4.93	-	-	4	2.46
9	8	6.89	2	1.72	10	4.31	2	2.46	-	-	2	1.23
10	-	-	1	0.86	1	0.43	1	1.23	-	-	1	0.61
11	-	-	-	-	-	-	-	-	1	1.23	1	0.61

TABLE No.8(d)
PERCENTAGES OF LINE A

End-ings	Males						Females					
	Rt.	%	Lt	%	Rt+Lt	%	Rt	%	Lt	%	Rt+Lt	%
2			-	-	-	-	-		5	6.17	5	3.08
3			-	-	-	-	3	3.70	3	3.70	6	3.70
7	10	8.62	16	13.79	26	11.21	19	23.45	22	27.16	41	25.30
5	105	90.51	99	85.34	204	87.92	57	70.37	47	58.02	104	64.19
11	1	0.86	1	0.86	2	0.86	2	2.46	1	1.23	3	1.85
12	-	-	-	-	-	-	-	-	1	1.23	1	0.86
13	-	-	-	-	-	-	-	-	2	2.46	2	1.23

Line D ends in 11 in 50.86%, in 9 in 30.17% and in 7 in 18.96% in the case of males; while in females the percentages are 44.44, 27.76, and 22.22 respectively.

Line C ends in 9 in 53.99%, in 7 in 28.01% and in 5 in 10.34% and in 11 and X in 3.88% each in males; while in females the percentages are 51.23, 25.30 and 16.04, 2.46 and 2.46 respectively.

Line B ends in 5 in 44.82% in 7 in 49.57% in 9 in 4.31% and in 10 in 0.43% ; while in the females it is 48.76 in 5, 45.67 in 7, 2.46% in 8 and 1.23% in 9.

Line A ends in 5 in 87.92%, in 4 in 11.21% and 11 in 0.86% in males; while in females the percentages are 64.19, 25.30 and 1.23% respectively. In females it also ends in position 13 with a percentage of 1.23% while in males it is nil.

AXIAL TRIRADII

TABLE No.9

THE FREQUENCIES OF DIFFERENT POSITIONS OF THE AXIAL TRIRADII
CHENCHUS

Males No.116						Females No.81						
Rt.	%	Lt	%	Rt+Lt	%	Rt	%	Lt	%	Rt+Lt	%	
t	106	91.37	105	90.51	211	90.94	74	91.35	75	92.52	149	91.97
t'	6	5.17	8	6.89	14	6.03	7	8.65	6	7.40	13	8.02
t''	4	3.44	3	2.58	7	3.01	-	-	-	-	-	-

Among the Chenchus t occurs in both the sexes in the highest percentage, -- 90.94 in males and 91.97 in females. t' occurs in the next highest frequency, namely 6.03% and 8.02%. Among the males t'' occurs in the last order with a percentage of 3.01 while it is nil in the females.

Patterns on Hypothenar area:

In the Hypothenar area the males show seven patterns in contrast to six among females.

TABLE - 10

FREQUENCIES OF VARIOUS TYPES OF HYPOTHENAR PATTERNS

Types	Males 116						Females 81					
	Rt.	%	Lt.	%	Rt+Lt	%	Rt.	%	Lt.	%	Rt+Lt	%
A ^u	69	59.48	70	60.34	139	59.91	28	34.56	23	28.39	51	31.48
L ^r	23	19.82	24	20.68	47	20.25	15	18.51	9	23.45	34	20.98
V	13	11.20	12	10.34	25	10.77	19	23.45	22	27.16	41	25.30
L ^u	8	6.89	7	6.03	15	6.46	7	8.64	7	8.64	14	8.64
L ^r /L ^u	1	0.86	2	1.72	3	1.29	-	-	-	-	-	-
O	-	-	-	-	-	-	11	13.58	10	12.34	21	12.96
W	-	-	-	-	-	-	1	1.23	-	-	1	0.61
S	1	0.86	-	-	1	0.43	-	-	-	-	-	-
Tr	1	0.86	1	0.86	2	0.86	-	-	-	-	-	-

The frequencies of various hypothernar patterns of 232 male and 162 female palms shows that, true pattern A^u occurs in the highest frequency in both the sexes, the percentages being 60.34 and 31.48 for males and females respectively. The next highest frequency occurs in L^r in males and V in females, followed by V in males and L^r in females. Open fields occur only in females. L^u occurs in males with a percentage of 6.46 and in females with a percentage of 8.64. L^r/L^u occurs in males only with a percentage of 1.29.

PATTERNS ON THENAR/ INTER DIGITAL AREA

TABLE -- 11

FREQUENCIES OF DIFFERENT THENAR/INTER DIGITAL PATTERNS.

Types	Males						Females					
	Rt.	%	Lt.	%	Rt+Lt	%	Rt.	%	Lt.	%	Rt+Lt	%
O	99	85.34	97	83.62	196	84.48	64	79.01	65	80.24	129	79.62
L ^r	-	-	-	-	-	-	5	6.17	3	3.70	8	4.93
V	16	13.79	17	14.65	33	14.22	8	9.87	10	12.34	18	11.11
W	1	0.86	2	1.72	3	1.29	-	-	-	-	-	-
L ^c	-	-	-	-	-	-	2	2.46	2	2.46	4	2.46
L ^u	-	-	-	-	-	-	1	1.23	-	-	1	0.61
L/L	-	-	-	-	-	-	1	1.23	1	1.23	2	1.23

"O"
 The pattern/Occurs in highest frequency in both sexes, with a percentage of 84.68% in males and 79.62% among females. Vestiges (V) occurs in the next higher frequency of 14.22% among males and 11.11% among females. The patterns L^r, L^c, L^u, L/L are absolutely absent in males but they occur in females with percentage frequency of 4.93, 2.46, 0.61 and 1.23 respectively. The pattern "W" occurs in males with a percentage of 1.29 but absent in females.

Patterns of the Inter Digital Areas II, III and IV

The pattern O Occurs in highest percentage in both the males and females with 93.96, and 94.40, respectively compared to 6.03 and 4.93 of pattern L. In the case of III Inter digital O is found in 43.53% and L is found in 56.46% among males, while among females they are found in 59.85% and 40.10% respectively. In the case of IV inter digital, the pattern O is 55.60% and L is 44.39%, while in females the percentages are 64.16 and 35.78 respectively.

PATTERNS ON II, III and IV INTER DIGITALS:

TABLE -- 13

PATTERNS ON II, III & IV INTER DIGITAL OF 116 MALES AND 81 FEMALE PALMS

Patterns	Males No.116						Females No.81					
	Rt.	%	Lt.	%	Rt+Lt	%	Rt	%	Lt	%	Rt+Lt	%
O.O.O	15	12.93	19	16.37	34	14.65	22	27.16	28	34.56	50	30.86
O.O.L	28	24.13	38	32.75	66	28.44	19	23.45	24	29.62	43	26.54
O.L.L	13	11.20	17	14.65	30	12.93	7	8.64	6	7.40	13	8.02
O.L.O	53	45.68	34	29.31	87	37.50	28	34.56	19	23.45	17	29.01
L.O.L	-	-	-	-	-	-	-	-	-	-	-	-
L.L.L	4	3.44	3	2.58	7	3.01	2	2.46	-	-	2	1.23
L.O.O	-	-	1	0.86	1	0.43	3	3.70	-	-	3	1.85
L.L.O	3	2.58	4	3.44	7	3.01	1	1.23	4	4.93	5	3.08

The main combination in II, III and IV inter digitals is O.L.O (37.50%) in males, and O.O.O. (30.86%) in females. The combination O.O.L.(28.44%) in males and O.L.O(28.39%) in females occur in the next highest frequency, followed by O.O.O in males and O.O.L (26.54%) in females. The combination O.L.L occurs in both sexes in the next highest frequency of 12.93% among males and 8.02% among females. The combination L.L.O is almost equal in both sexes being 3.01% in males and 3.08% in females. The combination L.L.L occurs in males in 3.01% while in females it is 1.23%. Lastly the combination L.O.O. Occurs in males in 0.43%, while in females it is 1.85%

C O N C L U S I O N :

The analysis of Digital and Palmar dermatoglyphics of the Chenchus shows that loops are more than whorls in both sexes. The pattern intensity, Arch/Thor1 and Thor1/loop Indices respectively are 12.982; 14.986; 58.815 for males and 13.382; 6.482; 58.834 for females. The main line formula 11, 9, 7, 5 is the most common. The most common endings for lines D and C are in 9, while for lines B and A are in 5. The endings of the axial triradii show t in more than 90% of the hands. On the hypothenar areas the males

show seven patterns while the female show only six patterns. True pattern A^u is very common, pattern 'O' occurs in highest frequency on Thenar Interdigital area and also interdigital areas II, III and IV; while the main combination of II, III and IV interdigitals is O.L.O in males and O.O.O in females. In many respects the Chenchus resemble the tribes of Visakhapatnam, and Orissa State like the Khond and Juang who are of Proto-Anstralaoid ethnic stock.

Br/-

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