

Dermatoglyphic Variation in the Nooka Dora of Andhra Pradesh

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ABSTRACT Finger and palm print data on 285 Nooka Doras from eleven villages of Ananthagiri Mandal of Visakhapatnam District, Andhra Pradesh are presented. Palm rather than finger revealed greater variation. There is a positive correlation between the digital ridge count and ridge count estimated from triradial point to the basal crease of the digit.

INTRODUCTION

Dermatoglyphic studies are profitably employed in population variation. The present paper reports, for the first time finger and palmar dermatoglyphics of Andhra Tribe, viz., the Nooka Dora.

The Nooka Dora, numbering 17,948 (ITDA Report), is a Scheduled Tribe of Coastal Andhra Pradesh. The history, origin and migration of the tribe is in vogue. The people speak Telugu with hilly accent. In physical features they are medium to tall in stature, and have brown to dark tan coloured skin. They prefer and practise consanguineous marriages particularly between the cross cousins, i.e., with FSD and MBD, but discourage uncle-neice marriages. Their social structure reveals having several exogamous clans or *intiperuluor* surnames that regulate marriage alliances. Their economy is agro-forest based. Shifting cultivation or 'podu' is their main occupation besides gathering of minor forest produce.

MATERIALS AND METHODS

Bilateral inked prints of finger balls and palms were collected and analysed after Cummins and Midlo (1961). The subjects included 285 Nooka Doras (145 males and 140 females) from 11 villages, viz., Beesupuram, Baarajaala, Katiki, Ekkumamidi, Jeelugadda, Doraguda, Baliyaguda, Ananthagiri, Kothavalasa, Sunkarametta and Bangalavalasa of Ananthagiri Mandal, Visakhapatnam District, Andhra Pradesh. Only unrelated subjects were considered.

RESULTS AND DISCUSSION

Dermatoglyphic data were analysed for both qualitative and quantitative characters and results are presented in table 1. Correlation coeffi-

Table 1: Dermatoglyphic variation in the Nooka Dora

Character	Male (145)	Female (140)
Finger Dermatoglyphics		
<i>Finger Pattern Types (in per cent)</i>		
Whorls	41.31	37.50
Loops	54.34	57.93
Arches	4.34	4.57
<i>FPII ($\bar{X} \pm S.E.$)</i>	13.83 ± 0.29	13.26 ± 0.28
<i>Ridge Counts</i>		
*TFRC ($\bar{X} \pm S.E.$)	94.00 ± 2.40	91.00 ± 2.19
AFRC ($\bar{X} \pm S.E.$)	138.45 ± 5.18	127.48 ± 4.55
Palmar Dermatoglyphics		
<i>*Palmar Mainline Formulae (in per cent)</i>		
11.9.7.-	26.20	21.79
9.7.5.-	21.72	31.79
7.5.5.-	33.10	27.50
"Rest"	18.97	18.93
<i>*Polymorphic C-line (in per cent)</i>		
Radial	55.86	60.00
Ulnar	35.52	31.07
Proximal	0.00	1.07
Absent	8.62	7.86
<i>Hypothenar Triradii (in per cent)</i>		
H ^p	4.14	5.71
H ^{ba}	7.93	3.93
H ^{pa}	0.00	0.71
<i>MLI ($\bar{X} \pm S.E.$)</i>	16.34 ± 0.22	16.15 ± 0.19
<i>PPII ($\bar{X} \pm S.E.$)</i>	12.43 ± 0.70	12.59 ± 0.85
<i>Ridge Count</i>		
a-b ($\bar{X} \pm S.E.$)	50.86 ± 0.57	51.36 ± 0.64

* Show significant sex difference as evident from χ^2 and t-values at 5% probability level

icients computed between the digital ridge count and ridge count from triradial point to the basal crease of the respective digit are given in table 2.

Finger Dermatoglyphics

(a) *Finger Pattern Types*: A preponderance of whorls in males and loops in females is evident. Left hand shows greater variation than the right in females and combined sex series. The bimanual

difference is statistically significant while sex dimorphism is observed for the right hand only. Thus the present population deviates from other neighbouring tribal groups viz., the Bagatha (Heena and Narahari, 1990), Konda Dora (Narahari et al., 1989), Mali (Narahari et al., 1995) since sex dimorphism (Cummins and Midlo, 1961; Holt, 1968; Mukherjee, 1967). However, Henry's classification of pattern types reveals significant sex dimorphism suggesting the prominence of pattern variability details (Bhanu, 1991).

(b) *Finger Pattern Intensity Index (FPII)*: It's mean value is though slightly higher for the males but fail to exhibit significant sex dimorphism. This may be due to an excess of tented arches in females despite more whorls observed in females.

(c) *Ridge Counts*: Total and Absolute Finger Ridge Counts (TFRC and AFRC) are relatively smaller compared to other neighbouring populations reported so far. Hence, an attempt is made to evaluate the role of elevated position of pattern triradius and size of the pattern. To ascertain this a conventional method was followed in the present study by taking the ridge count between the basal phalangeal crease and triradial point which in turn is correlated with concern pattern ridge count. The correlation coefficient values along with the 't' values for sex difference were given in table 2. Interestingly there is a positive correlation between the two varied ridge counts. The values are slightly higher for females than males. Except the III digit (in males only) all the digits show r value more than 0.5. The

sex differences are significant for the I, III digits only. Such a correlation may be assumed in view of Loesch's (1971) schematic embryonic formation of dermal ridges during 13th week of embryo.

Palmar Dermatoglyphics

(a) *Principal Main Line Formulae (PMLF)*: 7.5.5- predominates followed by 9.7.5- and 11.9.7-. In laterality, right hand than the left hand reveals high values. The sex difference is statistically significant. The Nooka Doras by having high frequency of 7.5.5- deviates from the Bagatha, Koya Dora and Valmiki in whom 11.9.7- predominates.

(b) *Polymorphic C-Line*: 'Ulnar' type of termination occurred most frequently followed by 'Radial' type. Right hand shows much variability than the left in both the sexes. Again females are considerably varying than males. However, neither bilateral nor sex dimorphism is statistically significant among the Nooka Doras.

(c) *Hypothenar Triradii*: Females show about 2 per cent excess of hypothenar triadius (H^p) while males show almost double the frequency of extra limital triadius (H^{pm}) over their counterparts. The bimanual; and sex differences are non-significant. This corroborates with the earlier findings by Kamali et al. (1986) for Monogoloid and Caucasoid but deviates from those of Karmakar and Malhotra (1982) and Narahari (1982).

(d) *Main Line Index (MLI)*: The mean values of the character were observed slightly higher for males. Right hand shows much transversality

Table 2: Correlation coefficients (r) between X and Y ridge counts

Digit	Male (145)			Female (140)			't' values for Sex Difference
	Max. X	Count Y	R ± S.E.	Max. X	Count Y	R ± S.E.	
<i>Right Hand</i>							
I	48	31	0.54 ± 0.04	38	42	0.67 ± 0.03	2.72*
II	30	25	0.67 ± 0.03	35	24	0.63 ± 0.03	0.72
III	27	26	0.47 ± 0.04	33	27	0.61 ± 0.04	2.43*
IV	39	25	0.63 ± 0.03	37	26	0.65 ± 0.03	0.05
V	29	24	0.50 ± 0.04	38	24	0.60 ± 0.04	1.61
<i>Left Hand</i>							
I	42	33	0.57 ± 0.04	35	30	0.65 ± 0.03	1.56
II	44	26	0.59 ± 0.04	29	26	0.56 ± 0.04	0.63
III	32	32	0.32 ± 0.05	30	31	0.57 ± 0.04	-3.95*
IV	38	33	0.59 ± 0.04	33	32	0.52 ± 0.05	0.95
V	29	25	0.55 ± 0.04	29	22	0.54 ± 0.04	0.28

*Significant at 5% probability level

Note : X = Digital ridge count

Y = Ridge count from triradial point to the basal phalangeal crease in a digit

over the left in both the sexes, thereby lead to show significant bilaterality. The sex difference, is non-significant. The findings coincides with those reported for neighbourhood tribal populations (see Narahari et al., 1995).

(e) *Palmar Pattern Intensity Index (PPII)*: The total number of triradii on the palm per individual failed to show any significant difference in either bilateral or sex dimorphism, a common observation found in most of the earlier works.

(f) *Plamar a-b Ridge Count*: The mean value is not much variable in either sex of hand and show non-significant bilaterality or sex dimorphism. However, the values are much lesser in the Nooka Dora for this character when compared to other tribal populations of the state.

Thus the dermatoglyphic variation of the Nooka Dora is significant for the palmar rather than finger dermatoglyphic characters.

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