

Palmar Dermatoglyphic Creases Among Eleven Population Groups of Himalayas

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ABSTRACT This paper reports the variation of palmar creases frequencies among the Pangwalas, Transhumant and Settled Gaddis of Himachal Pradesh, Newars of Nepal and Bhutanese of Bhutan. The results of the study are compared within and in between these groups, as well as with other reports available in the literature.

Some of the important traits in dermatoglyphics are those concerned with the various creases of the palm. A few reports are available in the literature on the palmar creases among the normal population groups. Further, no single standardised methodology is available which can facilitate comprehensive population comparisons. In the present paper Pangwalas, Transhumant and Settled Gaddis from Himachal Pradesh, Newars of Nepal and Bhutanese of Bhutan are reported. The details relating to the area and the people have been reported elsewhere (Bhasin, 1964, 1974; Bhasin et al., 1982). In this paper the frequencies of the various palmar creases will be observed and the comparison made within and inbetween the various groups. Further the variations with the other population groups reported in the literature will be studied.

MATERIAL AND METHODS

The dermatoglyphic samples for the present study were collected from Himachal Pradesh among the Pangwalas (Pangi Tehsil), Transhumant Gaddis (Bharmour Tehsil) of Chamba District, Settled Gaddis of Kangra District, Newars from Nepal and Bhutanese from Bhutan. The detailed description of the data collection and

sampling have been reported by Bhasin (1964, 1974) and Bhasin et al. (1982). In the present paper all the samples reported are male. The distribution of the dermatoglyphic samples among various groups is as follows:

Chamba District, Himachal Pradesh

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|--|-------|
| 1. Pangwalas of Pangi Tehsil | n=190 |
| 2. Transhumant Gaddis of Bharmour Tehsil. (TG) | n=327 |
| 2.1 Brahmans | n= 83 |
| 2.2 Rajputs | n=194 |
| 2.3 Scheduled Castes | n= 50 |

Kangra District, Himachal Pradesh

- | | |
|------------------------|-------|
| 3. Settled Gaddis (SG) | n=219 |
| 3.1 Brahmans | n= 80 |
| 3.2 Rajputs | n=120 |
| 3.3 Scheduled Castes | n= 19 |

Nepal

- | | |
|-------------------------------|-------|
| 4. Newars of Kathmandu Valley | n=313 |
| 4.1 Shrestha | n=175 |
| 4.2 Gubhaju | n= 40 |
| 4.3 Jyapu | n= 66 |
| 4.4 Remainder | n= 32 |

Bhutan

- | | |
|--------------|-------|
| 5. Bhutanese | n= 73 |
|--------------|-------|

The analyses of palmar creases have been done after Leiber (1961), Bali and Chaube (1971) and Dar et al. (1971).

RESULTS AND DISCUSSION

Radial Base Crease

The frequencies of various palmar creases among the different population groups are presented in table 1. The frequency for single radial base crease (SRBC) ranges in between 6.00 among Transhumant Gaddis and 7.99 per cent in Newars of Nepal. The high frequencies for SRBC type S_1 , S_2 and S_3 have been observed among all the groups. The difference observed are statistically non-significant within and in between the different groups reported. Chaube (1979) reported five population groups from India where the frequency ranges from 6.85 among Punjabis to 16.67 per cent in Bhangi which is high as compared to present study and from South India, a coastal population from Andhra Pradesh is reported by Sudarshan (1979) where the frequency of SRBC is 5 per cent which is a little less than the present study.

The lowest frequency for double radial base crease (DRBC) is observed among Newars of Nepal (80.51 per cent) and highest in Settled Gaddis (84.2 per cent). The frequency of Type D_1 has been observed quite high among all the groups studied, which is followed by Type D_2 (Table 1). Statistically non-significant differences are observed within and in between the various groups studied except among Gubhaju Newars with Shrestha Newars and Jyapu Newars. In the present study, the frequency of DRBC is similar when compared to the population groups of India (range 77.33 to 85.78 with an average value 82 per cent), studied by Chaube (1979), whereas it is low when compared with coastal population of Andhra Pradesh (88.3 per cent).

The frequency for triple radial base crease (TRBC) is observed highest among Bhutanese (12.33 per cent) and lowest among Settled Gaddis (8.9 per cent). Significant differences have been

observed only among Transhumant Gaddis and Pangwalas, Scheduled Caste (TG) and Rajputs (SG) and Gubhaju Newars with Shrestha and Jyapu. Among Indian groups, the frequency of TRBC, is reported in between 4.55 among Yadas to 10 per cent in Nairs with an average value of 7.5 per cent and among coastal Andhra group it is 6.7 per cent which are less than as compared to the present study.

In general, it has been observed that the present population groups show almost similar pattern of frequency distribution as reported among North Indian population groups like Punjabis and Yadavas.

'M' Lines

The occurrence of 'M' line types unilateral and bilateral do not show a clear trend in the present population groups. It has been observed that the frequency of unilateral type is high among Pangwalas and Transhumant and Settled Gaddis. Whereas among Newars of Nepal and Bhutanese the frequency of bilateral is high than unilateral (Table 1). The differences within and in between the population groups are observed significant for Pangwalas with Transhumant Gaddis, and Newars and Bhutanese with Pangwalas and Transhumant and Settled Gaddis.

Simian Crease

In the present study, the frequency observed for typical simian crease is quite low (varies from 1.14 in Settled Gaddis to 2.72 per cent in Newars of Nepal) as compared to transitory simian crease (ranges in between 5.5 in Transhumant Gaddis and 8.90 per cent in Bhutanese). Non-significant differences are observed within and in between all the groups except Rajputs (TG) and Rajputs (SG) for transitory type simian crease.

Among the Indian population groups, Chaube (1979) observed the frequency of typical simian crease on average 1.5 per cent. Bhanu et al. (1979) reported its frequency in between 2.0 and 5.56 per cent among different population groups

Table 1: The frequency of radial base creases, 'M' line and simian crease (Right + Left) among eleven population groups of Himalayas

Particulars	Western Himalayas										Central Himalayas										Eastern Himalayas					
	Transhumant Gaddis, Chamba District					Settled Gaddis, Kangra District					Newars of Nepal										Bhutan	Bhutanese				
	Brahman		Rajput		Scheduled Castes	Brahman		Rajput		Scheduled Castes	Shrestha		Gubhoju		Jyapu		Remainder	Total								
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	No.	%			No.	%						
(n = 190) (n = 83) (n = 194) (n = 50) (n = 80) (n = 120) (n = 19) (n = 175) (n = 40) (n = 66) (n = 32) (n = 313) (n = 73)																										
I. Radial Base Creases																										
(a) SRBC																										
S ₁	6	1.58	2	1.20	4	1.03	2	2.00	2	1.25	6	2.50	0	0.00	5	1.43	2	2.50	0	0.00	1	1.56	8	1.28	2	1.37
S ₂	3	0.79	2	1.20	5	1.29	0	0.00	0	0.00	0	0.00	1	2.63	3	0.86	1	1.25	3	2.27	1	1.56	8	1.28	0	0.00
S ₃	16	4.21	3	1.81	10	2.58	1	1.00	0	0.00	12	5.00	2	5.26	8	2.29	0	0.00	4	3.03	1	1.56	13	2.08	7	4.79
S ₄	4	1.05	6	3.61	4	1.03	0	0.00	5	3.13	2	0.83	0	0.00	11	3.14	1	1.25	5	3.79	3	4.69	20	3.19	0	0.00
S ₅	0	0.00	0	0.00	0	0.00	0	0.00	1	0.63	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.56	1	0.16	0	0.00
Total	29	7.63	13	7.83	23	5.93	3	3.00	8	5.00	20	8.33	3	7.89	27	7.71	4	5.00	12	9.09	7	10.94	50	7.99	9	6.16
(b) DRBC																										
D ₁	1	0.26	0	0.00	1	0.26	0	0.00	0	0.00	1	0.42	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
D ₂	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.29	0	0.00	0	0.00	2	3.13	3	0.48	0	0.00
D ₃	16	4.21	3	1.81	19	4.90	7	7.00	3	1.88	15	6.25	0	0.00	15	4.29	4	5.00	5	3.79	2	3.13	26	4.15	9	6.16
D ₄	189	49.74	95	57.23	218	56.19	56	56.00	84	52.50	121	50.42	21	55.26	244	69.71	67	83.75	74	56.06	37	57.81	422	67.41	68	46.58
D ₅	88	23.16	36	21.69	74	19.07	15	15.00	44	27.50	57	23.75	9	23.68	23	6.75	2	2.50	21	15.91	7	10.94	53	8.47	42	28.77
D ₆	22	5.79	3	1.81	13	3.35	2	2.00	3	1.88	11	4.58	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	316	83.16	137	82.53	325	83.76	80	80.00	134	83.75	205	85.42	30	78.95	283	80.86	73	91.25	100	75.76	48	75.00	504	80.51	119	81.51
(c) TRBC																										
35	9.21	16	9.64	40	10.31	17	17.00	18	11.25	15	6.25	5	13.16	40	11.43	3	3.75	20	15.15	9	14.06	72	11.50	18	12.33	
II. M Line																										
Unilateral	53	27.89	23	27.71	70	36.08	20	40.00	31	38.75	40	33.33	7	36.84	8	4.57	5	12.50	2	3.03	2	6.25	17	5.43	4	5.48
Bilateral	22	11.58	9	10.84	47	24.23	13	26.00	8	10.00	12	10.00	3	15.79	13	7.43	4	10.00	4	6.06	0	0.00	21	6.71	7	9.59
III. Simian Crease																										
Typical	9	2.37	4	2.41	7	1.80	1	1.00	2	1.25	3	1.25	0	0.00	11	3.14	2	2.50	1	0.76	3	4.69	17	2.72	2	1.37
Transitory	23	6.05	12	7.23	18	4.64	3	3.00	8	5.00	22	9.17	2	5.26	25	7.14	3	3.75	10	7.58	6	9.38	44	7.03	13	8.90

of Maharashtra (West India). In the coastal population group of Andhra Pradesh (South India), the frequency is reported as 1.78 per cent. Buechi (1954) reported the frequency of typical simian crease 3.87 per cent among Tibetans and 13 per cent among Chinese.

It must be emphasized here that much more population studies are needed before a critical evaluation of the population variation for the creases of palm in Indian region could be attempted.

With regard to the population groups of Himachal Pradesh i.e., Pangwalas, Transhumant and Settled Gaddis, it has been reported in the previous papers (Bhasin et al., 1982, 1986 a,b; Singh et al., 1982) that they show more similarities with the population groups of North India. Though in the present study sufficient reports are not available for comparison, but still the present population groups show similarities with the population groups from North India (Punjabis and Yadavas)

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