

Cleft chin as a population marker

There are a number of easily observable morphological traits in human beings, viz, cleft chin, Darwin's tubercle, cartilagenous projection at the back of the ear, etc., the utility of which in inter-population studies has as yet not been fully exploited. In the present study, an attempt has been made for the first time to report data on cleft chin for 2064 unrelated subjects, representing 19 population groups from Kerala, Maharashtra and Manipur, in order to examine if the trait could be used as an analytical tool in population comparisons.

Some persons have been observed to have a distinct depression or cleft in the lower part of the chin in the median sagittal plane.

TABLE I
Incidence of cleft chinmed individuals among 19 population groups

Population Groups		Abbrevia- tions	n	Cleft Chin Present	
				No	%
Kerala					
1.	Ezhavas M	E.Z.	100	7	7
2.	Chovas M	C.O	100	8	8
3.	Tiyyas M	T.S.	100	10	10
4.	Valluva M	V.A.	100	6	6
5.	Kana M	K.A.	100	6	6
6.	Thanta M	T.A.	100	8	8
7.	Parya M	P.A.	100	4	4
8.	Vem Paraya M	V.F.	100	9	9
9.	Sambavar M	S.R.	100	8	8
TOTAL			900	66	7.33
Maharashtra					
10.	Deshasth Rgvedi Brahmins-F	D.R.	100	8	8.0
11.	Deshasth Yajurvedi Brahmins-F	D.Y.	100	12	12.0
12.	Chippavan Brahmins-F	C.H.	100	6	6.0
13.	Karhada Brahmins-F	K.R.	96	15	15.6
14.	Saraswat Brahmins-F	S.A.	60	18	30.0
15.	Chandraseniya Kayasth Prabhu-F	C.K.P.	60	14	23.3
16.	Maratha M	M.A.	100	12	12.0
17.	Korku M	K.U.	163	109	66.8
	F		52	44	84.6
	T		215	153	71.16
			831	238	28.64
Manipur					
	Brahmins M	M.B.	59	23	39.00
	F		56	4	7.1
	T		115	27	23.50
	Meitheci M	M.M.	107	18	16.8
	F		111	13	11.7
	T		218	31	14.25
			2064	362	17.53

M=Male; F=Female; T=Male+Female.

Such chins are also known as bilobed chins. The chin of 2064 persons (1229 males and 835 females) was observed and the presence or absence of the cleft was recorded and the inheritance as an autosomal dominant¹.

TABLE 2
Inter-group χ^2 -values for Males

Population groups	E.Z.	C.O.	T.S.	V.A.	K.A.	T.A.	P.A.	V.P.	S.R.	K.U.	M.B.	M.M.
E.Z.		0.07	0.58	0.08	0.08	0.07	0.87	0.27	0.07	103.16 ^a	24.37 ^a	4.86 ¹
C.O.		—	0.24	0.30	0.30	0.00	1.44	0.06	0.00	98.59 ^a	22.22 ^a	3.76 ¹
T.S.			—	1.09	1.09	0.24	2.85	0.05	0.24	90.16 ^a	18.47 ^a	2.08
V.A.				—	0.00	0.30	0.42	0.65	0.30	108.01 ^a	26.75 ^a	6.17 ¹
K.A.					—	0.30	0.42	0.65	0.30	108.01 ^a	26.75 ^a	6.17 ¹
T.A.						—	1.44	0.06	0.00	98.59 ^a	22.22 ^a	3.76 ¹
P.A.							—	2.10	1.44	232.38 ^a	32.38 ^a	9.66 ²
V.P.								—	0.06	94.27 ^a	20.27 ^a	2.84
S.R.									—	98.59 ^a	22.22 ^a	3.76 ¹
K.U.										—	13.82 ^a	69.35 ^a
M.B.											—	9.73 ^a
M.M.												—

Statistical Significance:
¹ = Significant at 5% level of probability
² = " " " 1% " " "
³ = " " " 00.1% " " "

TABLE 2a
Inter-group χ^2 -values for Females

Population groups	D.R.	D.Y.	C.H.	K.R.	S.A.	G.K.P.	M.A.	K.U.	M.B.	M.M.
D.R.		0.49	0.31	2.78	12.96 ^a	7.18 ^a	0.89	94.89 ^a	0.00	0.81
D.Y.		—	2.24	0.54	7.74 ^a	3.43	0.00	82.03 ^a	0.97	0.01
C.H.			—	5.41	16.57	9.48	2.24	102.52	0.08	2.15
K.R.				—	4.47	1.42	0.54	71.19	2.51	0.61
S.A.					—	0.68	7.74 ^a	36.02 ^a	10.56 ^a	8.40 ²
G.K.P.						—	3.44	45.28 ^a	6.11 ¹	3.80 ¹
M.A.							—	82.03 ^a	0.97	0.01
K.U.								—	74.91 ^a	86.18 ^a
M.B.									—	0.89
M.M.										—

(Table 1). The data on the Manipuris was gathered by Mr. N. R. Singh, around Imphal in 1966-67. Mrs. U. S. Shastree in 1967-68 observed the chin of Maharashtrian females in and around Poona, while data on Keralites was obtained by Mr. B. Vijaya Bhanu in 1967-68. Data on Korkus was collected by Miss S. Sachdeva in 1967. The χ^2 values were calculated by using tables of Woolf².

Following inferences could be drawn from Table 1, 2 and 2a:

- (1) The incidence of cleft chin while among the males varies from 4% (Paraya) to 66.8% (Korkus), with a mean of 17.57%, it ranges from 6% (Chitpavan Brahmins) to 84% (Korkus), with a mean of 17.48% for the series.
- (2) For the three groups where data are available for both the sexes, it is noticed that while among the Manipuri Brahmins and Meithei, the males have higher incidence of cleft chin, the opposite is observed among the mundari speaking Korkus. In the case of Manipur Brahmins and Korkus, the bisexual differences are statistically significant, the χ^2 values being 17.63 and 6.33 respectively, with d.f.=1. Both sexes of Meithei, however, show homogeneous distribution.
- (3) The population groups show a great deal of heterogeneity (Tables 2 and 2a). Out of 63 combinations for males, significant differences above the level of 0.5% probability have been observed for 28 combinations. In the case of females out of 45 comparisons, 21 showed significant differences.
- (4) Racially the data represents Caucasoids (Groups Sl. No. 10 to 17 and 19), Mongoloids (19), Australoids (1 to 9) and Australoid+Mediterranean admixture (17). It is observed that all these four racial groups show striking differences in the incidence

of cleft chin, the maximum being among both the sexes of Korkus, and the minimum being among the Keralites. Interestingly enough all the 9 castes from Kerala are homogeneous for this character, whereas the Maharashtrian castes, as well as Manipuri groups show a great deal of heterogeneity. A more complete analysis of these data will appear in *Am. J. Phys. Anthropol.*

- (5) In view of the heterogeneity depicted by these groups, we strongly feel that the trait could profitably be used as a population marker and therefore we recommend that in population genetic surveys this normal, inherited, easily observable, presumably non-adaptive variation should be recorded as a routine.

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¹ A. M. Winchester, *Heredity and your life*, 1960.

² B. Woolf, *Ann. Hum. Genet.*, **21**, 397-409, 1957.