

Morphological Variation of Certain Traits Among The Scheduled Caste Madigas of Andhra Pradesh

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ABSTRACT The paper reports the morphological variation of earlobe types, cleft chin, hypertrichosis of the ear and eye-brow types among the two Madiga groups, belonging to the same sub-caste of Gampadhompti Madigas: Madigas at Cuddapah District (MDCDP) and Madigas of Chittoor District (MDCTR). The proportion of persons with attached earlobe is lower in MDCDP (26.22%) than in MDCTR (38.79%), with highly significant sex difference in the latter group. The overall incidence of the trait of attached earlobe of the pooled Madigas is relatively lower than in other population. The cleft chin incidence in pooled Madigas is highly variable in male series (27.85%) with highly significant sex and intergroup differences, and shows larger variation compared to other populations. Hypertrichosis of the ear is found to be lower in MDCDP (20.38%) than in MDCTR (23.53%), and the overall incidence of pooled Madigas is somewhat higher than in other populations. Continuous eye-brow type is less common in the pooled Madigas (16.56%) with negligible group difference and significant sex difference in either group.

INTRODUCTION

The morpho-behavioural characters used to play a significant role in the earlier works in the discrimination of the various population group. Hilden was the first scientist to investigate and report as early as 1922 that the free earlobe is a dominant trait and has a hereditary basis. This work was followed by the studies of Carriere, Quelprud, Powell and Whitney, Suzuki, Glass, Gable, and Saldanha. Winchester (1960) believed that the cleft chin trait is inherited as an autosomal dominant, while McKusick (1968) listed it as good dominant. Cokayne (1933) thought hypertrichosis to be inherited through a dominant Y-chromosome

gene and most studies showed that the trait is compatible with a gene or genes in the Y-chromosome with occasional failure to penetrance (Gates, 1960; Dronam Raju, 1960; Gates et al., 1962; Slati and Apelbaum, 1963). The works conducted on eye-brows among Indian populations revealed that continuous type of eye-brows is less frequent than free type (Parmar, 1967; Karve and Malhotra, 1968).

The Madigas of the present study are the great leather-working Telugu-speaking scheduled caste of Andhra Pradesh, whose counterparts are called Chakkiliyans in Tamil Nadu, Karnataka and Kerala; Madigas in Maharashtra, Orissa, Gujarat and Rajasthan states. They are found distributed almost all over the state of Andhra Pradesh, including Cuddapah and Chittoor districts, where the survey was carried out. The different terms by which Madigas are called are Asprughyulu, Jambavulu, Gosangis, Matangas, Muttaranivaru or Antaranivaru, Harijan, Ettivaru, Tegavaru, Masti galu, Pedda Intivaru, etc. There are however terms like Arundhitiya, Gosangi, Jambavulu, etc included separately in the list of other scheduled castes (Census of India, 1971).

An economically distressed community, the Madigas occupy the lowest rung of the Hindu caste hierarchy. Their settlement is usually situated outside the main village. Of the 15 and odd main subdivisions or sub-castes among them, the Gampadhompti Madigas predominate. Hence this single endogamous group from two revenue districts of the State, Cuddapah and Chittoor, has been selected for the purposes of the paper.

MATERIAL AND METHODS

The material for the traits of earlobe types, cleft chin and eye-brow types consists of a sample of 1353 unrelated individuals (Male:703, Female: 650) and for hypertrichosis 703 males - all studied among a single endogamous group of Gampadhompti Madigas from two Rayalaseema districts of Cuddapah and Chittoor. The data were drawn from 13 villages in the former district and 18 villages in the latter district. The subjects observed were aged between 20 and 50 years.

The subjects were examined to see whether the earlobe is free or attached (Chattopadhyay, 1968; Rami Reddy, 1978; Rami Reddy et al., 1979, 1984). A distinct depression or dimple or fissure or cleft on the lower margin of their chins in the median sagittal plane is known as bilobed or cleft chin and accordingly the subjects were recorded as clefted or non-clefted (Bhanu and Malhotra, 1972). The trait of hypertrichosis was observed and recorded for the presence or absence of hairs on the ears (Malhotra, 1970). Eye-brows of the subjects were tested to see whether they were 'continuous' - where both the eye-brows are connected by hair-follicles, or 'separate' where the eye-brows are not connected.

RESULTS AND DISCUSSION

Earlobe Types : The free earlobe type is most common in occurrence with the highest proportion in either sex of both the Madiga population groups. The proportion of males (35.42%) with attached earlobe was found to be higher than that of females (29.38%) with significant sex-dimorphism among the pooled Madigas (Table 1). The district-wise data reveals relatively lower proportion of persons with attached earlobe in MDCDP (26.22%) than in MDCTR (38.79%) with significant group difference, and significant sex-dimorphism in the former group.

The proportion of attached earlobe persons

Table 1 : Frequency distribution of earlobe types

Madiga groups	Sex	Number tested	Earlobe types (%)	
			Free	Attached
MDCDP	M	363	68.87	31.13
	F	312	79.49	20.51
	M+F	675	73.78	26.22
MDCTR	M	340	60.00	40.00
	F	338	62.43	37.57
	M+F	678	61.21	38.79
Pooled	M	703	64.58	35.42
	F	605	70.62	29.38
	M+F	1353	67.48	32.52

of the present study is closer to the populations of Palli Reddis (Rami Reddy et al., 1984: 25.87%) only in female series among caste populations; Chenchus (Narahari et al., 1981: M - 30.95%, F - 30.00%), Nakkalas (Narahari et al., 1981 : M - 29.59%, F : 24.56%) in both the sex series and Jatapus (Ramachandraiah et al., 1978: 27.06%) and Yanadis (Narahari et al., 1981: 25.82%) in female series only among the tribal populations. From this it is evident that the proportion of individuals with attached earlobe is high among caste populations, particularly higher castes like Brahmmins, Vysyas and so on and low among tribal populations.

Cleft Chin : The distribution of phenotypes and allele frequencies for types of chin recorded following the basic binary classification of clefted and non-clefted chin types among the two groups of Madigas (Table 2) shows that the proportion of non-cleft chin individuals (51.66%) is slightly higher than the cleft chin individuals (48.34%) when both the sexes of the pooled group of Madigas are combined. But cleft chin individuals are more common among male series (67.28%) and non-cleft chin individuals among female series (72.15%) of this group. The sex difference is found to be statistically significant and conforms with most of the earlier works (Bhanu and Malhotra, 1972; Sethuraman et al., 1978; Narahari and Ramachandraiah, 1981; Narahari, 1982). The recessive non-cleft allele frequencies (c1) for male series and female series are 0.5720 and 0.8494, respectively with an average of 0.7187 for the pooled group.

Table 2 : Phenotype and allele frequencies for cleft chin

Madiga groups	Sex	Number tested	Phenotypes (%)		Allele Frequencies	
			Cleft	Non-cleft	C1	c1
MDCDP	M	363	74.93	25.07	0.4993	0.5007
	F	312	18.91	81.09	0.0995	0.9005
	M+F	675	49.04	50.96	0.2861	0.7139
MDCTR	M	340	59.12	40.88	0.3606	0.6394
	F	338	36.09	63.91	0.2006	0.7994
	M+F	678	47.64	52.36	0.2764	0.7236
Pooled	M	703	67.28	32.72	0.4280	0.5720
	F	650	27.85	72.15	0.1506	0.8494
	M+F	1353	48.34	51.66	0.2813	0.7187

The frequency of cleft chin individuals in the present study is closer to the proportion of Nayi Brahmins (Shameem Bhasha, 1980: 68.51%) in male series and Suryavamsam Kshatriyas (Monohara Raju 1982 : 72.00%) in female series among caste groups, while none in either sex of tribal populations. But when both sexes are combined, our series lie closer to Sugalis (Narahari and Ramachandraiah, 1981 : 50.00%) among tribal populations. From this it is evident that cleft chin individuals are more common in tribal than caste populations.

Hypertrichosis : The incidence and quantity of hypertrichosis of the ear, tested on 363 and 340 male individuals from Cuddapah and Chittoor districts (Table 3), shows a relatively higher percentage of the trait in MDCTR (23.53%) than in MDCDP (20.38%), their average for the pooled Madigas being 21.91%. The quantity of the hypertrichosis of the ear for the sake of convenience is divided into scanty, medium and bushy following Sarkar et al. (1961) and Majumdar (1974). The category of scanty hair individuals (11.52%) represented the highest proportion in the pooled population of Madigas, followed by the medium (8.39%) and bushy hair (1.99) categories. The scanty (13.24%) and medium (8.53%) category types of hair are proportionately higher in MDCTR than in MDCDP (scanty : 9.92%, medium: 8.26%) while the bushy type of hair is higher in MDCDP (2.20%) than in MDCTR (1.76%). But the intergroup difference is insignificant.

Table 3 : Frequency distribution of hypertrichosis of the ear by quantity and position

Classes of hypertrichosis	Madiga groups (%) Pooled (%)		
	MDCDP N:363	MDCTR N:340	N:703
Quantity			
Scanty	9.92	13.24	11.52
Medium	8.26	8.53	8.39
Bushy	2.20	1.76	1.99
Position			
Helix	3.58	7.06	5.26
Meatus	2.75	2.65	2.70
Tragus	4.41	4.71	4.55
Lobe	3.31	4.41	3.84
Helix + Meatus	1.10	0.59	0.85
Helix + Tragus	1.65	0.59	1.14
Helix + Lobe	1.10	0.88	1.00
Meatus + Tragus	0.00	0.29	0.15
Meatus + Lobe	1.10	0.29	0.71
Tragus + Lobe	0.28	0.88	0.57
Helix + Tragus + Lobe	0.83	0.29	0.57
Helix + Meatus + Tragus + Lobe	0.28	0.88	0.57
Total	20.39	23.53	21.91

In both the Madiga groups however the hair quantity occurs in order of scanty > medium > bushy categories.

The positional incidence of hypertrichosis of the ear (Table 3) shows that the helix incidence (5.26%) is the highest, followed by the tragus (4.55%), lobe (3.84%) and meatus (2.70%), respectively in the pooled Madigas. The trend of positional occurrence of the trait in either group is inconsistent, the intergroup difference being statistically insignificant.

The incidence of Madigas for the trait

comes closer to Andhra Brahmin (16.13%) (Chattopadhyay, 1966) and Palli Reddi (Ramana Reddy, 1982: 18.60%) castes and Jatapu (Ramachandraiah et al., 1978: 20.00%) tribe. On the whole the castes tend to show in general higher frequency of hypertrichosis than the tribes. In view of limited number of investiga-

Table 4 : Frequency distribution of eye-brow types (in percentage)

Madiga groups	Sex	Number tested	Eye-brows types	
			Separate	Continuous
MDCDP	M	363	79.34	20.66
	F	312	87.82	12.18
	M+F	675	83.26	16.74
MDCTR	M	340	80.00	20.00
	F	338	87.28	12.72
	M+F	678	83.63	16.37
Pooled	M	703	79.66	20.34
	F	650	87.54	12.46
	M+F	1353	83.44	16.56

tions and lack of uniform methods of study, no convincing inferences can be drawn on the trait.

Eye-brows: The subjects were examined for the two types of eye-brows - separate and continuous - based on the connection or non-connection of the eye-brows by hair follicles. The frequency of separate type eye-brows (83.44%) is more common than the continuous type (16.56%) among the pooled Madigas. In the continuous type of eye-brows, the proportion of males (20.34%) is relatively higher than in females (12.46%), the intersex difference being significant. This holds good for the two Madiga groups.

The results of our study (16.60%) on this trait as compared to other populations of India interestingly show that the frequency of the continuous type of eye-brows is less than in all the tribal as well as caste populations of Assam such as Miri (24.40%), Lalung (36.50%), and Kachri (40.00%) among tribal populations and Koch (47.50%), Kalita (51.50%), Ahom (47.50%), Kalibarta (50.00%) and Brahman (56.40%) among caste populations studied by Huq (1975). There are no works available from

Andhra Pradesh for comparison with our findings.

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