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INBREEDING IN VARIOUS ETHNIC GROUPS OF INDIA

Mating systems in human groups influence gene pools of populations. A comprehensive picture of consanguineous marriages preference in various communities from different parts of India has emerged during recent years. This is the one of important differences in customs between the South and the North [Sastri 1976]. The practice of consanguineous marriages is widely prevalent in South India [Dronamraju & Meera Khan 1961, Sanghvi 1966, Ali 1968, Cakravartti 1968, Pingle 1975, Veeraju 1973, 1977, Srinivasan et al. 1976, Reddy 1974, Roychoudhury 1976, Rao 1977, Saheb 1979] whereas in Northern India only a few communities practice consanguinity [Goswami 1970, Mukherjee 1971, 1972, 1973, Gosh 1972, Basu 1975, Barua 1976, Hug 1976, Bhatta & Bhatia 1974, Roychoudhury 1976]. Regional and social hierarchical differences are marked in a few studies from Andhra Pradesh and in some parts of the country. Reports about inbreeding in *telugu* speaking caste groups differ considerably suggesting the need for a comparative study of endogamous populations. Furthermore such studies concerning the Telangana region of Andhra Pradesh are still lacking. With this view an attempt has been made in this paper to study consanguinity in a village of Medak district and to compare it with other Indian populations.

MATERIAL AND METHOD

Data on 808 couples belonging to 16 endogamous groups of different castes was collected in Avancha village in Narasapur *taluk* of Medak district of Telangana region, Andhra Pradesh, during years 1970 - 1973. The data for each household was collected by means of schedules and genealogies.

MEASUREMENT OF INBREEDING

The extent of consanguinity has been expressed in terms of the proportion of a number of consanguineous marriages to the total number of marriages recorded. Number of consanguineous marriages has been broken down into numbers of par-

ticular types of such unions (based on degree of relationship between spouses) and these presented as frequencies among the total number of marriages.

Degree of consanguinity has been measured by the inbreeding coefficient F' as suggested by Sewall Wright. The coefficient is defined as the probability that two genes in the offspring of a given union are identical by descent from a common ancestor. The weighted average of all inbreeding coefficients of the progeny including those with $F=0$, has served to estimate the mean inbreeding coefficient (α) of a population: $\alpha = \sum p_i F_i$, where weights p_i are relative frequencies of progeny with coefficient F_i. Average inbreeding is estimated from marriages rather than from progeny. The f and α values computed for autosomal genes have been presented for some of South Indian populations and their temporal changes analysed (tab. 2).

The data on other Indian groups used in the present paper for comparisons are taken from literature quoted in tables.

THE POPULATION

The village under study occupies an area of 1.26 square miles on which are located 91 households. The population numbers 556 individuals, 287 males and 269 females belonging to 16 caste groups. Numerically 17% of the population constitute Madigas, 12.4% the Malas, 13.3% the Kurubas, another 13.3% the Muthrasis and 8.8% the Reddis. Thus members of five dominating castes make up 75% of the population while the remaining 25% of population comprises 11 less numerous castes [Rao 1977].

RESULTS AND DISCUSSION

Frequencies of consanguinity in all the 16 endogamous groups of Avancha village are presented in table 1. The prevalent type of consanguineous marriage is that between first cousins. Second cousin marriages have been observed in three castes only: the Malas (1.06%), the Reddis (1.02%) and the Kurubas (2.17%). Only the Muslims practice parallel cousin marriages (3.17%). The frequency of cross-cousin marriages is comparatively higher than that of paralel cousins. Uncle--niece marriage, that is highly prevalent and preferred type of consanguineous marriage in Andhra Pradesh, is absent in Avancha village. Out of 16 caste groups seven show a high frequency of consanguineous marriages (above 16%).

Inbreeding coefficients for the Avancha and Karnataka populations have been shown in table 2. The Chakali and the Muthrasi populations show low inbreeding coefficients. The Muslim, the Gollas, the Vera-musti the Malas, the Kurubas and the Sali populations are enumerated in descending order of α values. Inbreeding coefficients show higher values among the Komatis, the Mangali, the Gavandla, the Madiga and in the Kummari populations, than in the other caste groups of

Avancha: The Kummari and the Kammari populations in Avancha show the same values of inbreeding coefficients. In the Rangeraju population, consanguinity is absent, but this is due to the small sample size (5).

A survey conducted by Sanghvi [1966], over 14 districts of Andhra Pradesh shows significant variation in the pattern of inbreeding in different districts, with the highest concentration in coastal areas of Visakhapatnam and East Godavari.

Table 1. Frequency of mating patterns in Avancha village

Group	First cousins marriages	IInd cousins marriages	Total consangui-neous	Unrelated marriages	Total
Madiga	22 (16.79)	—	22 (16.79)	109 (83.21)	131
Mala	10 (10.64)	1 (1.06)	11 (11.70)	83 (88.30)	94
Muslim	*10 (15.87)	—	10 (15.87)	53 (84.13)	63
Reddi	16 (16.33)	1 (1.02)	17 (17.35)	81 (82.65)	98
Kuruba	9 (9.0)	2 (2.00)	11 (11.00)	89 (89.00)	100
Muthrasi	6 (5.36)	—	6 (5.36)	106 (94.64)	112
Chakali	2 (4.08)	—	2 (4.08)	47 (95.92)	49
Veera-Musti	5 (11.36)	—	5 (11.36)	39 (88.64)	44
Sali	2 (8.70)	—	2 (8.70)	21 (91.30)	23
Golla	3 (13.04)	—	3 (13.04)	20 (86.96)	23
Gavandla	4 (20.00)	—	4 (20.00)	16 (80.00)	20
Other castes	9 (17.65)	—	9 (17.65)	42 (82.35)	51
Total	98 (12.13)	4 (0.50)	102 (12.62)	706 (87.38)	808

* Includes (3.17%) of parallel cousin marriages. Figures in parentheses indicate the percentage. Other castes include Kammari, Kummari, Mangali, Komati and Rangeraju.

In both these districts inbreeding values are higher: 0.045, 0.048 respectively, than in caste groups of Avancha village. This is due to a high proportion of uncle-niece and matrilineal cross-cousin marriages prevailing in coastal districts. In the interior districts of Karimnagar and Nizamabad, uncle-niece marriage is almost nonexistent, which correlates with the observations of the present study. The two populations of the adjacent districts of Karimnagar and Nizamabad reveal low value of inbreeding coefficient that is similar to that observed in Avancha groups. This may be attributed to the gradual decline of inbreeding levels away from the coast (tab. 5). Occupation-caste groups show that the Brahmins (0.019) and the traders Komatis — (0.022) posses relatively low inbreeding while the Shepherds (0.033) and Fishermen (0.047) have higher level of inbreeding. The farmers and artisans are in the middle of range for the region. Unlike the results of Sanghvi, the Muslims of the present study do not show any case of uncle-niece marriage, but cross-cousin marriages were there more common than the parallel cousin unions. This is in contrast to Muslim custom in the North and in other parts of the country. Inbreeding coefficient of Muslims reported by Sanghvi shows a higher value than that for the present sample of Muslims (tab. 6). A study among hospital patients and parents of schoolchildren in Vishakhapatnam reported by Dronamraju and Meera Khan (tab. 7) shows that inbreeding coefficients for patients (0.0277), parents of patients (.01745), patients'

Table 2. Inbreeding coefficients for Avancha groups

Group	$\alpha \pm$ S.E.	S.D. $\pm$ S.E.	C.V. $\pm$ S.E.
Madiga	0.01049 ± 0.00092	0.02336 ± 0.00144	222.6191 ± 13.7535
Malas	0.00682 ± 0.00199	0.01929 ± 0.00141	282.8722 ± 20.6306
Muslims	0.00992 ± 0.00125	0.02284 ± 0.00203	230.2173 ± 20.5094
Reddis	0.01036 ± 0.002331	0.023080 ± 0.001649	222.7766 ± 15.9126
Kurubas	0.005938 ± 0.001792	0.017922 ± 0.001267	301.8411 ± 21.3434
Muthrasi	0.00335 ± 0.00133	0.01407 ± 0.00094	420.0806 ± 28.0678
Chakali	0.00255 ± 0.00177	0.01236 ± 0.00125	484.8691 ± 48.9792
Veera-musti	0.00710 ± 0.00299	0.01984 ± 0.00211	279.2848 ± 29.7719
Sali	0.00543 ± 0.00367	0.01761 ± 0.00260	324.0370 ± 47.7767
Gollas	0.00815 ± 0.00439	0.02105 ± 0.00310	258.2092 ± 38.0709
Gavandla	0.01250 ± 0.00559	0.02500 ± 0.00395	200.0000 ± 31.6228
*Other castes	0.01103 ± 0.00334	0.02383 ± 0.00236	216.0247 ± 21.3896
Pooled sample	0.007658 ± 0.000718	0.020405 ± 0.000508	266.4542 ± 6.6283

Inbreeding values for other caste groups of Avancha

Kummari	0.01042 ± 0.006717	0.023269 ± 0.004750	223.3062 ± 45.5822
Mangali	0.01389 ± 0.00612	0.02598 ± 0.00433	187.0829 ± 31.1805
Kammari	0.01042 ± 0.006717	0.023269 ± 0.004750	223.3062 ± 45.5822
Komati	0.01563 ± 0.01353	0.02706 ± 0.00957	173.2051 ± 61.2372

Inbreeding values for Coorg populations of Karnataka [Saheb 1979 and 1980]

Kodavas (1980)	0.001185 ± 0.000274	0.009798 ± 0.000194	826.8354 ± 16.3482
Amma Kodavas (1980)	0.020355 ± 0.001531	0.03113 ± 0.001083	152.8519 ± 5.318397
Kodavas (1979)	0.000977 ± 0.000213	0.007616 ± 0.000151	779.5059 ± 15.4124
Amma Kodavas (1979)	0.002684 ± 0.000691	0.011916 ± 0.000489	443.9782 ± 18.2166

Inbreeding values for Karnataka population studied by Reddy [1974]

Vokkaliga	0.08193 ± 0.00317*	0.03781* ± 0.00224*	199.75182* ± 11.85309*
Lingayat	0.02742 ± 0.00414*	0.04098* ± 0.00293*	149.4355* ± 10.67397*
Kuruba	0.02311* ± 0.00378*	0.04121* ± 0.00267*	178.31859* ± 11.55868*
Adikarnataka	0.02210 ± 0.00423*	0.03827* ± 0.00299*	173.13642* ± 13.51968*
Pooled sample	0.02253 ± 0.00189*	0.03967* ± 0.00134*	176.04896* ± 5.92788*

* Values calculated by the present authors.

children (0.01862) and for parents of schoolchildren (0.01939) are comparatively higher than values obtained in the present study.

For the 13 tribal communities studied by Veeraju [1977] from the coastal and Telangana regions of Andhra Pradesh reports give 6.5 to 72% of consanguineous marriages when inbreeding coefficients for autosomal loci vary from 0.005 to 0.058. Among these tribal communities the most frequent type of consanguineous marriage is that between first cousins. Mean inbreeding coefficients of the population studied by us fall within the range found by Veerraju, but in a few groups studied by him values of coefficients are higher than ours. The four Hindu caste groups (Sali, Kapu, Kamma and Jalari) studied by Veeraju [1973] fall in line with the population

Table 3. Intergroup comparison of castes cf Avancha for mean coefficients of inbreeding. t values are given for d. f. $= \alpha$

Caste group	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Madigas	1.75	0.37	0.05	2.26*	4.42***	3.98***	1.08	1.34	0.52	0.35	0.16	2.43**	0.01	0.01	0.55	0.38
2. Malas		1.39	.21	0.27	1.38	1.54	0.13	0.29	0.31	0.99	1.13	0.48	0.54	0.54	1.13	0.66
3. Muslims			0.17	1.82	3.60***	3.40***	0.87	1.16	0.39	0.45	0.31	1.57	0.07	0.07	0.64	0.42
4. Reddis				1.50	2.61***	2.67***	0.86	1.13	0.44	0.35	0.16	1.11	0.01	0.01	0.54	0.38
5. Kuruba					1.16	1.35	0.33	0.12	0.47	1.12	1.34	0.89	0.64	0.64	1.25	0.71
6. Muthrasi						0.36	1.15	0.53	1.05	1.59	2.14	2.85**	1.03	1.03	1.68	0.90
7. Chakali							1.31	0.71	1.18	1.70	2.24	2.67**	1.13	1.13	1.78	1.00
8. Veera-musti								0.35	0.20	0.85	0.88	0.18	0.45	0.45	1.00	0.62
9. Sali									0.48	1.06	1.13	0.60	0.65	0.65	1.19	0.73
10. Golla										0.61	0.52	0.11	0.28	0.28	0.76	0.53
11. Gavandla											0.23	0.86	0.24	0.24	0.41	0.21
12. Other castes												0.99	0.08	0.08	0.41	0.33
13. Pooled sample													0.41	0.41	1.01	0.59
14. Kummari														0.00	0.38	0.34
15. Kammari															0.38	0.34
16. Mangali																0.12
17. Komati																

* — Significant at 5% level
** — Significant at 1% level
*** — Highly significant

Table 4. Intergroup comparision for mean inbreeding coefficients between Avancha groups and Karnataka and Kodagu (Coorg) groups reported by Reddy [1974]

Avancha caste groups	Karnataka groups					Kodagu (Coorg) groups			
	Vokka-liga	Linga-yat	Kuruba	Adikar-nataka	Pooled sample	Koda-vas (1980)	Amma Kodavas (1980 - -81)	Koda-vas (1979)	Amma Kodavas (1979)
1. Madigas	2.56*	3.99***	3.24**	2.68**	5.73***	9.69***	5.52***	10.07***	6.78***
2. Malas	3.28**	4.52***	3.85***	3.31***	5.79***	2.81**	5.39***	2.92**	1.96
3. Muslims	2.64**	4.05***	3.31***	2.76**	5.56***	6.83***	5.28***	7.05***	5.07***
4. Reddis	2.18*	3.59***	2.87**	2.43*	4.06***	3.91***	3.58***	4.01***	3.16***
5. Kurubas	3.57***	4.76***	4.10***	3.52***	6.37***	2.62**	6.12***	2.75**	1.69
6. Muthrasis	4.53***	5.54***	4.93***	4.23***	8.30***	1.59	8.39***	1.76	0.44
7. Chakali	4.51***	5.52***	4.93***	4.26***	7.72***	0.76	7.61***	0.88	0.07
8. Veera Musti	2.71**	3.98***	3.32***	2.90**	4.36***	1.97	3.95***	2.04*	1.44
9. Sali	2.78**	3.97***	3.36***	2.98**	4.14***	1.15	3.75***	1.21	0.74
10. Golla	1.99*	3.19**	2.58**	2.29*	3.01**	1.58	2.63**	1.63	1.23
11. Gavandla	1.00	2.14*	1.57	1.37	1.70	2.02*	1.36	2.06*	1.74
12. Other castes	1.72	3.08**	2.39*	2.05*	3.00**	2.94**	2.54*	3.00***	2.45**
13. Pooled sample	3.47***	4.70***	4.02***	3.37***	7.36***	8.42***	7.51***	8.92***	4.99***
14. Kummari	1.15	2.15*	1.65	1.47	1.74	1.37	1.44	1.41	1.15
15. Kammari	1.15	2.15*	1.65	1.47	1.74	1.37	1.44	1.41	1.15
16. Mangali	0.73	1.83	1.28	1.10	1.35	2.07*	1.02	2.11*	1.82
17. Komati	0.24	0.83	0.53	0.46	0.51	1.07	0.35	1.08	0.96

  * Significant at 5% level
 ** Significant at 1% level
*** Highly significant

Table 5. Inbreeding in the rural districts of Andhra Pradesh [Sanghvi, 1966]

District	No. of marria-ges	Frequency of consanguineous marriages						Coefficients of inbreeding	
		Maternal uncle-niece		Patrilateral cross-cousin		Matrilateral cross-cousin		Auto-somal	Sex linked
		No.	%	No.	%	No.	%	F	F'
Srikakulam	206	24	11.65	2	0.97	52	25.24	.031	.046
Vishak	602	116	19.27	9	1.50	224*	37.21	.048	.071
E. Godavari	647	161	24.88	2	0.31	138*	21.33	.045	.058
W. Godavari	396	41	10.35	7	1.77	121	30.56	.033	.039
Krishna	567	29	5.12	9	1.59	149	26.28	.024	.039
Guntur	553	65	11.75	23	4.16	163	29.48	.036	.052
Nellore	575	32	5.57	19	3.30	199	34.61	.031	.050
Kurnool	634	31	4.89	11	1.74	222	34.70	.029	.049
Anantapur	452	50	11.06	22	4.87	146	32.30	.037	.042
Cuddappah	579	33	5.70	13	2.25	210	36.27	.031	.052
Chittoor	394	28	7.11	22	5.58	138	35.03	.034	.053
Warrangal	560	29	5.18	9	1.61	158	28.21	.025	.042
Karim Nagar	469	1	0.21	—	—	170	36.25	.023	.046
Nizambad	311	1	0.32	—	—	75	24.12	.015	.031
Total	6945	641	9.23	148	2.13	2165	31.17	.032	.051

  * Includes one marriage of children of two sisters.

of Avancha, but his findings among the Koya Dora and Konda Reddy's (two tribal populations) are much higher (0.041, tab. 8.) Coefficients of inbreeding among the five endogamous groups of Karnataka reported by Reddy (tab. 2) and Chakra-vartti (tab. 9) lie within the range of caste populations of the present study. However, the Kodavas and Amma Kodavas show extremely low values.

Table 6. Inbreeding in the rural areas of Andhra Pradesh according to castes [Sanghvi, 1966]

Caste	No. of marriages	Frequency of consanguineous marriages						Coefficients of inbreeding	
		Maternal uncle-niece		Patrilateral cross-cousin		Matrilateral cross-cousin		Autosomal F	Sex linked F'
		No.	%	No.	%	No.	%		
Brahmans	82	4	4.88	—	—	17	20.73	.019	.032
Traders	229	10	4.37	4	1.75	56	24.45	.022	.036
Farmers	2490	265	10.64	52	2.09	729*	29.28	.033	.050
Shepherds	482	42	8.71	14	2.91	194	40.25	.038	.061
Fishermen	308	55	17.86	5	1.62	115*	37.34	.047	.069
Artisans etc.	1264	122	9.65	22	1.74	403	31.88	.033	.052
Harijans	1185	81	6.84	31	2.62	354	29.87	.029	.046
Muslims	356	12	3.37	8	2.25	109	30.62	.025	.042
Christians	215	14	6.51	6	2.79	67	31.16	.029	.047
Others	334	36	10.78	6	1.80	121	36.23	.037	.059
Total	6945	641	9.23	148	2.13	2165	31.17	.032	.051

* Includes one marriage of children of two sisters.

Table 7. Percentage of consanguineous marriages and coefficients of inbreeding [Dronamraju and Meera Khan 1963]

Group	Consanguineous marriages				Coefficients of inbreeding	
	Uncle-niece	First cousin	Remote relatives	All consanguineous	I*	II**
Parents of patiens	5.7	15.0	4.3	25.1	0.01745	0.01671
Patiens	10.7	19.8	8.8	39.3	0.02777	0.02598
Patiens' children	5.3	14.4	14.1	33.8	0.01862	0.01572
Parents of school children	6.6	16.7	4.7	28.0	0.01939	0.01865

* The coefficients in the Ist column are calculated taking all the known consanguineous marriages into consideration.
** The coefficients in the IInd column are calculated considering only those marriages with first cousins or nearer relatives as consanguineous.

Table 8. Prevalence of consanguinity among tribal groups in different parts of India. [Roychoudhury, 1976]

States and references	Marriages observed	Percent consanguineous			Total	Inbreeding coefficient (α)
		Uncle-niece	Ist cousins	Beyond Ist cousins		
Andhra Pradesh						
Chakravarthi [1968]	680	5.00	15.00	—	20.00	0.016
Veerraju [1973]	291	17.52	30.58	—	48.11	0.041
Pingle [1975]	986	0.30	35.70	—	36.00	0.023
Kerala						
Ali [1968]	162	—	9.87	—	9.87	0.006
Madhya Pradesh						
Yadav [1968]	293	—	59.04	—	59.04	0.037
Chakravarthi [1968]	200	—	14.00	7.00	21.00	0.010
Maharashtra						
Karve [1957]	1350	—	39.41	19.92	59.33	0.025
Rajasthan						
Ghosh [1972]	449	0.45	5.57	6.68	12.69	0.005

Mean coefficient of inbreeding of the Muslims of the present study falls within the range reported by several authors (tab. 9, 10, 14). Mean inbreeding coefficients for the Muslims range from 0.0010 to 0.030. Frequency of consanguineous marriages varies from 20 to 60%. First cousin marriages are the most common type while uncle-niece unions are quite rare with exception for a few states.

Table 9. Inbreeding in South India

Population	Sample size	Consanguinity	Mean inbreeding coefficient (α)	Sources
Andhra Pradesh				
Tirupati	104	19.20	0.0153	Mukherjee, et al., [1974]
Madigas	43	51.16	0.0538	Yaseen Saheb, et al., [1978]
Muslims	40	47.50	0.0296	Dube, [1966]
Yanadis	255	12.55	0.0084	Vasulu, [1978]
Yanadis	328	30.48	0.0171	Vasulu, [1978]
Karnataka				
Vokkaligas	142	22.54	0.0189	Reddy, [1974]
Lingayaths	98	34.69	0.0274	Reddy, [1974]
Kurubas	119	26.89	0.0229	Reddy, [1974]
Adikarnatakas	82	28.04	0.0221	Reddy, [1974]
Kanarese Brahmins	212	23.10	0.0130	Chakravarthy, [1968]
Kerala				
Maplahs	500	22.00	0.0131	Chakravarthy, [1968]
Muslim Malayalam	45	26.70	0.0167	Chakravarthy, [1968]
Muslim Tamil	35	25.70	0.0130	Ali, [1968]
Muslim Urdu	42	13.00	0.0141	Ali, [1968]

Table 10. Prevalence of consanguinity among Muslims in different parts of India
[Roy Choudhury, 1976]

States and References	Marriages observed	Percent consanguineous marriages			Total	Inbreeding coefficients (α)
		Uncle-niece	Ist cousins	Beyond Ist cousins		
Andhra Pradesh Sanghvi [1966]	356	3.37	32.87	–	36.24	0.025
Kerala Ali [1968]	215	–	16.74	5.59	22.33	0.012
Madhya Pradesh Goswami [1970]	351	7.41	19.09	32.76	59.26	0.026
Maharashtra Sanghvi, et al. [1956]	2014	–	14.00	6.71	20.71	0.010
Rajasthan Basu [1976]	412	–	31.55	9.31	41.26	0.022
Tamil Nadu Rao, et al. [1971]	6116	0.88	16.29	2.38	19.55	0.012
Uttar Pradesh and Delhi Basu [1975]: Shia	1000	–	27.70	21.70	49.40	0.020
Basu [1975]: Sunni	1483	–	11.40	16.25	27.65	0.010
West Bengal Hug [1976]	835	–	20.36	1.80	22.16	0.013
Barua [1976]	471	–	8.28	11.03	19.31	0.007

Inbreeding among the four endogamous Tamil Brahmins groups reported by Srinivasan and Mukherjee [1976] corresponds well with the Madiga, Reddis, Gavandla, Kummari, Komati and Mangali caste groups of Avancha, where as in other populations considerably low values occur (tab. 11). In Tamil Nadu 20% of the urban population practices-consanguineous marriage whereas 80% of rural marriages are between first cousins which is significantly higher percentage than in caste groups of Avancha. Inbreeding coefficients in the rural and the urban areas are 0.0371 and 0.0204 respectively [Rao & Inbaraj 1977], which is closer to the values found in the present study (tab. 12, 13).

Out of 1414 marriages covered [Puri et al. 1977] in Pondicherry, 55.5% are consanguineous. Muslims had a higher rate of consanguinity (56.5%) than the present sample. In 94.4% of consanguineous marriages, spouses were either first

Table 11. Inbreeding coefficient (F) and percent frequencies of consanguineous marriages in different sects and endogamous populations of Brahmin caste in Tamil Nadu [Srinivasan and Mukherjee 1976]

| Sect | Population | No. of marriages | U.N. | I.C. | | ICI | 2C | Total | F |
				Maternal	Paternal				
Ayyar	Vadama	154	3.3	6.5	3.9	1.9	0.6	16.2	0.01100
	Brahacharnam	127	2.4	9.4	3.1	0.8	0.0	15.7	0.01331
	Total	281	2.8	7.8	3.6	1.5	0.4	16.1	0.01111
Ayyangar	Vadagali	122	5.8	4.9	1.6	1.6	0.8	14.7	0.01193
	Thengalai	83	6.0	14.4	3.6	1.2	0.0	25.2	0.01913
	Total	205	5.9	8.8	2.4	1.5	0.5	15.1	0.01492
Grand Total		486	4.1	8.2	3.1	1.4	0.4	17.3	0.01241

U.N. — Uncle-niece
I.C. — First cousins
ICI — First cousins once removed
2C — Second cousins

Table 12. Distribution of women by type of consanguineous marriage [Rao and Inbaraj, 1977]

| Type of consanguinity | Rural | | Urban | |
	No.	%	No.	%
Uncle-niece and aunt-nephew	1841	15.8	589	6.6
First cousin	2886	24.8	1573	17.5
First cousins once removed	393	3.4	265	3.0
Second cousins	269	2.3	143	1.6
Beyond second cousins	70	0.6	50	0.5
Total consanguineous	5459	46.9	2620	29.1
Non-consanguineous	6169	53.1	6378	70.9

Table 13. Inbreeding coefficients by religion of couples [Rao and Inbaraj, 1977]

| Religion | Rural | | Urban | |
	N	F	N	F
Hindu	11 288	0.03727	6765	0.02332
Muslim	212	0.02011	1960	0.01131
Christian	126	0.02186	264	0.01191
Others	2	0.0	9	0.00347

cousins (57.2%) or uncle-niece (37.2%) which is very much higher than in caste groups of Avancha.

Among the 12 endogamous groups (about 6600 marriages) in Maharashtra, Sanghvi et al. [1956] found that the mean coefficient of inbreeding among the Hindus (0.004) was higher than in some of Avancha groups, whereas in the Muslim groups of Maharastra it varies from 0.006 to 0.013 and closely correlates with the present study. The Parsis' (0.0108) and the Christians' (0.001) inbreeding does not show a considerable variation in comparison to the Avancha population. Among the Hindus coefficient of inbreeding varies from 0.001 to 0.003 in the Brahmins (Desastha and Saraswat) and the Prabhus (Kayastha and Pathare); it ranges from 0.005 to 0.007 among the three castes lower in social hierarchy (Marathas, Agris and Mahars). The same trend may be observed in Avancha caste groups. First cousin marriages were dominant like in the present study. Among the Hindus the matrilateral cross-cousin type was the most common one; while in non-Hindu communities the first cousin marriage was the most frequent of all the four possible types.

Table 14. Percentage of consanguineous marriages and mean coefficients of inbreeding by religion and tribal affilation in different states in India [Roy Choudhury 1976]

States	Villages surveyed	Percentage of consanguinity out of total marriages by community				Mean coefficient of inbreeding by community			
		Hindus	Muslims	Christians	Tribals	Hindus	Muslims	Christians	Tribals
Jammu and Kashmir	21	0.98	18.64	—	—	.0006	.012	—	—
Himachal Pradesh	4	0.10	—	—	—	.0001	—	—	—
Punjab	25	0.72	1.22	—	—	.0004	.001	—	—
Rajasthan	4	16.25	43.03	—	—	.010	.027	—	—
Uttar Pradesh	24	0.04	14.70	—	—	.0000	.009	—	—
Bihar	17	0.82	9.54	2.33	31.53	.0005	.006	.001	.020
West Bengal	5	—	5.88	—	—	.0000	.004	—	—
Assam	13	0.75	—	2.52	4.08	.0005	—	.002	.003
Arunachal Pradesh	17	—	—	—	3.06	—	—	—	.002
Manipur	20	—	—	10.62	—	—	—	.007	—
Tripura	9	0.21	5.19	—	—	.0001	.003	—	—
Gujarat	16	0.43	40.00	—	—	.0003	.025	—	—
Madhaya Pradesh	19	3.23	—	—	—	.002	—	—	—
Orissa	10	4.17	—	4.43	52.34	.003	—	.003	.034
Maharashtra	7	11.66	—	—	73.03	.009	—	—	.046
Andhra Pradesh	25	34.77	46.15	20.83	51.96	.024	.030	.013	.034
Karnataka	3	30.33	27.63	—	—	.026	.018	—	—
Tamil Nadu	48	31.81	34.18	17.58	—	.024	.021	.012	—
Pondicherry	2	28.82	—	—	—	.024	—	—	—
Kerala	31	12.68	17.26	0.76	63.73	.008	.011	.0005	.040

A declining trend has been observed in inbreeding of Parsis but not in any other group. 1961 census revealed that 14.3% of married women among the Parsis of Bombay were espoused to their blood relatives. About 75% of consanguineous marriages occured between first cousins and nearly 1% between uncles and nieces.

The survey conducted by Roy Choudhury [1976] on inbreeding in 587 villages, reveals the North-South difference in consanguinity frequencies as proposed by Sastri [1976]. Tribal groups showed the highest consanguinity in comparison with the three religious groups (tab. 14).

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WSOBNOŚĆ W RÓŻNYCH GRUPACH LUDNOŚCI INDII

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Zebrano informacje o małżeństwach krewniaczych wśród próby 808 par małżeńskich należących do 16 grup endogamicznych zamieszkujących wieś Avancha w okręgu Medak stanu Andhra Pradesh. Najczęstszym typem małżeństwa pomiędzy krewnymi okazały się związki kuzynostwa pierwszego stopnia. Małżeństwa pomiędzy wujami i siostrzenicami, stanowiące przeważający typ związku krewniaczego w stanie Andhra Pradesh nie wystąpiły we wsi Avancha. Większość dotychczas opisanych populacji endogamicznych z Południowych Indii wykazuje wysokie wartości współczynników wsobności, wyższe niż grupy kastowe wsi Avancha. Autorzy podają obszerne zestawienie danych porównawczych z terenu całych Indii. W danych tych zaznacza się zasadniczy podział Indii na dwie strefy: północną o niskim stopniu wsobności i południową o wysokim stopniu wsobności. Różnica ta ma podłoże kulturowe, gdyż na północy rzadkie są grupy etniczne czy wyznaniowe praktykujące zawieranie małżeństw pomiędzy krewnymi, natomiast na południu praktyki takie są częste.