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BRAHMANS AND THEIR DIVERSITY: A GENETICAL APPROACH BASED ON ABO BLOOD GROUP DISTRIBUTION

ABSTRACT. — *The distribution of ABO blood groups and their gene frequencies among the different groups of Brahmans of India indicate that intra-state Brahmans samples show homogeneity and on the other hand the comparison (X^2 test) between different geographical regions presents a confusing picture. Intra-state homogeneity may be due to the fact that neighbouring populations would generally show more similar trend than the populations living at a distance.*

The conclusive answer to the process of formation of sub-castes (sub-groups) is only possible after we have more data for various traits both genetical and morphological, from different parts of India.

Social anthropologists (most of them) and Indologists are of the opinion that the group bearing the same general name are the product of the same parent group, traditionally referred to as "Caste" and subdivisions as "sub-caste". In 1915 Risely defined caste as "a collection of families bearing a common name, claiming a common descent from a mythical ancestor, human or divine and regarded as forming a single homogeneous community". Bhattcharya (1968) maintains that new subdivision (of castes) have been formed in later times by the operation of many causes, important to our purpose are two (a) migration to different parts of the country and (b) quarrels between the different sections of the same caste as to their relative status. Ghurye (in Hutton's book) points out that certain divisions (sub-castes) had come to be actually from the division, in historical times, of a bigger group (caste). The supporters of this view are of the opinion that the caste and sub-caste were supposed to have the same biological relationship as species and subspecies. But Karve (1964) conceded that there might have been division of a bigger group (caste), but contended that generally the smallest endogamous unit was an independent social phenomenon

which had not come into existence through division in larger groups. Gulati (1971) writes that "the caste bearing the same or similar names over very wide areas including many linguistic regions . . . the impression was strengthened that either (1) the castes bearing similar names were products of fission of an original single body or that (2) each linguistic region, having a single casteless society, split into several endogamous groups called castes".

The Brahmans, who are found all over India, constitute a very important social group in Hindu society and are at the top of the ladder in the Hindu caste hierarchy. There are many endogamous groups of Brahmans occupying more or less geographically separated regions, forming various "breeding isolates". Almost all the authorities agree to the viewpoint that Brahmans have two great divisions namely "Panch Gaur" or five groups of northern India and "Panch Dravida" or five groups of Southern India. The Gaur Brahmans are generally found in Northern India, whereas, Dravida are generally scattered in Western and Southern India. Sherring (1974) writes that "the river Narbadha in Central India is commonly regarded as right geographical line of demarcation between Gaur and Dravida".

TABLE 1. ABO Blood Group Among the Brahmans of Different Places of India

Station	BLOOD GROUP (%)				GENE FREQUENCY (%)				AUTHOR
	N	O	A	B	AB	p	q	r	
Pandits	320	35.63	17.58	38.75	8.12	13.74	27.01	59.25	Bhattacharya 1966'
Himachal Pradesh									
Brahmans (Chamba)	147	24.49	30.61	35.37	9.52	22.87	26.04	51.09	
Brahmans (Kulu & Katrain)	110	17.27	35.45	32.72	14.54	29.55	27.63	42.82	
Brahmans (Simla Hills)	71	18.31	22.54	40.85	18.31	22.86	35.74	41.40	
Brahmans (Palampur)	113	26.55	17.70	39.82	15.93	18.20	32.89	48.91	
Brahmans (Rampur Bhushar)	58	29.31	17.24	34.48	18.96	19.52	30.81	49.67	
Uttar Pradesh									
Brahmans Khassa	50	32.00	30.00	28.00	12.00	23.64	21.07	55.28	
Brahmans (Garhwal)	125	29.60	32.00	25.60	12.00	25.51	20.86	53.63	Majumdar 1947'
Brahmans (Kumaoni)	108	25.93	27.78	31.48	14.81	24.01	26.47	49.52	
Brahmans (Meerut)	199	35.18	22.61	31.66	10.55	18.10	23.80	58.10	
Brahmans (Lucknow)	203	31.53	29.06	31.53	7.88	20.70	22.28	57.02	
Brahmans (Saryupari)									L. U. 1974
(Lucknow)	110	27.27	24.55	38.18	10.00	19.17	28.12	52.80	
Brahmans (Kanyakubj)									
(Lucknow)	100	19.00	20.00	42.00	9.00	15.77	30.06	54.17	
Brahmans (Gorakhpur)	107	34.58	19.03	34.56	11.21	20.80	22.40	56.80	
Assam									
Brahmans	360	38.33	23.05	33.05	5.55	15.70	21.48	62.00	Majumdar & Kishan 1947
West Bengal									
Brahmans Bengali									Das et. al. 1973
Brahmans (Calcutta)	200	35.50	29.50	29.50	5.50	19.54	19.54	60.91	
Brahmans (24-Pargana)	201	37.81	19.90	35.32	6.97	14.48	24.03	61.49	Macferlane 1938
Brahmans (Ranchi)	100	28.00	38.00	27.00	7.00	26.16	18.99	54.85	
Brahmans (West Bengal)	372	36.02	24.46	30.38	9.14	18.44	22.13	59.43	
Brahmans (Collected in U. K.)	237	34.18	21.10	35.44	9.28	16.51	25.57	57.92	
Brahmans (Calcutta)	188	38.30	22.34	32.98	6.38	15.62	22.15	62.23	
	235	31.49	25.49	32.77	10.21	19.79	24.43	55.78	Chaudhuri 1969
Orissa									
Brahmans	90	34.44	18.89	43.33	3.30	11.96	27.31	60.72	
Brahmans (Shashana)	200	30.00	25.50	37.50	7.50	17.99	26.12	55.88	
Brahmans (Oriya)	28	32.17	25.00	39.80	3.57	15.44	24.84	59.71	Mahapatra & Misra 1971
Madras									
Brahmans	55	40.00	30.91	27.27	1.82	18.25	16.03	65.72	Tripathi & Misra 1967
Brahmans (Tamil Brahmins)	221	41.18	25.34	26.24	7.24	17.85	18.39	63.76	
Tamil speaking	100	39.0	24.0	28.0	9.00	17.94	20.83	61.22	Ayer & Mummurthi 1953
Brahmans from Mysore									Shastri 1970
Brahmans Karnataka	133	42.1	23.3	27.1	7.5	16.74	19.04	64.21	
Brahmans Ayengar	93	37.63	31.18	23.66	7.53	21.70	17.04	61.26	Shastri 1970
Brahmans Ayer	128	43.75	21.09	28.13	7.03	15.15	19.40	68.45	
Maharashtra									
Deshasth Brahmins	200	37.5	25.00	30.00	7.5	17.83	20.94	61.23	
Koknasth Brahmins	200	51.0	24.00	20.00	5.0	15.69	13.36	70.94	Sanghvi & Khanolkar 1949
Deshasth Rigvedi Brahmins	154	37.01	24.68	31.17	7.1	17.45	21.49	61.06	Sanghvi & Khanolkar 1949
Deshasth Rigvedi (Bombay)	100	37.00	28.00	29.00	6.00	18.86	19.48	61.66	
Deshasth Yajurvedi	100	38.00	22.00	31.00	9.00	16.84	22.42	60.74	
Brahmins (Shukla)									
Vadnagra Brahmins (Suddha)	100	41.00	30.00	25.00	4.00	18.90	15.85	65.25	
Vadnagra Brahmins (U. P.)	108	55.6	15.1	26.9	1.9	9.24	15.62	75.14	
Vadnagra Nagar (Brahmins)	200	41.00	30.00	24.50	4.50	19.21	15.83	64.96	
Bombay									
Rigvedi Brahmins	210	38.57	26.19	28.57	6.67	18.12	19.55	62.33	
Yajurvedi Brahmins	200	37.50	24.00	30.50	8.00	17.54	21.54	60.92	Ektere et al. 1975
Chitpawan Brahmins	195	48.21	23.59	22.05	6.15	16.11	15.20	68.69	Ektere et al. 1975
Saraswat Brahmins	218	35.32	34.86	25.23	4.59	22.45	16.40	61.15	Ektere et al. 1975
Madhyandin Brahmins	282	44.00	25.90	24.80	5.30	17.06	16.43	66.51	Ektere et al. 1975
Charak Brahmins	26	23.1	34.6	38.5	3.8	22.20	24.80	52.99	Karve & Dandekar 1951
Chitpawan Brahmins	104	46.15	28.85	16.35	8.65	22.70	13.25	66.05	Karve & Dandekar 1951
Karhodo Brahmins	39	33.3	38.5	17.9	10.2	28.24	15.15	56.60	Karve & Dandekar 1951
Saraswat Brahmins	37	40.5	29.7	27.3	2.7	17.88	16.41	65.71	Karve & Dandekar 1951
Deshasth Brahmins	200	36.0	30.0	28.00	6.00	20.19	18.88	60.93	Karve & Dandekar 1951
Chitpawan Brahmins (Koknath)	100	51.00	25.00	20.00	4.00	15.74	12.82	71.44	

Continued table 1.

Station	BLOOD GROUP (%)				GENE FREQUENCY (%)				AUTHOR
	N	O	A	B	AB	p	q	r	
Gujrat									
Audich Brahmins	106	33.96	22.64	29.25	14.15	20.13	24.33	55.54	Majumdar & Kishan
Nagar Brahmins	107	33.64	32.71	26.17	7.48	22.75	18.61	58.64	Majumdar & Kishan
Audichya Brahmins	200	37.00	32.50	22.50	8.00	22.84	16.59	60.57	
Madhya Pradesh									
Brahmins (Ujjah & Dewas)	105	30.48	28.57	33.33	7.62	20.27	23.33	56.40	
Brahmins Central India	137	27.01	27.74	37.96	7.29	19.65	26.35	54.00	

Some are taken from Mourant et al. 1976

"Both the divisions are further divided into five sub-divisions and each forms an endogamous group. The sub-divisions of Gaur are Kanyakubja, Saraswat, Gaur, Mathils and Utkala, whereas Dravida's sub-divisions are Maharashtras, Tailangas, Dravidas, Karnatas and Gurjaras. Besides these there are few other groups which are of doubtful origin". (op-Cit.).

According to the legendary origin of Brahmans, it is said that Brahman was produced from the mouth of the supreme being (Crooke, 1974). Muir, as stated by Crooke (1974), was of the opinion that the word "Brahma" must have been originally applied to the same persons who are elsewhere in the Vedic-hymn spoken of as Risi, Kavi etc. Bhattacharya (1968) opines that Brahmans are a caste and different sub-groups have originated from a common stock. However, Crooke writes that "this theory then that even the Brahmans themselves are probably of mixed origin... goes to the very root of the Brahmanical caste systems of modern India" (1974). The various groups of Brahmans living in different linguistic and geographical regions, no doubt shared the same social status and the function, but perhaps, not the biological affinity, which is expected, if the process of splitting has been at work in the formation of these smaller groups or these smaller groups are not part of a bigger group. In the present paper the ABO blood group distribution among various endogamous groups of Brahmans is presented with a view to discuss the above social proposition. Further an attempt will also be made to present a picture of the distribution of ABO blood group frequency in the Brahmans of India.

MATERIAL

The present paper is based on 55 samples of Brahmans of different places and representing ten states, studied by different workers. The samples for various states range from one sample (for Jammu and Kashmir and Assam) to eight samples, with the exception of Maharashtra which is represented by 19 samples. Due to non-availability (in some cases) and not mentioning (in few cases) of the various sub-divisions of Brahmans (ten, five

each of Panch Gaur and Panch Dravida) the Brahmans are grouped according to various states. The Chi-Square values for intra and inter zonal variation have been calculated with the help of Woolf "G" table (1957), except where the total of the combined samples exceeds more than two thousands. The gene frequencies (wherever necessary) are calculated by the formula suggested by Mourant (1954) using Bernstein's improved formula.

DATA AND THEIR INTERPRETATION

The distribution of ABO blood group and the gene frequencies in the Brahmans of different parts of the country are listed in table 1, indicating that there is a great variation in the distribution. The gene "p" ranges between 11.96 % [except Vadnagra Brahman's sample of Sirsat (1956) from Varanasi, Uttar Pradesh, which has a frequency of 9.24 %] and 29.55 %, whereas the "q" gene ranges from 15.20 % [with the exception of Chitpawan Brahman's sample of Karve and Dandekar (1951), in which the frequency is 13.25 %] to 30.06 %. The frequency of "r" gene more or less, falls between 49.67 % and 71.44 %. The exception to this range is Kulu and Katrain sample of D. U. (1959) and Simla Hills Sample of D. U. (1958), where the frequencies are 42.82 % and 41.40 % respectively.

STATE-WISE DISTRIBUTION

The various samples listed in table 1 are grouped according to various states and are presented in table 2, along with their gene frequencies. This pooling has been done only after applying Chi² test between various samples of a state and as Chi² values (table 4) indicate a homogeneity between the samples of a state except in Maharashtra. The incidence of "AB" is the least in two eastern states (Assam — 5.55 %, Orissa — 5.97 %) and the highest in the northern state (Himachal Pradesh — 14.43 %). A cursory glance of the table reveals that "p" gene shows a high incidence in Himachal Pradesh, Uttar Pradesh and Gujrat and the low in

TABLE 2. State and zone-wise distribution of ABO blood group

Zone	State	N	Phenotype				Genotype		
			O	A	B	AB	p	q	r
1. North	Jammu & Kashmir	320	35.63	17.50	38.75	8.12			
		499	23.05	26.05	36.47	14.43	.1374	.2701	.5925
		1002	31.04	25.75	32.63	10.58	.2288	.2996	.4716
		1821	29.65	24.39	34.76	11.20	.2015	.2457	.5527
2. East	Assam Orissa	360	38.33	23.05	33.05	5.55	.1967	.2640	.5393
		1533	34.96	24.79	32.16	8.09	.1570	.2140	.6280
		318	31.45	23.27	39.31	5.97	.1864	.2265	.5870
		2211	35.01	24.29	33.33	7.37	.1696	.2616	.5687
3. South		730	40.96	25.21	26.71	7.12	.1737	.2305	.5958
4. West	Maharashtra Gujarat	2773	41.40	26.72	25.96	5.91	.1770	.1864	.6368
		413	35.35	30.02	25.18	9.44	.1795	.1749	.6455
		3186	40.61	27.15	25.86	6.37	.2174	.2202	.5623
5. Central India	All States	242	28.51	28.10	35.95	7.44	.1848	.1769	.6383
		8190	36.34	25.62	30.23	7.81	.1922	.2502	.5505
							.1841	.2129	.6029

Jammu and Kashmir. The gene "p" and "q" ranges between 13.74 % to 22.88 % and 17.81 % to 29.96 % respectively and indicate a greater variation of gene "q". A deep analysis reveals that there seems to be no trend in the distribution of "p" and "q" gene in different state's samples.

ZONE-WISE DISTRIBUTION

The grouped data for states were pooled for five zones, namely North, East, South, West and Central and are presented in table 2. Before pooling the states data, the χ^2 test is applied and except north zone ($X^2 = 37.175$, 6 d.f.) all other zone's states sample exhibit homogeneity with each other (intra-zone i. e. in the same zone) (11.7786, 6 d.f.) (East $X^2 = 10.010$, 6 d.f., South $X^2 = 7.8480$, 15 d. f., West $X^2 = 11.7786$, 6 d.f. and Central $X^2 = 0.628$, 3 d.f.).

The high "A" frequency that characterise the Brahmins of India reach their highest value in West, whereas, in North and East, it is less than

25 %. In the Brahmins of South and West the frequency of "B" blood group is less than 30 %, but in North and East it is nearly 34 %, with a middle value of 30% in the Central zone. The North zone is characterised by the high frequency of gene "p" and "q" with a low "r". The gene "p" is lowest in Eastern and Southern zone and increases from this to Central to Western and to Northern zone. The lowest frequency of gene "q" is found among Western Brahmins closely followed by Southern Brahmins. In both the zones (Western and Southern) the frequency of "q" gene is below 20 %, whereas in rest it is higher than 20 percent, the highest being in North zone. The frequency of "r" gene increases from North to East to Central to West and reaching maximum in the South.

The χ^2 values for inter-zone comparisons are given in table 3. It is clear from the table that the two zones South and West, differs from all the other regions but show similarities between them (i.e. South and West). The Central zone shows similarity with North and East zone and exhibit dissimilarity with South and West zone. This and above discus-

TABLE 3. χ^2 Values for Inter-zone differences

Groups Compared	χ^2 Value 3 d.f.	Probability	Remark
1. North zone \times East zone	25.4781	.001 - .	Heterogeneous
2. North zone \times South zone	39.5345	.001 - .	Heterogeneous
3. North zone \times West zone	106.1980	.001 - .	Heterogeneous
4. North zone \times Central zone	4.1835	.30 - .20	Heterogeneous
5. East zone \times South zone	13.1559	.001 - .	Homogeneous
6. East zone \times West zone	41.9397	.001 - .	Heterogeneous
7. East zone \times Central zone	4.4079	.001 - .	Heterogeneous
8. South zone \times West zone	1.5352	.30 - .20	Homogeneous
9. South zone \times Central zone	13.6121	.80 - .70	Homogeneous
10. West zone \times Central zone	17.3684	.001 - .	Heterogeneous
		.01 - .001	Heterogeneous

TABLE 4. χ^2 Value for intra-State Variation

State	χ^2 Value	d.f.	Probability	Remark
All Samples of Gujarat	7.4377	6	0.30-0.20	Homogeneous
All Samples Madhya Pradesh	0.6280	3	0.90-0.80	Homogeneous
All Samples Uttar Pradesh	21.0580	21	0.50-0.30	Homogeneous
All Samples West Bengal	24.5690	18	0.20-0.10	Homogeneous
All Samples Orissa	4.1865	6	0.70-0.50	Homogeneous
All Samples Himachal Pradesh	19.9298	12	0.10-0.05	Homogeneous
All Samples Madras (now Tamil Nadu)	7.8400	15	0.95-0.09	Homogeneous
All Samples Maharashtra	74.8090	54	0.05-0.02	Heterogeneous

sion of phenotype and genotype of ABO blood group indicates that there seems to be no particular trend in their occurrence among the Brahmins of different zones in India.

The Brahmins of India (all Brahmins) exhibit a higher "B" (30.20 %) than "A" (25.69 %) with a moderate "AB" (7.89 %). The frequency of gene "p" and "q" are 18.50 % and 21.32 % respectively, which is expected in the caste populations of India. Mourant (1954) writes that "Those of the caste Hindus and of Pakistan as well as of many non-caste populations cluster around the gene percentages: A 18, B 25" (p. 104).

DISCUSSION

The foregoing discussion of the distribution of ABO blood groups and their gene frequencies among the different groups of Brahmins of India indicate that intra-state Brahmins samples show homogeneity and on the other hand the comparison (X^2 test) between different geographical zones presents a confusing picture. Intra-state homogeneity may be due to the fact that neighbouring populations would generally show more or less like trend than the populations living at a distance. However it can be said that arbitrary similarities do not lead to the formulation of general laws. The heterogeneity among Brahmins was also observed by Dutta and Kumar (1966) for colour blindness and by Karve and Malhotra (1968) for various morphological and genetical traits for their regional studies. Karve and Malhotra (1968) writes that "on the basis of these statistics, independent origins can be suggested for five of the eight groups" (all Brahmins). The above generalization nullifies (to some extent) the proposition, as made by most of the social anthropologists and Indologists that the groups bearing the same general name are the product of the same parental group. Or, perhaps, Crooke (1974) was right when he writes that: "... Brahmins themselves are probably of mixed origin..." However, the conclusive answer to the process of formation of sub-castes (sub-groups) is only possible after we have more data (for various traits both genetical and morphological) from different parts of India.

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