

# Blood Groups, Sickle Cell Haemoglobin and Lipid Profiles in Some Scheduled Castes and Scheduled Tribes of Andhra Pradesh, India

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## INTRODUCTION

Porja and Gadaba are primitive tribals predominantly found in Srikakulam, Vizianagaram, and Visakhapatnam Districts of Andhra Pradesh. Porja Population in state constituted 16,374 and Gadaba 28,049 (1991 census). Mala and Madiga are Scheduled Caste populations economically poor and having the lowest status in the society inhabiting in almost all the districts of Andhra Pradesh. Mala Population in state as per 1991 Census was 2,896,642 and Madiga population 3,572,072. In this paper an attempt has been made to study the distribution of ABO and, Rh(D) blood groups, sickle cell haemoglobin and lipid profiles in these four different populations of this south Indian state.

## MATERIALS AND METHODS

Porja and Gadaba were surveyed from Paderu, Araku Valley, Ananthagiri, and Munchingiput areas of Visakhapatnam district. The Mala and Madiga were surveyed from Pendurti, Anandapuram, Bheemunipatnam and Visakhapatnam (rural) areas of Andhra Pradesh. The blood samples were collected from 512 adult healthy unrelated individuals (94 Mala, 100 Madiga, 160 Porja and 158 Gadaba) by using intravenous method in sterile test tubes containing two drops of ACD solution as an anticoagulant. Blood groups and other serological traits were estimated

after Boorman and Dodd (1977). Screening test for the presence of sickle cell trait was conducted after Daland and Castle (1948) and confirmation by cellulose acetate membrane electrophoresis. Serum total proteins were estimated after Biuret method (Anino, 1976) and Serum cholesterol-(HDL, LDL, VLDL) and serum triglycerides after Kit method (Allan, 1974). Phenotypic frequencies and allele frequencies were calculated after Bernstein (1930).

## RESULTS AND DISCUSSION

Distribution of ABO blood groups among Scheduled Castes and Scheduled Tribes studied is presented in table 1. Blood group 'O' records higher incidence than group 'B' in Mala, Madiga and Porja, while the opposite is true in Gadaba. The gene frequencies of ABO blood groups of Mala and Madiga, Porja and Gadaba are listed in table 1.

Distribution of Rh (D) blood groups among the present Scheduled Castes and Scheduled Tribes is depicted in table 2. In the present study Mala (2.13%), Porja (2.50%), Gadaba (2.53%) recorded the presence of Rh(D) negative blood group.

The incidence of sickle cell haemoglobin are presented in table 3. The sickle cell trait is not reported in Mala and Madiga. The combined incidence of Sickle Cell trait and disease in Porja (8.75%) is higher than Gadaba (7.60%). Detailed

**Table 1: Distribution of ABO blood groups among Scheduled Castes and Scheduled Tribes of Andhra Pradesh**

Pop-ulation	n	Phenotypes								Allele frequencies		
		O		A		B		AB		A	B	O
		n	%	n	%	n	%	n	%			
Mala	94	60	63.83	14	14.89	18	19.15	2	2.13	0.0890	0.1112	0.7998
Madiga	100	66	66.00	12	12.00	18	18.00	4	4.00	0.0830	0.1160	0.8010
Porja	160	54	33.75	40	25.00	52	32.50	14	8.75	0.1874	0.2316	0.5810
Gadaba	158	50	31.65	46	27.86	54	14.18	10	6.33	0.1896	0.2378	0.5826

clinical examination was carried out for every subject suffering from sickle cell disease (sufferer).

The lipid profiles of Mala, Madiga, Porja and Gadaba of Visakhapatnam district are listed in table 4. It is inferred from the table that the total protein of Mala ( $10.37 \pm 15.75$ ) is higher than Madiga ( $6.53 \pm 0.61$ ). The Mean total cholesterol, HDL, LDL, VLDL and Serum Triglycerides, Total Cholesterol/HDL, and LDL/HDL of Madiga is higher than Mala but both the cases are found to be normal.

The mean Total Protein of Gadaba ( $12.97 \pm 1.20$ ) is higher than Porja ( $11.00 \pm 14.00$ ). The mean Total cholesterol, HDL, LDL, VLDL and Serum Triglycerides, Total cholesterol/HDL, and LDL/HDL of Gadaba ( $206.70 \pm 10.60$ ,  $49.00 \pm 6.00$ ,

$132.60 \pm 15.20$ ,  $25.21 \pm 2.50$ ,  $126.63 \pm 7.44$ ,  $6.17 \pm 0.32$ ,  $3.94 \pm 0.30$ ) is higher than Porja ( $189.00 \pm 2.90$ ,  $46.00 \pm 0.80$ ,  $120.00 \pm 3.98$ ,  $24.90 \pm 3.10$ ,  $122.00 \pm 12.40$ ,  $4.22 \pm 0.12$ ,  $3.26 \pm 0.31$ ) and are found to be normal in both the cases. It is inferred from the table 4 that all the Lipid Profiles of Gadaba are higher than Porja. Thus these results were useful to the planners and policy makers to formulate and implement the health improvement programmes and also useful to the physician for medical treatment of these communities.

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**Table 2: Distribution of Rh(D) blood groups among Scheduled Castes and Scheduled Tribes of Andhra Pradesh**

Population	n	Phenotypes				Allele frequencies	
		Rh(D) Positive		Rh(D) Negative		D	d
		n	%	n	%		
Mala	94	92	97.87	2	2.13	0.85	0.15
Madiga	100	100	100.00	0	0.00	1.00	0.00
Porja	160	156	97.50	4	2.50	0.84	0.16
Gadaba	158	154	97.47	4	2.53	0.84	0.16

**Table 3: Sickle cell Haemoglobin in Scheduled Castes and Scheduled Tribes of Andhra Pradesh**

Population	n	Phenotypes						Allele frequencies	
		AA		AS		SS		HbA	HbS
		n	%	n	%	n	%		
Mala	94	94	100.00	0	0.00	0	0.00	1.000	0.000
Madiga	100	100	100.00	0	0.00	0	0.00	1.000	0.000
Porja	160	146	91.25	8	5.00	6	3.75	0.935	0.065
Gadaba	158	146	92.40	10	6.33	2	1.27	0.960	0.040

**Table 4: Lipid profiles in Scheduled Castes and Scheduled Tribes of Andhra Pradesh**

Lipid	Mala		Madiga		Porja		Gadaba	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
Total protein	10.37	15.75	6.53	0.61	11.00	14.00	12.97	1.20
Total Cholesterol	190.80	3.03	201.84	15.66	189.00	2.90	206.70	10.60
HDL	48.00	1.00	48.20	0.84	46.00	0.80	49.00	6.00
LDL	119.00	4.41	129.40	14.15	120.00	3.98	132.60	15.20
VLDL	23.80	2.77	24.20	1.48	24.90	3.10	25.21	2.50
Serum Triglyceride	121.00	13.38	123.80	8.44	122.00	12.40	126.63	7.44
Total Cholesterol/HDL	3.94	0.13	4.16	0.29	4.22	0.12	6.17	0.32
LDL/HDL	2.36	0.25	2.66	0.29	3.26	0.31	3.94	0.30

entitled: Physical Growth, Health and Nutritional status among some selected Scheduled Castes and Scheduled Tribes of Andhrapradesh is gratefully acknowledged.

**KEYWORDS** Blood Groups. Lipid Profile. Cholesterol, Triglycerides. Sickle Cell Trait. Mala. Madiga. Porja. Gadaba. Visakhapatnam.

**ABSTRACT** A random sample of 512 subjects from two endogamous populations of tribals (160 Porja and 158 Gadaba) and two of non tribals (94 Mala and 100 Madiga) inhabiting Visakhapatnam district of Andhra Pradesh was surveyed for ABO and Rh( D) blood groups sickle cell haemoglobin and lipid profiles.

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