



## Population Structure and Variation Among the Tribals of Madhepura (Bihar)

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### ABSTRACT

*The Genetic status of two predominant tribal populations namely Munda and Oraon of Bihar have been studied for their genetic characters.*

*Reproductive adaptability has been studied on the basis of the parameters of marriage practices like age of parents at the time of marriage and matrimonial distance. Certain natural phenomenon like age at menarche, waiting time, fertility, primary sterility, twinning have been studied on a comparative basis. Preadolescent mortality and net reproductive index have been recorded and finally selection intensity in the two populations has been calculated which comes to very comparable figures of 0.344 in Munda and 0.337 in Oraon*

### KEYWORDS : Munda, Oraon, Reproductive adaptability.

#### Introduction

People of India exhibit a unique caste system range of socio cultural, linguistic, religious, ethnic and biological diversity. Several waves of people of different ethnic stocks, cultures and languages either invaded India or migrated to India from different directions and contributed significantly to the present-day gene pool of the subcontinent. [1],[2] These people not only settled in India but also gradually merged and mingled with the autochthonous local populations. The caste system is generally known as classic land of caste and creeds. There are approximately 3000 caste and tribes and each one is distinct from the rest by origin, endogamy and traditional occupation. As to the origin of caste in India probably there are as many theories as there is curator on the subject.

Endogamy is decidedly the most distinctive basis of a caste. Most of the castes are further grouped into sub castes and marriage between them is traditionally prohibited. In this respect each sub caste may be treated as a fully fledged caste from the genetic point of view; a caste may represent the segregation of gene pool. Comparison of the average value of various genetic parameters in two closely related castes could thus be utilized as a convenient tool to determine the evolutionary ranking of the convinced caste and their genetic distance. Such studies have provided the necessary base for working out the relationship between various castes. However the tribal communities of the Chotanagpur have not yet attracted the attention of population geneticist and demographer to the extent desired for elucidation of their phylogenetic interrelationship barring reports by physical anthropologist, whose approach to the problem is rather different from those of population geneticist and more or less confined to inheritance of certain genetic character such as domotoglyphics blood grouping, PTC tasting ability etc.

Munda and Oraon are the two most dominant and major caste in Bihar from the point of view of their population size.

#### METHODOLOGY ADOPTED

Data on various ingredients of reproductive fitness were collected randomly from villages, and recorded on questionnaire sheets. The subjects surveyed were mostly elderly women who had completed their reproductive span. Cross checking of the data with elder persons of the family helped in correcting figures in some cases. Major physical (floods, earthquakes, draught, forest fire), social (certain festival

and political (independence of India, visit of VIP) events were used to determine the age of the subjects.

#### Results and Discussions

The reproductive fitness of the population has been studied in terms of reproductive potentiality, fertility and mortality. Reproductive potentiality in turn, has been studied in terms of incidence of marriage including second, third and subsequent marriages of male and female subjects; age of the female at the time of marriage; matrimonial distance; age at menarche; frequency of never pregnant women and birth of twins etc. fertility has been recorded in terms of number of live births per mother and the age span of maximum live births. Mortality records have been presented in respect of pre-adolescence.

#### REPRODUCTIVE POTENTIALITY:

##### Incidence of marriage:

Multiple marriages of male and female subjects are of common occurrence in the two tribes studied. These tribes are unique in this respect as one frequently finds cases of second and third marriages of widows, divorcees and separated women. In most of the other Indian castes remarriages are mostly confined to male subjects only. However, polygamy is extremely rare. Table-1 shows incidence of multiple marriages in Munda and Oraon male and female subjects. Comparison is here made between the Munda and Oraon on the one hand a few other castes.

**Table -1: Incidence of marriages among males and females of Munda and Oraon tribes.**

Population	No. of couples	Marriage incidence (%)								Total
		Once		Twice		Thrice		M	F	
		M	F	M	F	M	F			
Oraon	370	74	76	23	22	3	2	25.94	24.05	25.00
Munda	352	74	77	22	20	3	2	25.85	23.01	24.43

##### Age of women at the time of their marriage:

The religious sanction of early marriage of girl in some communities preferably, before or just after menarche, has not influenced the thinking of tribal populations who have preferred marriages after attainment of puberty. Thus the average age of women at marriage has been found to be 18.95 yrs in Oraon

and 17.21 yrs in Munda. Girls marrying at an early age of less than 14 yrs form a small percentage (5.73% in Munda and 0.49 % in Oraon) of the populations. The population of girl marrying between 14 and 17 yrs of age constitute 45.66% of the population in Munda and 24.02% in Oraon; between 18 and 20 the corresponding values are 48.61% and 59.069% respectively. In Oraon, marriages of women after 20 yrs constitute a sizeable population (15.93%) while in Munda marriage beyond 20 yrs is negligible (Table-2). earlier study on the topic are those by Rakshit (1962) on Maharashtrian Brahmin women.

**Table-2: Age of mothers at the time of their marriage:**

Age at marriage	Population			
	Munda		Oraon	
	No.	%	No.	%
10-14	31	5.73	6	1.4
15	64	11.83	7	1.72
16	92	17.00	52	12.75
17	91	16.82	37	6.84
18	103	19.04	110	20.33
19	97	17.93	24	4.44
20	63	11.65	107	19.78
21			9	1.66
22			29	5.36
23			4	0.74
24			4	0.74
25			13	2.40
27			2	0.37
28			1	0.18
29			1	0.18
30 & beyond			2	2.37
Mean age (X) marriage SD	17.205 ± 0.061 1.997		18.93 ± 0.078 2.535	

**Matrimonial Distance:**

Marriage distance is an index of the geographical extent of gene flow in a population. Endogamy is a common feature of castes and tribes in India but these castes and tribes practice clan exogamy thereby ruling out the possibility of inbreeding. In some South Indian states however, marriage of girls with their maternal uncle (mother's brother) is not only allowed but also preferred. In Munda and Oraon tribes there is no such inbreeding but endogamy is strictly adhered to. Comparatively speaking Oraon populations show a higher value of the mean matrimonial distance than Mundas (Table -3) the latter being more or less confined to 50 kms at the most in their search for the spouse while Oraon populations go even beyond 200 kms. This may be because Mundas are earlier migrants than Oraons and therefore they (the Mundas) could settle in greater members in a locality. For the present study the data were divided into four groups of varying class differences – (i) 5 km, (ii) 10 km, (iii) 20 km and (iv) 50 km. Mean matrimonial distance (MMD), standard deviation of the mean and standard error are calculated separately for each group of class differences and the t difference for each group in the two populations has been calculated..

**Table-3: Mean matrimonial distance (MMD) in kilometers and t difference between Munda and Oraon tribes for different distance classes.**

Distance Class (km)	Population						t diff.
	Munda			Oraon			
	No.	Mean (X)	SD	No.	Mean (X)	SD	
0-5	179			162			0.98
6-10	97			115			
11-15	82	7.66	5.04	56	7.22	4.65	
16-20	35			25			

21-30	15			20		
31-40	4	41.45	7.22	2	29.5	8.94
41-50	6			1		6.32*
51-60	17			2		
61-80	9			2		
81-100	5	77.64	9.59	4	83.67	2.45
101-150	3			5		
151-200	2	168.36	51.65	5	175.36	40.83

\*Significant at 5% level

**(d) Age at menarche:**

The age at which a girl menstruates for the first time has a marked bearing on her reproductive potentiality. It has been a common observation that girls undergoing menarche at an early age have a better reproductive capacity than those menstruating at higher age. The age at menarche is itself determined by several factors, the most important being food and atmospheric temperature. Higher temperature and rich food are said to be favouring early menarche.

The subjects for the present study were chosen from girls' schools and women's hostels. The data also include a few other women who could recall the month and year of their first menstruation.

Data show a slightly higher age (at menarche) in Munda than in Oraon populations. A more clear distinction was evident in rural and urban population, the latter menstruating earlier. The results are in close proximity with those of other workers (Sinha and Sinha, 1980 on four caste groups of Bihar: range 13.50 to 13.75 yrs).

**Table - 4: Mean, standard deviation (SD) and standard error of age at menarche in rural and urban populations of Munda and Oraon tribes.**

Population	(N)	Range	Mean (X)	SD	SE
Urban Oraon	134	12-16	13.19	1.26	0.11
Rural Oraon	149	12-17	14.27	1.61	0.13
Urban Munda	174	12-17	13.56	1.50	0.11
Rural Munda	177	12-17	14.32	1.79	0.13

**Table- 5: The value of "t" for difference of mean age (at menarche) between pairs of population.**

Populations	Rural Munda	Urban Oraon	Urban Munda
Urban Oraon	6.65*	-	-
Urban Munda	4.47*	2.43	-
Rural Oraon	0.272	6.35*	4.18*

\*Significant at 5% level.

**(e) Age of parents at first pregnancy:** this aspect of reproductive behavior has been studied in a number of Indian population by Robertson (1845), Curjel (1920), Mckeown and Lowe (1951), Sen (1953), Novitaki and Kimball (1958), Nag (1962), Rakshit (1962), Pohlman (1968 a, 1968b), Raina (1969), Pakrasi (1975) and Rao (1980). Age of mother at first pregnancy is bound to have impact on the survival of the offspring and on the reproductive potentiality of the mother. Generally speaking, a birth at low age of the mother leads to greater mortality of the offspring and a high percentage of still births though the total reproductive potentiality may be higher than in mothers giving late births.

Socio-economic condition, education, urbanization etc. have marked influence on this parameter and hence urban populations were not taken into consideration. Data were collected by simple memory recall method. The two tribal populations' surveyed show little difference in mean age at first pregnancy (Munda 20.72 ± 0.13. Oraon 20.89 ± 0.16.

**Table 6: Difference in mean age at first pregnancy in Mundas & Oraons**

Age in completed yrs	Population			
	Munda		Oraon	
	N	%	N	%
17	10	4.07	7	2.26
18	27	10.98	21	6.77
19	23	9.35	19	6.13

20	67	27.24	103	33.23
21	49	19.92	20	6.45
22	18	7.32	32	10.32
23	27	10.98	40	12.90
24	12	4.88	23	7.42
25	9	3.66	16	5.16
26	3	1.22	6	1.94
27	1	0.41	2	0.65
28	-	-	3	0.97
29	-	-	1	0.32
30 & above	-	-	8	2.58
N	206		301	
Mean age( $\bar{X}$ )	20.72±0.13		20.89 ± 0.16	
SD	2.05		2.78	
SE	0.13		0.16	

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