

# Assessment of differences in craniofacial structures between Oraon and Non-Oraon boys

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## Abstract

In India, children living in the backward and drought-prone areas, urban slums and those belonging to the socially backward groups like scheduled castes and tribal communities are highly susceptible to undernutrition. But condition is worst among the scheduled tribal communities. Most of the tribal people of India have their own geographically isolated life style. Inadequate food habits along with traditional socio-cultural and biological activities may lead to high proportion of child undernutrition. A total number of 100 Oraon Tribe boys and 100 Non-Oraon boys were selected as subjects for the study. The data was collected on students of school. They were grouped into two groups- Oraon and non Oraon. The mean CI index varied between 72.35 to 78.08 in OT and NO both. The highest value for this index was observed at 11+ and 17+ years in both groups respectively, while the lowest value was observed at 8+ and 15+ years in both groups respectively.

**Keywords:** Craniofacial structures, oraon and non oraon, cephalic index, OT(Oraon tribe), NO (Non Oraon)

## Introduction

Studies on child growth and development have always occupied an important position in the scientific research curriculum and are of interest to the researchers of both Medical Science and Physical Anthropology all over the world<sup>[1]</sup>.

India is characterized by a wide diversity of populations, which consists of several endogamous groups of varying size and distribution. India has several socially disadvantaged communities among which schedule tribes are the most deprived ones<sup>[2]</sup>.

In India, children living in the backward and drought-prone areas, urban slums and those belonging to the socially backward groups like scheduled castes and tribal communities are highly susceptible to undernutrition. But condition is worst among the scheduled tribal communities. Most of the tribal people of India have their own geographically isolated life style. Inadequate food habits along with traditional socio-cultural and biological activities may lead to high proportion of child undernutrition<sup>[3]</sup>.

Chhattisgarh is a comparatively young state in the history of India. Total population of Chhattisgarh is 2,55,40,196.(2.55 Cr) as of 2011 census and it is ranked 16<sup>th</sup> in Indian in order of population.

Jashpur is one of the districts of Chhattisgarh. The north-south length of this district is about 150 km and its east-west breadth is about 85 km. Its total area is 6,205 km<sup>2</sup>. It is between 22° 17' and 23° 15' North latitude and 83° 30' and 84° 24' East longitude. The main towns situated on the national highway (N.H.78) are Lodam, Gholeng and Jashpur in the Upper Ghat and Kunkuri, Bandarchuwan, Kansabel, Ludeg and Pathalgaon<sup>[4]</sup>.

Oraon is one of the tribal communities found in India, which mainly depends on agriculture for earning their living. They are also known as Kurukh tribes. These tribes are mainly found in the states of Jharkhand, Chhattisgarh, Bihar, West Bengal and Orissa. There are a total of 14 clans in Oraon tribal community like Bara, Lakra, Kachhap, Ekka, Kindo, Oraon, Bhagat, Kujur, Toppo, Kerketta, Xaxa, Xalxo, Kispotta, Barva, Tigga, Barla, Baxla, Beck, Minz, Tirkey, Runda, Linda.

Land is their main economic resource. They are settled cultivators. But during lean seasons they depend on forest produce. A number of Oraons work as wage labourers and industrial workers and some of them are employed in government and private organizations. The Oraons have their own religion, folk songs and folk tales<sup>[5]</sup>.

The tribal population, which constitutes 8.08 percent of the total population in India, is characterized by widespread poverty, illiteracy, malnutrition, lack of safe drinking water and hygienic conditions, which are the contributing factors for their dismal health conditions. Tribal communities in general and primitive tribal groups in particular are highly disease prone. Also they do not have required access to basic health facilities. They are most exploited, neglected and highly vulnerable to diseases with high degree of malnutrition, morbidity and mortality<sup>[6]</sup>.

### **Methodology**

A total number of 100 Oraon Tribe boys and 100 Non-Oraon boys were selected as subjects for the study. The data was collected on students of school. They were grouped into two groups-Oraon and non Oraon. Before testing, the investigator had a meeting with the students in the presence of their teacher to ensure maximum co-operation on each test. The purpose of study was explained to them, so that there will be no ambiguity among the subjects regarding the efforts they will have to put in for the successful completion of the investigation.

All the subjects were convinced of the need for the investigation and assured that the subjects will be made available for the collection of data. A semi-structured interview-cum-schedule was prepared to collect information regarding food habit of the family in general, socio-economic condition, occupation, in brief of the health condition of the individuals.

Examination of the subject with special mention of date, time and place was done.

### **Inclusion criteria**

- Children of school of Pathalgaon block, Jashpur district, Chhattisgarh.
- Age group 5 to 18 yrs. Male and apparently healthy.

### **Exclusion criteria**

- Children other than schools of Pathalgaon block, Jashpur district, Chhattisgarh.
- Females.
- Age less than 05 yrs & more than 18 yrs.
- Apparently ill child.

Using standard instruments the following parameters were measured-

- 1) Head length.
- 2) Head Breadth.
- 3) Head Circumference.
- 4) Bizygomatic Diameter.
- 5) Morphological Face Height.
- 6) Nose Height.
- 7) Nose Breadth.

## Results

**Table 1: Head Length (cm)**

Age	Non Oraon(NO)				Oraon Tribe(OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	17.68	0.43	0.18	6.00	17.52	0.44	0.18	0.52
6+	5.00	17.36	0.55	0.25	7.00	17.44	0.54	0.21	0.80
7+	7.00	17.46	0.68	0.26	7.00	17.27	1.09	0.41	0.71
8+	9.00	17.34	0.50	0.17	5.00	17.78	0.32	0.14	0.10
9+	10.00	17.67	0.64	0.20	6.00	17.72	0.48	0.20	0.88
10+	5.00	17.38	0.43	0.19	8.00	17.31	0.54	0.19	0.82
11+	10.00	17.65	0.52	0.16	6.00	17.10	0.65	0.27	0.08
12+	8.00	17.56	0.37	0.13	10.00	18.00	0.49	0.15	0.05
13+	6.00	17.93	0.62	0.25	5.00	18.00	0.74	0.33	0.87
14+	6.00	18.00	0.30	0.12	9.00	17.79	0.36	0.12	0.25
15+	7.00	17.93	0.65	0.25	7.00	17.64	0.51	0.19	0.38
16+	7.00	17.77	0.63	0.24	10.00	17.66	0.51	0.16	0.69
17+	8.00	17.61	0.45	0.16	7.00	17.83	0.58	0.22	0.43
18+	6.00	17.87	0.34	0.14	7.00	18.03	0.35	0.13	0.42
Total	100.00	17.65	0.53	0.05	100.00	17.66	0.60	0.06	0.98

When Oraon tribe (OT) and Non-Oraon (NO) boys were compared, it was seen that the distance curve for OT boys ran below the distance curve for NO boys except in the age period of 6+, 8+, 9+, 12+, 13+, 17+ and 18+, where the distance curve for OT boys ran above the distance curve for NO boys.

The S.D. varied from a minimum of 0.32 and 0.30 at 8+ and 14+ to a maximum of 1.09 and 0.68 at 7+ and 7+, indicating the extent of variation in the total sample of Oraon tribe boys and Non-Oraon boys respectively.

**Table 2: Head Breadth (cm)**

Age	Non Oraon(NO)				Oraon Tribe(OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	13.45	0.47	0.19	6.00	13.12	0.39	0.16	0.21
6+	5.00	13.22	0.57	0.25	7.00	12.77	0.26	0.10	0.09
7+	7.00	13.46	0.63	0.24	7.00	12.83	0.28	0.11	0.03
8+	9.00	13.12	0.87	0.29	5.00	12.86	0.49	0.22	0.55
9+	10.00	13.49	0.49	0.16	6.00	13.43	0.72	0.29	0.85
10+	5.00	13.20	0.62	0.28	8.00	13.36	0.68	0.24	0.67
11+	10.00	13.42	0.30	0.10	6.00	13.27	0.69	0.28	0.55
12+	8.00	13.51	0.47	0.17	10.00	13.64	0.53	0.17	0.60
13+	6.00	13.80	0.31	0.13	5.00	13.60	0.55	0.25	0.47
14+	6.00	13.63	0.38	0.16	9.00	13.66	0.49	0.16	0.93
15+	7.00	13.06	0.27	0.10	7.00	13.47	0.48	0.18	0.07

16+	7.00	13.67	0.36	0.14	10.00	13.23	0.63	0.20	0.12
17+	8.00	13.74	0.63	0.22	7.00	13.63	0.55	0.21	0.73
18+	6.00	13.85	0.44	0.18	7.00	13.93	0.73	0.27	0.82
Total	100.00	13.47	0.54	0.05	100.00	13.36	0.61	0.06	0.18

When Oraon tribe (OT) and Non-Oraon (NO) boys were compared, it was seen that the distance curve for OT boys ran below the distance curve for NO boys except in the age period of 10+, 12+, 14+, 15+ and 18+, where the distance curve for OT boys ran above the distance curve for NO boys. Difference is significant at the age period of 7+ (p value < 0.05).

The S.D. varied from a minimum of 0.26 and 0.27 at 6+ and 15+ to a maximum of 0.73 and 0.87 at 18+ and 8+, indicating the extent of variation in the total sample of Oraon tribe boys and Non-Oraon boys respectively.

**Table 3:** Head Circumference (cm)

Age	Non Oraon (NO)				Oraon Tribe (OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	51.25	1.33	0.54	6.00	51.27	1.47	0.60	0.98
6+	5.00	51.26	1.11	0.50	7.00	50.24	1.06	0.40	0.14
7+	7.00	51.20	1.02	0.38	7.00	50.61	1.33	0.50	0.37
8+	9.00	51.46	0.56	0.19	5.00	51.42	1.08	0.49	0.94
9+	10.00	52.42	1.14	0.36	6.00	51.17	1.35	0.55	0.07
10+	5.00	52.74	1.78	0.79	8.00	50.66	1.58	0.56	0.05
11+	10.00	51.38	1.29	0.41	6.00	50.50	1.20	0.49	0.20
12+	8.00	52.09	0.67	0.24	10.00	53.09	1.09	0.34	0.04
13+	6.00	53.80	1.39	0.57	5.00	53.76	1.74	0.78	0.97
14+	6.00	53.38	1.03	0.42	9.00	52.58	1.93	0.64	0.37
15+	7.00	53.39	1.48	0.56	7.00	52.34	0.84	0.32	0.13
16+	7.00	53.07	0.70	0.27	10.00	52.47	1.56	0.49	0.36
17+	8.00	54.16	1.01	0.36	7.00	53.29	1.67	0.63	0.38
18+	6.00	52.70	1.12	0.46	7.00	54.50	2.00	0.76	0.08
Total	100.00	52.42	1.45	0.14	100.00	52.05	1.87	0.19	0.12

When Oraon tribe (OT) and Non-Oraon (NO) boys were compared, it was seen that the distance curve for OT boys ran below the distance curve for NO boys except in the age period of 5+, 12+ and 18+, where the distance curve for OT boys ran above the distance curve for NO boys. Difference is significant at the age period of 12+ (p value < 0.05).

The S.D. varied from a minimum of 0.84 and 0.56 at 15+ and 8+ to a maximum of 2.00 and 1.78 at 18+ and 10+, indicating the extent of variation in the total sample of Oraon tribe boys and Non-Oraon boys respectively.

**Table 4:** Cephalic Index

Age	Non Oraon (NO)				Oraon Tribe (OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	76.09	2.98	1.22	6.00	74.87	0.61	0.25	0.35
6+	5.00	76.17	2.76	1.24	7.00	73.30	3.44	1.30	0.16
7+	7.00	77.21	5.19	1.96	7.00	74.54	5.19	1.96	0.36
8+	9.00	75.79	6.70	2.23	5.00	72.35	3.23	1.44	0.31
9+	10.00	76.44	3.97	1.26	6.00	75.91	5.31	2.17	0.82
10+	5.00	75.92	2.06	0.92	8.00	77.28	5.15	1.82	0.59
11+	10.00	76.09	2.69	0.85	6.00	77.72	5.79	2.36	0.45
12+	8.00	76.97	3.09	1.09	10.00	75.84	3.87	1.22	0.51
13+	6.00	77.07	4.22	1.72	5.00	75.73	5.76	2.57	0.67

14+	6.00	75.74	1.90	0.78	9.00	76.78	2.89	0.96	0.45
15+	7.00	72.90	2.71	1.03	7.00	76.43	3.89	1.47	0.07
16+	7.00	76.96	2.00	0.76	10.00	74.91	2.60	0.82	0.10
17+	8.00	78.08	4.92	1.74	7.00	76.52	4.21	1.59	0.52
18+	6.00	77.54	2.77	1.13	7.00	77.24	3.21	1.21	0.86
Total	100.00	76.36	3.77	0.38	100.00	75.74	4.04	0.40	0.26

**Table 5:** Cephalic index in study subjects

Cephalic index						
Characteristics		Meaning	Cephalic Index	Tribe		Total
				Non-Oraon	Oraon	
Cephalic index	Hyperdolichocephalic	> 'long-headed'	X-70.9	6	10	16
	Dolichocephalic	'long-headed'	71.0-75.9	41	47	88
	Mesocephalic	'medium-headed'	76.0-80.9	45	30	75
	Brachycephalic	'short-headed'	81.0-85.4	6	12	18
	Hyperbrachycephalic	<'short-headed'	85.5-90.9	2	1	3
	Ultra Brachycephalic	<<'short-headed'	91.0-X	0	0	0
Total				100	100	200

The mean value for cephalic index changed markedly within the entire period of growth in both groups.

The mean CI index varied between 72.35 to 78.08 in OT and NO both. The highest value for this index was observed at 11+ and 17+ years in both groups respectively, while the lowest value was observed at 8+ and 15+ years in both groups respectively.

Most of the OT boys were dolichocephalic(47%), while most of the NO boys were mesocephalic (45%).

**Table 6:**BI Zygotic Diameter(cm)

Age	Non Oraon(NO)				Oraon Tribe(OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	10.45	0.25	0.10	6.00	10.08	0.31	0.12	0.05
6+	5.00	10.26	0.60	0.27	7.00	10.06	0.26	0.10	0.44
7+	7.00	10.33	0.59	0.22	7.00	10.49	0.47	0.18	0.59
8+	9.00	10.27	0.42	0.14	5.00	10.62	0.60	0.27	0.22
9+	10.00	10.27	0.30	0.09	6.00	10.75	0.58	0.24	0.04
10+	5.00	10.30	0.73	0.33	8.00	11.09	0.31	0.11	0.02
11+	10.00	10.82	0.37	0.12	6.00	10.95	0.36	0.15	0.50
12+	8.00	10.73	0.32	0.11	10.00	10.91	0.35	0.11	0.27
13+	6.00	10.98	0.42	0.17	5.00	11.26	0.50	0.22	0.34
14+	6.00	11.20	0.40	0.16	9.00	11.81	0.77	0.26	0.10
15+	7.00	11.43	0.49	0.18	7.00	11.31	0.49	0.19	0.67
16+	7.00	11.07	0.15	0.06	10.00	11.68	0.50	0.16	0.01
17+	8.00	11.08	0.68	0.24	7.00	11.74	0.54	0.20	0.11
18+	6.00	10.93	0.20	0.08	7.00	12.29	0.50	0.19	0.00
Total	100.00	10.72	0.57	0.06	100.00	11.12	0.78	0.08	0.00

When Oraon tribe (OT) and Non-Oraon (NO) boys were compared, it was seen that the distance curve for OT boys ran above the distance curve for NO boys except in the age period of 5+, 6+ and 15+, where the distance curve for OT boys ran below the distance curve for NO boys. Difference is significant at the age periods of 9+, 10+ and 16+ (p value < 0.05) and highly significant at the age period of 18+ (p value < 0.01).

The S.D. varied from a minimum of 0.26 and 0.15 at 6+ and 16+ to a maximum of 0.77 and

0.73 at 14+ and 10+, indicating the extent of variation in the total sample of Oraon tribe boys and Non-Oraon boys respectively.

**Table 7:** Morphological Face Height(cm)

Age	Non Oraon (NO)				Oraon Tribe (OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	8.88	0.29	0.12	6.00	8.73	0.38	0.15	0.46
6+	5.00	9.00	0.25	0.11	7.00	8.80	0.45	0.17	0.71
7+	7.00	9.20	0.15	0.06	7.00	8.81	0.62	0.23	0.13
8+	9.00	9.34	0.28	0.09	5.00	9.16	0.23	0.10	0.23
9+	10.00	9.25	0.25	0.08	6.00	9.32	0.10	0.04	0.55
10+	5.00	9.40	0.19	0.08	8.00	9.00	0.31	0.11	0.03
11+	10.00	9.34	0.29	0.09	6.00	9.03	0.31	0.13	0.07
12+	8.00	9.48	0.29	0.10	10.00	9.36	0.24	0.08	0.37
13+	6.00	10.18	0.63	0.26	5.00	9.10	0.19	0.08	0.01
14+	6.00	11.13	0.25	0.10	9.00	10.64	0.74	0.25	0.15
15+	7.00	10.84	0.19	0.07	7.00	10.89	0.20	0.07	0.68
16+	7.00	11.06	0.16	0.06	10.00	10.81	0.27	0.09	0.05
17+	8.00	11.03	0.32	0.11	7.00	10.97	0.28	0.10	0.74
18+	6.00	11.07	0.10	0.04	7.00	11.01	0.19	0.07	0.55
Total	100.00	9.91	0.88	0.09	100.00	9.77	0.97	0.10	0.33

When Oraon tribe (OT) and Non-Oraon (NO) boys were compared, it was seen that the distance curve for OT boys ran below the distance curve for NO boys except in the age period of 9+ and 15+, where the distance curve for OT boys ran above the distance curve for NO boys. Difference is significant at the age periods of 10+ and 13+ (p value < 0.05).

The S.D. varied from a minimum of 0.10 and 0.10 at 9+ and 18+ to a maximum of 0.74 and 0.63 at 14+ and 13+, indicating the extent of variation in the total sample of Oraon tribe boys and Non-Oraon boys respectively.

**Table 8:** Nose Height(cm)

Age	Non Oraon (NO)				Oraon Tribe (OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	3.45	0.31	0.13	6.00	3.28	0.15	0.06	0.27
6+	5.00	3.82	0.29	0.13	7.00	3.86	0.29	0.11	0.83
7+	7.00	3.76	0.43	0.16	7.00	3.61	0.44	0.17	0.55
8+	9.00	4.22	0.16	0.05	5.00	4.16	0.18	0.08	0.51
9+	10.00	4.16	0.31	0.10	6.00	3.97	0.37	0.15	0.28
10+	5.00	4.36	0.39	0.17	8.00	4.31	0.20	0.07	0.99
11+	10.00	4.08	0.28	0.09	6.00	3.87	0.23	0.10	0.14
12+	8.00	3.91	0.69	0.24	10.00	4.22	0.28	0.09	0.21
13+	6.00	4.65	0.19	0.08	5.00	4.40	0.31	0.14	0.13
14+	6.00	4.58	0.13	0.05	9.00	4.77	0.27	0.09	0.15
15+	7.00	4.60	0.29	0.11	7.00	4.37	0.11	0.04	0.08
16+	7.00	4.63	0.20	0.07	10.00	4.41	0.21	0.07	0.05
17+	8.00	4.64	0.29	0.10	7.00	4.69	0.20	0.07	0.72
18+	6.00	4.65	0.22	0.09	7.00	4.57	0.24	0.09	0.55
Total	100.00	4.25	0.48	0.05	100.00	4.21	0.47	0.05	0.61

When Oraon tribe (OT) and Non-Oraon (NO) boys were compared, it was seen that the distance curve for OT boys ran below the distance curve for NO boys except in the age period of 6+, 12+, 14+ and 17+, where the distance curve for OT boys ran above the distance curve

for NO boys.

The S.D. varied from a minimum of 0.11 and 0.13 at 15+ and 14+ to a maximum of 0.44 and 0.69 at 7+ and 12+, indicating the extent of variation in the total sample of Oraon tribe boys and Non-Oraon boys respectively.

**Table 9:** Nose Breadth (cm)

Age	Non Oraon (NO)				Oraon Tribe (OT)				P value
	No.	Mean	S.D.	S.E	No.	Mean	S.D.	S.E	
5+	6.00	2.57	0.14	0.06	6.00	2.87	0.19	0.08	0.01
6+	5.00	2.80	0.21	0.09	7.00	2.93	0.26	0.10	0.38
7+	7.00	2.77	0.16	0.06	7.00	2.79	0.20	0.08	0.89
8+	9.00	2.96	0.18	0.06	5.00	2.84	0.29	0.13	0.37
9+	10.00	2.88	0.18	0.06	6.00	3.05	0.16	0.07	0.08
10+	5.00	3.10	0.07	0.03	8.00	2.93	0.26	0.09	0.18
11+	10.00	2.89	0.22	0.07	6.00	2.83	0.29	0.12	0.67
12+	8.00	2.84	0.19	0.07	10.00	3.26	0.17	0.05	0.00
13+	6.00	3.12	0.13	0.05	5.00	3.28	0.16	0.07	0.10
14+	6.00	3.10	0.15	0.06	9.00	3.33	0.22	0.07	0.05
15+	7.00	3.51	0.09	0.03	7.00	3.44	0.13	0.05	0.25
16+	7.00	3.41	0.20	0.08	10.00	3.43	0.19	0.06	0.87
17+	8.00	3.71	0.28	0.10	7.00	3.31	0.21	0.08	0.02
18+	6.00	3.70	0.21	0.09	7.00	3.64	0.43	0.16	0.77
Total	100.00	3.09	0.38	0.04	100.00	3.16	0.35	0.03	0.16

When Oraon tribe (OT) and Non-Oraon (NO) boys were compared, it was seen that the distance curve for OT boys ran above the distance curve for NO boys except in the age period of 8+, 10+, 11+, 15+, 17+ and 18+, where the distance curve for OT boys ran below the distance curve for NO boys. Difference is significant at the age periods of 5+ and 17+ (p value < 0.05) and highly significant at the age period of 12+ (p value < 0.01).

The S.D. varied from a minimum of 0.13 and 0.07 at 15+ and 10+ to a maximum of 0.43 and 0.28 at 18+ and 17+, indicating the extent of variation in the total sample of Oraon tribe boys and Non-Oraon boys respectively.

## Discussion

Assessment of differences in craniofacial structures, such as, head length, head breadth, head circumference, bizygomatic diameter, morphological face height, nose height & nose width by their direct measurements from the subjects of two groups was done to see if there are any racial characteristics. When OT & NO boys were compared, it was seen that the distance curve for OT boys ran below the distance curve for NO boys for Head length, Head breadth and Head circumference except at the few age period where it is above with the Non Oraon. It was seen that head measurements such as head length, head breadth, head circumference, were more for NO boys as compared to the OT boys.

On comparing cephalic index it was seen Most of the OT boys were dolichocephalic (47%) and mesocephalic (30%), while most of the NO boys were mesocephalic (45%) and brachycephalic. Few among both OT & NO were hyperbrachycephalic.

In a study by Gupta<sup>[7]</sup>, head of the most of North Bastar Gond tribe adult male was larger. Most of Gond tribe boys were mesocephalic (26%) and brachycephalic (31%) while adult Gond tribe males of Bastar were ultra-brachycephalic (67%) and hyper brachycephalic (27%).

It was observed that, bizygomatic diameter of OT boys was more than NO boys in most of the age groups with the difference being significant in 16 and 18years.

The morphological face height & nose height were observed to be less in OT boys in most of the age groups. Although the difference was not statistically significant.

The parameters of bizygomatic diameter, morphological face height and nose height, together, supports the finding of Dolichocephalic head, observed in most of the OT boys.

It was observed that OT boys had wider nose, as nose width was more than NO boys at most age groups.

Broad nose has been reported in Gond adult population of Kanker district by Gupta<sup>[7]</sup>. Broad nose seems to be a racial feature characteristic of Gond tribe.

From the above discussion, it may be tempting to state that the normal growth status of the OT boys & NO boys, as judged by body weight and BMI, in comparison to the international standard as well as Indian standard may be due to the moderate socio-economic condition. What is most noteworthy is good development of stature in both OT and NO boys. BMI is the result of complex interaction between energy intake and energy expenditure.

Human growth is a dynamic changing process and is being influenced by heredity and environment. Genetic component and environment both contribute to attain final body structure. Certain factors like disease, proper diet, time, cultural pursuits, geographical conditions etc. have tremendous influence in the growth of a child. Shukla *et al.*<sup>[8]</sup>

Adequate job security and moderate living standards in Oraon population may be a reason for similar BMI to the BMI of non Oraon population. However, the few undernourished cases found amongst Oraon boys, suggests a need to further study and investigate the Oraon population.

## Conclusion

- On comparing cephalic index it was seen that most of the OT boys were dolichocephalic (47%), while most of the NO boys were mesocephalic (45%).
- Head of the most of Oraon tribe boys of Pathalgaon block, when compared with Non tribe boys was smaller.
- It was observed that OT boys had wider nose, as nose width was significantly ( $p$  value < 0.05) more than NO boys at some age groups.

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