ejpmr, 2023, 10(2), 250-254

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

COMPARATIVE STUDY OF ANTHROPOMETRIC STATUS BETWEEN SANTAL AND GENERAL PRE-SCHOOL (1-5 YEARS) BOYS

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Article Received on 07/12/2022 **Article Revised on 28/12/2022** **Article Accepted on 17/01/2023**

ABSTRACT

Developing country like India accounts for about 40% undernourished children in the world. It is well documented that chronic undernutrition is associated with slower cognitive development and serious health impairment later in life which reduces the quality of life in children. So the present study suggests the anthropometric status like height, weight, head circumference, chest circumference and mid upper arm circumference between Santal and General Pre-school (1-5 years) boys. The sample for present cross sectional study, the santal and general boys having age range between 1-5 years was selected randomly from different villages of Paschim Medinipur, Purba Medinipur and Bankura districts of West Bengal, India. Results shows that the anthropometric parameters between santal and general pre-school boys were lower in santal pre-school children of boys compared with general pre-school children of boys. It may be concluded that santal pre-school children have poor nutritional status compare with general pre-school children. So need to appropriate steps to improve the nutritional status of santal children.

KEYWORDS: Boys; Tribal, General, Anthropometric Status.

INTRODUCTION

In India, indigenous population is also known as Adivasi or Schedule Tribes (ST). The tribal population of India (84 million) is larger than that of any other country in the world (Census of India, 2011). In West Bengal, Santal represents 51.8% of total tribal population and the other major tribes are Asur, Birhor, Korwa, Lepcha and Munda (Census of India, 2001) and they are spread over in vast area of different district of Paschim Medinipur, Purba Medinipur, Bankura and Purullia.

Undernutrion is defined as insufficient energy intake and nutrients to meet an individual's dietary requirements and maintain good health (Meleta, 2006). It encompasses underweight, stunting, wasting and deficient in micronutrients (UNICEF, 2006). Undernutrition commonly affects all age groups in a community, infants and children are the most susceptible because of their high nutritional needs for their physical growth and development (Blossner and De Onis, 2005) and also mental development (Ghai et al, 2009). It is more prominent where people are experiencing rapid food insecurity and poverty in developing countries like India. In India, one third of malnourished children resides. The majority of malnourished children are belonging to lower socioeconomic level. Tribal communities in India are thought about to be socially and economically vulnerable community (Bisai et al, 2014). According to World Health Organization, it has been found that around 45% deaths of children below five years are connected with undernutrition. Malnutrition is a global burden and it is serious and lasting for individual and their families, for communities and for countries (WHO, 2021). Malnutrition is a major public health problem leading to child morbidity and underlying cause for more than half of child deaths worldwide, particularly in low socio-economic communities in developing countries (Schroeder and Brown, 1994, Pellitier et al 1994). So the present study suggests the anthropometric status between Santal and General Pre-school (1-5 years) boys.

MATERIALS AND METHODS

Subject Selection

The sample for present cross sectional study, the santal and general boys having age range between 1-5 years was selected randomly from different villages of Paschim Medinipur, Purba Medinipur and Bankura districts of West Bengal, India.

Study of nutritional status and prevalence of undernutrition

The nutritional status of randomly selected santal children of study areas was assessed by anthropometric measurements e.g., height, weight, head circumference, chest circumference and mid upper arm circumference by following standard techniques (WHO, 1995), the details of which are given bellow.

(a) Measurement of height

The children under two years of age measured the horizontal length. In such cases, children length was measured by lying down. Infantometer was used to measure the horizontal length. The children lies straight along the board and shoulders of children should touch the board at supine position. Older children or two years aged children who are able to stand was measured by using anthropometric rod and the reading was taken to the nearest 0.1 cm.

(b) Measurement of Weight

Weight of old children was measured by using portable weighing machine with wearing minimum cloth. During measuring weight, children should be stand motionless in the middle of the scale platform. Weight should be evenly distributed both feet, with feet slightly apart arm relaxed and having down loosely at the side of the body. The body weight of the children under two years was measured by using lever balance. The recording was taken to the nearest 0.5 kg.

(c) Head circumference

A still tape was used to measure head circumference of the children. Measuring tape should be scaled to 0.1 cm. The tape should be placed superior to the supraorbital ridge and adjusted around the head until the maximum circumference was obtained. The plane of tape should be identical on both sides of the head and care should be taken that the tape is set down evenly flat against the head. The tape should be relaxed and two more measurements obtained and mean taken down. Hair pins and band should be removed before measuring.

(d) Mid Upper Arm Circumference

A still tape was used to measure mid upper arm circumference. All measurements should be taken in triplicate to the nearest 0.1 cm. Mid Upper Arm Circumference was taken at the midpoint of the upper arm. The midpoint was calculated by measuring the length of the upper arm and also point out the midpoint. The mid upper arm circumference was measured with the children upright and arm down is a fully relaxed position. The measurement is taken at the midpoint with the tape measure perpendicular to the long axis of the arm. Precaution should be taken so that there is no pinching or gaping of the tape as it encircles the arm.

(e) Chest Circumference

A Still tape was used to measure chest circumference. During starting of measuring whilst the children was standing, feel for the xiphisternum where the ribs meet the sternum and mark with a short horizontal line. Then pass the tape around so that the mark is at the upper border of the tape and make sure the tape is level. It should relaxed on the skin but not pulled too tight and taken the reading at the end of the measurement. Measurement should be taken to the nearest 0.1 cm. The measurement repeated three times and calculates mean value.

Statistical Analysis

The data were expressed as mean ± S.E.M. Comparisons of the means between two groups were made by student-'t' test and asses a limit of significance.

RESULTS

Table 1, 2, 3, 4 & 5 shows that the changes of anthropometric parameters (Height, Weight, Head circumference, Chest circumference and Mid Upper Arm Circumference) of santal boys and general boys in one to five years children. Result showed that mean height and weight gradually increased with increasing age of both Santal and general boys and there is a statistically highly significant difference has been observed in all anthropometric parameters in one to five years children. In age group four, there is minimum significant difference has been observed in chest circumference of Santal and general boys.

Table 1: Comparison of Anthropometric Parameters between Santal and General Pre-school (One Year) Boys.

Age (Years)	Anthropometric Variables	Santal Boys				General Boys				T-test
		N	Mean	SD	SEM	N	Mean	SD	SEM	
One	Height(cm)	24	65.26	7.53	1.54	20	73.82	6.00	1.34	4.1131 P<0.0002
	Weight(Kg)	24	6.02	1.36	0.28	20	9.73	1.89	0.42	7.5659 P<0.0001
	Head circumference (cm)	24	41.61	1.78	0.36	20	47.6	1.97	0.44	10.5951 P<0.0001
	Chest circumference (cm)	24	40.27	2.05	0.42	20	48.68	2.17	0.48	13.1995 P<0.0001
	MUAC(cm)	24	12.08	0.95	0.19	20	15.40	1.00	0.23	11.2499 P<0.0001

Table 2: Comparison of Anthropometric Parameters between Santal and general Pre-school (Two Year) Boys.

Age (Years)	Anthropometric Variables	Santal Boys				General Boys				T-test
		N	Mean	SD	SEM	N	Mean	SD	SEM	
Two	Height(cm)	39	72.59	4.0537	0.6491	24	81.92	6.80	1.39	6.8365 P<0.0001
	Weight(Kg)	39	7.19	1.08	0.17	24	10.72	2.16	0.44	8.6256 P<0.0001
	Head circumference (cm)	39	44.70	0.95	0.15	24	46.92	1.99	0.41	5.9848 P<0.0001
	Chest circumference (cm)	39	43.58	2.25	0.36	24	47.77	2.14	0.44	7.3040 P<0.0001
	MUAC(cm)	39	13.46	0.89	0.14	24	15.48	1.34	0.27	7.1849 P<0.0001

Table 3: Comparison of Anthropometric Parameters between Santal and general Pre-school (Three Year) Boys.

Age	Anthropometric Variables	Santal Boys				General Boys				T-test
		N	Mean	SD	SEM	N	Mean	SD	SEM	
Three	Height(cm)	41	82.22	8.4078	1.3131	37	85.78	12.90	2.21	1.4567 P<0.1493
	Weight(Kg)	41	9.33	2.16	0.34	37	11.88	2.94	0.48	4.4003 P<0.0001
	Head circumference (cm)	41	45.86	2.25	0.35	37	47.43	1.54	0.25	3.5547 P<0.0007
	Chest circumference (cm)	41	45.69	2.95	0.46	37	48.62	3.47	0.57	4.0223 P<0.0001
	MUAC(cm)	41	12.58	1.25	0.19	37	15.26	2.61	0.43	5.8807 P<0.0001

Table 4: Comparison of Anthropometric Parameters between Santal and general Pre-school (Four Year) Boys.

Age	Anthropometric Variables	Santal Boys				General Boys				T-test
		N	Mean	SD	SEM	N	Mean	SD	SEM	
Four	Height(cm)	41	94.01	6.28	0.98	48	99.25	7.61	1.10	3.5029 P<0.0007
	Weight(Kg)	41	12.19	1.72	0.27	48	15.00	1.87	0.27	7.3310 P<0.0001
	Head circumference (cm)	41	48.02	2.02	0.31	48	49.20	1.09	0.16	2.9623 P<0.0039
	Chest circumference (cm)	41	49.02	2.51	0.39	48	49.76	1.53	0.22	1.6967 P<0.0933
	MUAC(cm)	41	13.68	1.22	0.19	48	16.00	0.41	0.06	12.4406 P<0.0001

Table 5: Comparison of Anthropometric Parameters between Santal and General Pre-school (Five Year) Boys.

	Anthropometric Variables	Santal Boys				General Boys				T-test
		N	Mean	SD	SEM	N	Mean	SD	SEM	
Age Five	Height(cm)	59	99.89	7.59	0.99	57	111.06	7.42	0.98	8.0476 P<0.0001
	Weight(Kg)	59	12.80	1.87	0.24	57	18.20	2.35	0.31	13.7669 P<0.0001
	Head circumference (cm)	59	47.77	1.45	0.19	57	49.76	0.98	0.13	8.7091 P<0.0001
	Chest circumference (cm)	59	51.10	3.42	0.45	57	53.00	1.97	0.26	3.6651 P<0.0004
	MUAC(cm)	59	13.98	0.87	0.11	57	16.76	1.40	0.19	12.9029 P<0.0001

DISCUSSION

The progress of malnutrition in India is also limited although India has largest child development programme in the World (Chatterjee, 2007). Undernutrition take part a significant role in mortality of children under five years. About 50% of all deaths among children are connected with undernutrition (Rice et al, 2000).

Present study suggest the anthropometric parameters between santal and general pre-school boys, it was found that mean height, weight, head circumference, chest circumference and mid upper arm circumference (Table-1, 2, 3, 4 & 5) were lower in santal pre-school children of boys compared with general pre-school children of boys. There is a highly statistical significant difference has been take place between santal boys and general boys except height in age group three. There is no statistical significance has been occurred in height between santal and general boys of age group three. The study focussed that Mean height, weight, head circumference, chest circumference and mid upper arm circumference below the normal standard (WHO, 2006) in santal pre-school children of both sexes. A study on reported that mean height and weight of pre-school santal children was higher than present study (Das et al, 2010; Mahapatra and Pal, 2020**)**. Rao et al reported that mean height and weight of tribal pre-school children was lower than the present study (Rao et al, 2005).

On the basis of result and discussion, it may be concluded that santal pre-school children have poor nutritional status compare with general pre-school children. Santal boys (1 – 5 Years) are more prone to have undernutrition in terms of underweight, stunting and wasting compare with the boys (1 – 5 Years). Higher rate of underweight, stunting and wasting was observed in santal pre-school children, indicating the censorious condition. So need to appropriate steps to improve the nutritional status of santal children.

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