Global Journal of HUMAN SOCIAL SCIENCE
History Archaeology & Anthropology
Volume 13 Issue 1 Version 1.0 Year 2013
Type : Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-460X & Print ISSN: 0975-587X

Health and Nutritional Status of a Primitive Tribe of Madhya Pradesh: Bhumia

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Total 616 subjects studied from 201 household of the five villages of Baigachak area. Anthropometric measurements taken were height and weight. Dietary data was collected using 24hr recall method. The extent of malnutrition for preschool children was assessed by SD classification and the nutritional status of adults was assessed by BMI classification.

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GJHSS-D Classification : *FOR Code: 321205*

Strictly as per the compliance and regulations of :

Health and Nutritional Status of a Primitive Tribe of Madhya Pradesh: Bhumia

Ajeet Jaiswal

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Results: About 58.6% of the pre-school children were under weight (moderate to severe) out of them 23.2% children were severely under weight. Stunting and wasting were seen in 42.2% and 36.2% children respectively. Prevalence of chronic energy deficiency (BMI<18.5) was about 78% among adult population. Consumption of cereals was higher than recommended level (460gm), while the consumption of other foodstuff was lower than the RDA.

Conclusion: The intake of all nutrients except calcium was significantly lower than recommended level. It is suggested that the overall socio-economic development should be accelerated in order to improve the health and nutritional status of Bhumia Tribe.

Keywords : bhumia tribe, nutritional status, nutrient intake.

I. Introduction

The tribal population of the country, as per the 2001 census, is 8.43 crore, constituting 8.2% of the total population with 91.7% of them living in rural areas and 8.3% in urban areas. The population of tribes had grown at the growth rate of 24.45% during 1991-2001. More than half of the Scheduled Tribe population is concen-trated in the States of Madhya Pradesh (14.51%).

Madhya Pradesh is the largest tribal state, with 23% of the total tribal population in the country & of 46 tribal groups in Madhya Pradesh six are considered to be primitive, based on neglect in the past, backwardness and low economic level. The Baiga, Bhumia tribe one of these six primitive tribes are mainly in five districts (Madla, Shahdol, Bilaspur, Bhalaghat and Rajnandgaon). Bhumia tribes are also located in the states of Bihar, Madhya Pradesh, Maharashtra, Orissa, and West Bengal. According to 1961 Census Data, Bhumia was reported from 9 districts of Madhya Pradesh totaling to 54520 (M.L. Patel 2007). Baigas or Bhumia are one of the oldest aboriginal tribes and classified as one of the primitive tribe of Madhya Pradesh on the basis of pre-agricultural technology, low literacy and stagnant and diminishing population (Tewari 1984). Shifting cultivation depicted as an important means of livelihood.

Tribal peoples are acknowledged to have very close association with the ecosystem and the environment because of their fulfillment of daily nutritional requirements with food foraged from nature. Inadequacies in nutritional intake or under-nutrition can be considered a major source of many adverse effects on the growth and health of individuals (Gordon et al., 1968). Knowledge of the nutritional status of a community or a region is necessary to have a comprehensive idea about it development process, as under nutrition is one of the major health problems in developing countries. It is reported that the basic cause of under nutrition and infection of people are poverty, poor hygienic condition and little access to preventive health care (Mitra 1985, WHO 1990). Nutritional status can be assessed by dietary, anthropometric, biochemical and clinical methods. Ideally, a combination of methods should be used when assessing nutritional status using standardised techniques.

The Bhumia's economy is still highly depended on agricultural pursuits and collection of minor forest produces. Maize, Vargu and Rice is the staple grain and forms an important item of daily diet. The baiga people also kodo, kutki, drink pej, eat little flour and are normally content with what little that they get. One of the prime foods is pej that can be made from grounding macca or from the water left from boiling rice. Also, they eat several items from the forest that includes primarily Chirota Bhaji, Gular leaves such as Chirota, chinch, chakora, sarroota, peepal etc. They also eat BirarKand, Kadukand and other rhizomes. Mushroom is also a delicacy. Numerous fruits such as mango, char, jamun, tendu are also eaten. They hunt as well, primarily fish and small mammals (K. Sharma 2007)

Out of 35 States (28 states and 7 union territories) in India, some are identified as demograp-ically lagging behind and Bhumia Tribes of Madhya Pradesh also falls in this category and needs a situational analysis related to nutritional and Health condition. The present paper deals with the health scenario and level of nutrition of Bhumia Tribes of Madhya Pradesh.

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II. Material and Methods

This study is a review work, done to understand the prevalence of under nutrition & health status among Bhumia tribe of Baigachak area of Dindori district in Madhya Pradesh. The implications of the discussed research will help in formulating better recommend-dations for further research so as to reduce this nutritional burden. The Baigachak area is spread out in 39 villages in three blocks. Total five villages were selected purposely from all three blocks for this study considering its accessibility during survey.

A total of 201 households comprising of 616 which 317 male, 299 female including 125 preschool children were randomly selected during the study. Thus the present investigation has been conducted by random sampling using pre tested, structured interview schedule. Simultaneously, group discussion and informal interview methods have been used. Observ-ation has been conducted through semi-participant method. Anthropometric measurements were taken using standard procedure (Weiner and Lourie (1981; Jeliffee, 1966).

Table 1 : Distribution of Bhumia tribes according to Age and Sex

Age group (in Yrs.)	Male	Female	Total
< 1	1	2	3
1-5	61	49	110
6-10	27	27	54
11-14	29	25	54
15-19	38	31	69
20-24	26	35	61
25-29	45	42	87
30-34	33	37	70
35-39	20	20	40
40-44	16	14	30
45-50	13	12	25
51-60	5	4	9
60+	3	1	4
Total	317	299	616

BMI was computed using the following standard equation: BMI = weight (kg)/ height^2 (m^2). Nutritional status was evaluated using internationally accepted BMI guidelines using James' classification (James 1988). Body weight was measured using lever actuated balance in Kg with accuracy of 100gm with minimum clothing. Height was measured by anthro-pometry rod (SECA, Yogul and Halke, Gmbh and Co. Humburg, Germany). Diet survey was carried out in every fifth household using 24 hours Dietary recall method (Thimmayama 1987). The nutrient intake was calculated using food tables for Indian foods (Gopalan et al. 1990) and food intakes were compared with the balanced diets recommended for Indians (ICMR 1981). The intake of nutrients was compared with the recommended Dietary allowances for Indians (ICMR 1990). The results were compared with the tribal data of National Nutrition Monitoring Bureau (NNMB, 2009).

The data analysis was carried out using statistical software package SPSS 13.0 version. Univariate analysis using t-test was applied to evaluate the statistical significance. Mean and Standard Deviation of the anthropometric data was calculated for each age group and compared with NCHS (National Center of Health statistics) standards (NCHS 1976). (NCHS data are of whole year).

III. Results

A total of six hundred and sixteen individuals' height and weight were recorded (Table 1). Preschool girls were slightly taller than the boys of same age group. However mean weight was comparable in both genders in the same age group. In the 7-10 years age group there was no difference in the mean height of boys and girls. However adolescent girls up to 15 years were taller by about 2-3 cm and heavier by 1-2 kg as compared to boys of the same age group.

In contrast boys of 16 years old were taller by about 6-10 cm and heavier by 3-5 kg as compared to the girls of the same age group. Similar observation was made with respect to adults also. The tribals were shorter and lighter when compared with the NCHS standards (Table 2).

Table 2 : Distribution of Height (cm) and Weight (kg) of Bhumi tribes according to age and sex

Age group (in Yrs.)	Height				Weight			
	Male		Female		Male		Female	
	Mean ±S.D.	Median	Mean±S.D	Median	Mean±S.D.	Median	Mean±S.D	Median
1+	74.1±0.2	76.0	76.1±0.5	76.0	6.2±1.1	5.8	6.7±1.3	6.5
2+	80.4 ±4.1	81.5	81.7±3.4	82.0	9.1±1.8	8.5	8.8±1.6	8.8
3+	85.7±5.1	85.3	86.5±7.1	86.0	10.6±1.5	9.8	10.4±1.5	9.8
4+	92.3±6.6	91.0	93.2±5.1	93.0	12.0±2.4	10.5	11.2±1.8	11.0
5+	100.5±7.1	99.0	101.4±7.0	101.0	14.3±2.6	11.7	13.1±2.6	13.0
6+	102.2±7.2	101.0	103.2±6.7	104.0	14.4±2.1	13.7	13.5±2.1	14.0

7+	110.2±5.6	109.0	111.8±7.7	112.0	16.0±1.7	16.0	15.6±3.1	16.0
8+	116.5±5.1	116.0	115.4±8.2	116.0	18.7±2.3	17.7	16.7±2.8	17.0
9+	120.5±5.3	120.0	120.2±5.2	119.8	20.3±3.0	20.0	19.0±3.0	19.0
10+	124.4±7.8	121.8	123.1±7.3	124.0	21.2±2.6	20.0	19.4±3.8	19.0
11+	128.8±7.1	127.0	127.6±7.1	129.0	23.3±2.5	22.0	23.0±4.1	23.0
12+	133.6±8.6	132.0	134.6±9.3	134.0	26.4±4.7	26.0	26.4±5.1	25.0
13+	139.4±9.5	137.0	144.6±6.1	144.4	29.7±6.7	26.0	30.2±5.3	30.0
14+	139.2±7.2	137.0	142.0±8.3	143.1	30.3±4.6	29.0	32.4±5.3	33.5
15+	147.7±8.3	147.0	149.8±6.1	150.0	35.4±6.3	34.0	36.2±4.2	36.5
16+	153.5±6.2	153.0	146.4±3.5	146.0	41.4±6.6	40.0	37.3±4.0	36.5
17+	156.1±6.7	155.0	145.7±5.3	147.0	44.5±5.7	44.4	37.5±5.8	37.5
18+	159.6±4.2	159.1	147.7±3.1	148.0	45.0±8.3	44.0	38.5±3.1	38.3
19+	161.3±5.3	158.7	148.7±6.1	149.0	46.4±6.5	45.0	40.0±5.5	39.0

Nutritional deficit of pre-school children using standard deviation classification of underweight (weight for age), stunting (Height for age) and wasting (Weight for Height) shown in table 3. The proportion of children with moderate grade of low body weight (-3SD to <-2SD) was 35.6%, while the severe grade (<-3SD) underweight was 23.2%.

Table 3 : Percent prevalence of malnutrition according to SD classification in pre-school children

Indicators	< -3SD	- 3SD to<-2SD	-2SD to<-1SD	-1SD to<Median	> Median
	Severe	Moderate	Normal		
Weight for Age (Underweight)	23.2	35.6	28.1	7.6	1.2
Height for Age(Stunting)	20.1	22.1	22.6	16.8	13.1
Weight for Height (Wasting)	9.0	27.2	27.2	21.3	11.1

The overall stunting was 42.2% and wasting was 36.2% and severely stunting and wasting was 20.1% and 9% respectively. Prevalence of chronic energy deficiency (BMI<18.5) through body mass index was about 77 per cent among adult population and adults females are slightly better nourished (26.0%) as compared to males (21.4%) (Table 4).

Table 4 : Percent Distribution of Bhumia Adult according to Body Mass Index

BMI Grades	Male	Female	Total
CED III (<16.0)	39.6 (100)	35.3 (83)	37.6 (183)
CED II (16.0-17.0)	15.2 (38)	14.7 (35)	15.0 (73)
CED I (17.0-18.5)	23.0(58)	23.6 (55)	23.4 (113)
Low Weight Normal (18.5-20.0)	14.9 (36)	16.4 (38)	15.6 (74)
Normal (20.0-25.0)	6.5 (17)	9.6 (22)	8.0 (39)
Over Weight (>25.0)	0.2 (1)	0.4 (2)	0.3 (3)

Table 5 : Average consumption of food stuffs in the Bhumias (gm/cu/day)

Food Items	Mean ± SD (n=475)	RDA (ICMR)
Cereals	475.4*±185.5	460
Pulses	28.8*±13.6	40
Green leafy vegetables	29.7*±12.7	40
Roots and Tubers	13.2*±4.6	50
Other vegetables	46.5*±24.4	60
Flesh food	1.7*±1.6	40
Milk and milk products	5.5*±3.2	150
Oil and fats	2.2*±3.6	40
Sugar and jaggery	0.4*±0.1	30
* P<0.05		

Two hundred and thirty six individuals were assessed for Dietary intake information. Maize and Rice formed the bulk of Bhumias diet. The mean intake of cereals (475g/day) was higher than the recommended level (P<0.05).

However the intake of foodstuffs, such as pulses, green leafy vegetables, root and tubers, oil and fat, sugar and jaggery was significantly lower than recommended level (Table 5) (P<0.05). The milk intake (5.5 g/day) was almost negligible in Bhumias.

Table 6 : Average Nutrient intake in the Bhumias (cu/day)

Nutrient intake	Mean ± SD (n=475)	RDA (ICMR)
Energy (Kcal)	1810.5*±739.6	2425
Protein (g)	50.4*±21.1	60
Fat (g)	11.1*±6.4	20
Calcium (mg)	435.5±232.2	400
Iron (mg)	15.7*±13.3	28
Carotene (µg)	368.1*±256.2	2400
Thiamine (mg)	1.3±0.4	1.2
Riboflavin (mg)	0.4*±0.3	1.4
Vitamin C (mg)	17.8*±13.7	40
* P<0.05		

The intake of all nutrients except calcium was significantly lower than recommended level (Table 6) (P<0.05).

IV. Discussion

Health is a universally cherished goal. Health cannot be forced upon the people. It is a positive attribute of life and the organization of health services to all people is considered to be the key step towards development (Srinivasan 1987). Health care is one of the most important of all human endeavours to improve the quality of life especially of the tribal people (Balgir, 1995, 2000, 2005 & 2007).

It implies the provision of conditions for normal, physical and mental development and functioning of human being individually as well as in a group. Health problems and health practices of tribal communities have been profoundly influenced by the inter-play of complex social, cultural, educational, economic and political practices (Balgir 2005). The common beliefs, customs, traditions, values and practices connected with health and disease have been closely associated with the treatment of diseases. In most tribal communities, there is a wealth of folklore associated with health belief.

Tribal populations are particularly vulnerable to malnutrition due to their traditional socio-cultural practices and low literacy level. Several studies on growth and nutritional status were done in rural or urban India (Reddy 2000). Studies on primitive tribes are very few and there is no report on the growth or nutritional status of Bhumia. .

The finding in the present study opens a debatable point about the role of different indices of health and nutritional status assessment. The mean anthropometric measurements indicated that the growth spurt of boys is around 16 years at that age they overcome the girls of same age in both height and weight. Similar trend was reported by various other studies (Hanumanth Rao 1994). The magnitude of wasting in pre-school children was more (36.2%) as compared to NFHS (29.6%) and NNMB (23.7%) report for tribals of Madhya Pradesh and this proportion was observed significantly higher (P<0.05) (NFHS, 1998 and NNMB, 2000). The wide variation could be due to different sampling techniques used in different studies, similarly the prevalence of chronic energy deficiency was 78% among adults, which was considerably high (P<0.05) than the reported figures of 48% among tribals of Madhya Pradesh (NNMB 2000). The high prevalence of malnutrition observed in the present study could be mainly due to inadequate Dietary intake.

Other reasons could be poor socio-economic status, low purchasing power and faulty feeding habits etc. (Verma 1999). In the present study the intake of cereals was higher than the recommended level. Similar observations were also reported by other authors among tribes of Maharashtra and Bihar (Hanumantha Rao et al. 1992 and Chandrasekhar 1997). This is because most of the tribals diet is a cereal-based diet. Most of the nutrients (calories, protein, Iron etc.) except calcium mean intake were inadequate as compared to RDA. Hanumantha Rao et al. (1993) also reported lower intake of such nutrients in Jenu Kurubas, a primitive tribe of Karnataka. The low value of Carotene and Riboflavin could be due to low intake of green vegetable and negligible amount of milk in their diet. The high calcium value was mainly due to frequent consumption of fetid cassia leaves (Cassia-Tora) by this tribe.

From the above discussion, it can be attributed that the poor growth pattern of the Bumia may be due to the poor socio-economic condition. Most of the Bhumia populations of Madhya Pradesh live without modern health care and transport facilities. Hence, the Bhumia the study area face many health and nutritional hazards due to poverty, illiteracy and ignorance. The health and nutrition status of the Bhumia tribes requires an immediate attention in the implementation of short-term supplementary feeding programmes, general medical, and awareness and health care facilities, improvement of food security are needed to overcome the nutrient deficits.

V. Acknowledgement

The authors are thankful to all the subjects and their families for their kind cooperation. AJ is grateful to Prof. A. K. Kapoor, Prof. Satwanti Kapoor of Delhi University, Dr A. Jain, and Dr Pradeep Kumar of Sagar, Madhya Pradesh for their help and valuable suggestions during research.

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