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Anthropometric profile and nutritional status of selected Mavasi tribal in Chhindwara district of Madhya Pradesh

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Abstract

The present study was carried out to determine anthropometric profile and nutritional status of selected Mavasi tribal of Chhindwara district of Madhya Pradesh. Mavasi is one of the tribe of Madhya Pradesh. A total of 75 households comprising of 115 individuals (60 adult male and 55 adult female) of Chhindwara district were selected for present study. Interviewed though the help of a pre-tested structured scheduled have prepared for the collection of health related data. Various anthropometric nutritional statuses were calculated by BMI, Pigent index, Broca index and Wirth's standard. In this present paper we can see various results on nutritional status in Mavasi tribe (both male and female) ranging the age between 20-50 year, have been highlighting in BMI 59.50% grade III,II,I malnutrition series. Apart from this, the present paper also reveals that the overall socio-economic condition of Mavasi tribe. The pignet index shows that 46.88% of Mavasi male are weak to poor state of physique. In conclusion the studies provide evidence that the nutritional status of both male and female adult was not satisfactory. Among the Mavasi tribe the adult female were having more nutritional deficiency than adult male. Immediate appropriate nutrition intervention programme are needed for improving their status.

Key words: *1. Anthropometric Indices, 2. Nutritional Status, 3. Mavasi Tribe, 4. Chronic 5. Energy deficiency.*

1. Introduction

The nutritional status of any population is the product of its cultural and ecological factors. Man has always been dependent on ecological resources and its surrounding ecological systems. The utility of recourses has constantly increased but in many cases natural resources do not increase at the same pace which results in change of techno-economic pursuits (Chandrasekhar, 1954). Due to massive deforestation, the economy of forest resources based communities and ultimately their nutritional status are affected badly. In India each state is practically equal to its specific socio-economic level, varies ethnic groups, food habits, health infrastructures and communication facilities. Thus, the nutritional status of the population shows a vital disparity between states since it result from varying combination of factors (FAO, 2010).

Tribal peoples are acknowledged to have very close relationship with the ecosystem and the environment because of their fulfilment of daily nutritional requirements with food foraged from nature. Malnutrition is the condition arising due to the intake of inadequate (over/less) nutrients in diet. It includes both under nutrition (imbalanced diet and specific deficiencies) and over nutrition. The health and nutrition problems of the tribal population of India are as varied as in their socio-economic, socio-cultural and ecological settings. Because of extreme poverty and poor economic status, their malnutrition is high among the non-tribal population. On the other hand, the indigenous people are now leaving their traditional food products based on wild plants and animals, dietary habits in a compulsive situation. Also, due to process of transformation of socio-cultural like assimilation the tribal are adopting new dietary practices without understating its nutritional implication (Singh, 1995).

In developing countries like India, anthropometry, despite its inherent limitations, remains the most practical tool for assessing the nutritional status of the community (Ghosh, 2001). In general, data are scanty on the anthropometric and nutritional status of various tribal populations of India (Yadav et al. 1999; Yadu et al. 2000; Khonngsdier et al. 2002; Bose & Chakraborty 2005). Rao (1996) concluded that nutritional status of tribes seems to be influenced by their habitat and socio-economic condition. Normally their diet is also governed by certain norms and traditions. For instance, drinking Milk is considered as taboo in Sauras of Odisha (Sing, 1995). Similarly, in the tribes Hill Kharia of Eastern Ghats, consumption of Milk and eating egg is completely prohibited during the time of pregnancy (Roy et al., 1999). Likewise various reports indicate on malnutrition from Odisha (Mahaptra and Das, 1990; Haque, 1990; Kar et al., 2002) and Madhya Pradesh (Basu et al., 1989) and so on. It has been recently suggested (Bose and Chakraborty 2005) that there is urgent need to evaluate the nutritional status of various tribes of India.

According to census 2011, the Scheduled Tribe (ST) population of the State of Madhya Pradesh is 1, 53, 16,784, of this 2,090,922 are in both rural and urban areas of Chhindwara District. In terms of gender composition, there are 1,064,468 male and 1,026,454 numbered of female scheduled tribes residing in both rural and urban areas.

The Mawasi tribe has placed in 31 numbers in the list of scheduled tribe. According to the Mr. L. M. Silu, Mawasi tribe has been identified by its unique heredity, lifestyle, cultural traditions, socio-economic structure, religious beliefs, language and speech, this apart they have also been recognised for their cow worshiping. This study has been under taken in the Junnardev sector of Chhindwara district as 80% of the total Mawasi community residing in this district.

The provision of optimal food and nutrition is an important responsibility of the state towards its every citizen. Thus it is the word to say that the healthy people can enhance the human resources of the nation, which ultimately contributes a healthy economy (Gupte et al., 2001). With this backdrop, the present research has been carried out to record the anthropometric profile among the of Mavasi tribe (both male and female) and to assess their nutritional status in Chhindwara district of Madhya Pradesh.

2. Objectives

The specific objectives of this study are as follows:

1) To analyse the socio-economic condition of the selected Mavasi tribal families.

2) To assess the nutritional status by indices of nutritional Anthropometry.

3. Material and methods

This is an empirical study was covering the survey of 3 hamlets, of Junnardev block, Chhindwara district, Madhya Pardesh. The hamlets were on hill slopes surrounded by forest and most of these were inaccessible by roads. These hamlets consist of 75 families, of which only 110 household. Out of the total population, only 60 Mavasi adult males and 55 adult female, ranging the aged between 20-50 years were considered for the present study. A simple but specially designed form has used to determine the Nutritional status; Anthropometric measurement has been used by Anthropometry rod, weight machine and measuring tape.

To assess the nutritional status of the adult Mavasi Tribe (both male and female), height and weight, arm circumference and chest girth, the four commonly used anthropometrical measurements were recorded, (Jellife, 1966). Few anthropometrical indices like Body mass index (Rao et al., 1986) and Pignet index (Ivanovsky, 1923) and weight for height taking Broca index and Writh's standard were also calculated to assess the nutritional status of the Mavasi Tribe (Park & Park 1991).

4. Results and discussion

1. Demographic characteristic

Various demographic factors like age, education, occupation of the head of the family member and children have a positive influence in the nutritional status of the people. So an attempt has made for the analysis of the demographic features of the sample in the bellow table-1.

Table: 1

Classification of the respondents (head of the family) on the basis of general information

General information	No.	%
AGE		
30 Year and below	11	14.47
31 Years to 60 years	60	78.95
Above 60 years	5	6.58
Total	76	100.00
Educational status		
Illiterate	15	19.73
<Matriculate	43	56.58
Matriculate	12	15.79
Higher education	6	7.89
Total	76	100.00
Occupational status		
Agriculture/ forest products collection	18	23.68
Domestications	28	36.84
Labour & allied	30	39.47
Total	76	100.00

The above table Illustrate that the majority member of the Mavasi tribe belonged to the age group of 31-60 years of age. The education level indicates that 56.58% member of this community was matriculated and 19.73% were illiterate. With regard to their occupational status, above table indicates that labour & allied is the primary and major source of income and about 39.47% people are employed as labour & allied. This apart 36.84% and 23.68% people are depending on the cattle and agriculture respectively s their source of income. From the above statistics it can be said that majority member of the Mavasi tribe belonged to the age group of 31-60 years of age and 7.89% were got higher education.

Table: 2

Distribution of the respondents on the basis of family information

Type of house	NO.	%
Pukka	3	3.95
Mixed	23	30.26
Kaccha	50	65.79
Total	76	100.00
Sources of water		
Public supply water	05	6.58
Tube well / hand pump	42	55.26
Well / pond/ river	29	38.16
Total	76	100.00

Sanitary		
No facility	37	48.68
Common toilet facility	25	32.89
Own toilet facility	12	15.79
Own toilet with proper facility	02	2.63
Total	76	100.00
Fuel		
Wood/dry cow dung	47	61.84
Coal+ wood+ kerosene	26	34.21
Gas/heater etc.	03	3.95
Total	76	100.00
Vehicles possessed		
No vehicles	12	15.79
Cycle	36	47.37
Scooter/ motor cycle	27	35.53
Four wheeler	01	1.31
Total	76	100.00
Food habits		
Kodo/kutki/makka page/pulse/vegetarian	31	40.79
Kanki/ makka page/ pulse/ veg.	27	35.53
Kodo/kutki/page/pulse/ veg. And non veg.	18	23.68
Total	76	100.00
Health		
Suffering from severs diseases	03	3.95
Suffering from common diseases	56	73.68
Suffering from major diseases	17	22.37
Total	76	100.00
Per capital income		
500-1000	28	36.84
1000-2000	29	38.16
2000-3000	15	19.74
3000-5000	04	5.26
Total	76	100.00

Table 2 denotes the general family information of the respondents of Mavasi tribe. Data shows that 65.79% respondents lived in kuchha house whether 30.26% and 3.95% respondents lived in semi-pukka house respectively. Regarding water facility only 6.58% household availing public supply water and majority of the people about 55.26% depend solely on tube well/ hand pump for water for all purpose. It is observed that majority of the member i.e., 48.68% households have no latrines. If we look upon the source cooking food 61.84% respondents used cow dung cake for this propose. Only 47.37% households used cycle for the communication. Corn gruel and *Kodo Kutki* is the primary food habit of the Mavasi people. Health status indicates that 73.68% peoples suffered from fever, cough and cold etc. 23.37% and 3.95% members suffered from major diseases and sever diseases respectively. The PCI of each family is also not good as they are employed in government and privet sectors, 5.26 percent of Mavasi tribal have PCI between Rs. 3000-5000/- per month, 19.74 percent of tribal have PCI between Rs. 2000-3000/- per month, 36.84 percent of tribal have PCI between Rs. 500-1000/- per month, 38.16 percent of Mavasi tribal

have PCI between Rs. 1000-2000/- per month. The above data indicates the low socio-economic status of Mavasi tribe.

2. Anthropometric measurement

Out of the total, there were 115 numbers of (i.e. both male 64 and 51 of female) Mavasi people were included in the present study.

Four different indices were used to assess the nutritional status of the Mavasi tribe. Body mass index (BMI) calculated as weight/ height^2 is an age-independent index used popularly for assessment of nutritional status in 20-50 year age groups. When the BMI of the Mavasi tribe was calculate that 28.13% of males and 31.37% of female are in chronic energy deficiency grades (Table 1).

Table: 1

Distribution of body mass index in adult males and adult female's mavasi tribe.

Nutritional grades **Grades**	**bmi value**	**Males**		**Female**	
		NO.	%	NO.	%
Chronic energy deficiency iii	<16	00	00.00	00	00.00
Chronic energy deficiency ii	16 - 17	03	4.69	00	00.00
Chronic energy deficiency i	17 – 18.5	15	23.44	16	31.37
Low weight normal	18.5 - 20	25	39.06	21	41.18
Normal	20 - 25	21	32.81	14	27.45
Obesity grade i	25 - 30	00	00.00	00	00.00
Obesity grade ii	>30	00	00.00	00	00.00
Total:		64	100.00	51	100.00

Ivanonsky (1923) opined that Pigent index value above 20.31% is an indication of weak physique. It is evident from (Table 3) that 26.57% of Mavasi, males show very weak to poor state of physique.

Table: 3

Distribution of pigent index value among the adult mavasi males

Nutritional grades **Grades**	**value**	**Males**	
		NO.	%
Very sturdy	<10	00	00.00
Sturdy	10 – 15	00	00.00
Good	16 – 20	14	21.87
Average	21 – 25	20	31.25
Weak	26 – 30	13	20.31
Very weak	31 – 35	10	15.63
Poor	>36	07	10.94
Total:		64	100.00

Weight for height is also an age-independent index, and a good prognostic indicator of malnutrition. Ideal weight for height was estimated according to Wirth's Standard and then the percentage of weight for height was classified as per the Waterlow's classification. According to the following classification of nutritional grade, both male and female have been seen under the three types of undernourished division i.e. 57. 82% and 58.82% respectively. Whereas, very few percentages were found in Obesity among the both male and female Mavasi community i.e. 1.56% and 3.92% respectively (Table: 4).

Table: 4

Distribution of wirth's standard value in adult male and female's mavasi tribe.

Nutritional grades		**Males**		**Female**	
Grades	**value**	NO.	%	NO.	%
Severely under nutrition	<=75%	03	4.69	02	3.92
Moderate under nutrition	>75 - <=84%	11	17.19	13	25.49
Marginal under nutrition	> 84 - <=90%	23	35.94	15	29.41
Normal	>90 - <=105%	26	40.62	19	37.25
Obesity grade i	>105 - <=115%	01	1.56	02	3.92
Obesity grade ii	>115%	00	00.00	00	00.00
Total:		64	100.00	51	100.00

*Wirth's standard: weight for height: ideal weight in kg= ht. in cm X 0.4
*Water low's classification: percentage of weight for height = Actual weight / ideal weight X 100

When the ideal weight was calculated as per the Broca Index and then the percentage of weight was classified, by Waterlow's classification of nutritional grade, male 53.13% and female 60.79% have been seen under the undernourished division, Whereas, minimum percentages were found in Obesity among the both male and female Mavasi community i.e. 1.56% and 3.92% respectively (Table:5).

Table: 5

Distribution of broca index values among adult mavasi (both male and female

Nutritional grades		**Males**		**Female**	
Grades	**value**	**NO.**	**%**	**NO.**	**%**
Severely under nutrition	<=75%	00	00.00	00	00.00
Moderate under nutrition	>75 - <=84%	12	18.75	10	19.61
Marginal under nutrition	> 84 - <=90%	22	34.38	21	41.18
Normal	>90 - <=105%	29	45.31	18	35.29
Obesity grade i	>105 - <=115%	01	1.56	02	3.92
Obesity grade ii	>115%	00	00.00	00	00.00
Total:		64	100.00	51	100.00

*Broca Index = Standard weight = height in cm – 100
*(Waterlow's classification)percentage of weight for height= actual weight / standard weight X 100

Conclusion and suggestion

Tribal communities are relatively more vulnerable to food and nutrition insecurity compared to their rural counterparts. The prevalence of under-nutrition in the tribal communities was relatively high compared to the urban counterpart. In present study reveals that Status of health and nutrition of Mavasi tribal people inaccessible to interior regions of Chhindwara district is very poor due to lack of nutrition awareness and non availability of health services. Among the Mavasi tribe the adult female were having more nutritional deficiency than adult male. Due to extreme poverty and financially vulnerable condition of this tribe nothing can be done more than maintenance. Although these people are merely engaged in the fulfillment of their basic needs. It is therefore, understood that an appropriate community and location specific Immediate appropriate nutrition intervention programme planning and improved service health system will be instrumental in bringing necessary changes in the tribal health seeking behavior of the primitive tribes.

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