

Taneja, Priti V. & Saxena, Manisha : Nutritional Anthropometry of Bhil Women in Jhabua District of Madhya Pradesh. The Indian Journal of Nutrition and Dietetics. Apr. 1998. 35(4). p.98-102.

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## **Nutritional Anthropometry of Bhil Women in Jhabua District of Madhya Pradesh**

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### **Introduction**

The issue of maternal health is the most neglected tragedy of Bhil women of Jhabua District, coupled with ignorance, illiteracy, striking poverty and superstition. The National Institute of Nutrition (1983)[1] reported various risk factors associated with low-birth-weight, height, morbidity and mortality which were assessed among non-pregnant-non-lactating and pregnant and lactating women from a slum. Poor anthropometric indices, adverse factors of previous pregnancy, abortion, perinatal death and short inter-pregnancy interval have been identified as risk factors.

This study was carried out in Jhabua District of Madhya Pradesh. Madhya Pradesh is one of the largest states in India, and the district of Jhabua, which is the area of this study, is predominantly tribal. The main tribal groups who dwell in this district are Bhils, Bhilalas and Patelias.

This paper aims to study the nutritional status by anthropometry of tribal women of Jhabua district, discussing the various parameters related to their health, i.e. weight, height and Body Mass Index, which affects their maternal health as well as child health.

The pattern of growth and the physical status of the body, though genetically determined, are profoundly influenced by diet and nutrition. Hence, anthropometric measurements are useful criteria for assessing nutritional status. It should be remembered that other factors such as frequent illness due to infection may also affect the growth and physical status of the body.

Physical measurements such as height, weight and body mass index reflect the total nutritional status over a life time.

## **Materials and Methods**

This study was carried out by multi stage random sampling method. The study was conducted in 50 per cent blocks in Jhabua District by random sampling to avoid bias. Here, 10 per cent of the villages from each block were selected from the list of total villages. Then, in each village, selection of house holds were done in a purposive manner. House holds with women in the reproductive age group, i.e. 18 to 45 years were studied. They were categorized as pregnant, lactating, and non-pregnant non-lactating, according to their physiological status.

Anthropometric measurements, height and weight of women were taken by standardized scientific tools and procedures. Body mass index was computed using the height-weight data.

## **Results and Discussion**

All women belonged to low socio- economic status. Educational status of women was very poor, as 95.45 per cent of women were illiterate. Lack of education failed to inculcate in them the basic understanding of health care practices which is required for women at the time of conception and thereafter.

Table I (Weight of Women) shows that only 11 to 38 per cent women were having weight between 100 to 90 per cent, including pregnant women. ICMR[2], standardized weight for Indian reference women in 50 kg. and weight gain in pregnancy is 10 to 12 kg. In first trimester the weight gain is 3 kg., In second it is 5.5 kg., and in third it is 4 kg.

Data shows that maximum number of women had weight below 40 kg. It is also clear that as the pregnancy progresses from the first trimester to third trimester, the Per-cent of women which had weight below 80 percent of standard increased from 5.45 percent 20.0 per cent and then 30.9 per cent in cent in the last trimester.

Thus, it is evident that these women are unable to gain appropriate weight during the last trimester, where in actual, the weight gain is maximum in a normal women. This results in insufficient weight gain of the foetus leading to either a premature birth or

low-birth-weight baby. Thus, it is seen that decreased weight gain in last trimester in pregnancy affects both maternal health as well as child's health.

**TABLE I**

<b>Weight of Women.</b>				
Percentage Distribution According to ICMR Standards				
S.NO.	Physiological Status	100-90% (50-45 KG.)	89-90% (45-40 KG.)	80% (40 KG.)
1	NPNL (N = 110)	25.54	35.45	40.00
2	Lactating (N = 110)	37.27	24.54	38.18
3	Pregnant (N = 110)	10.90	32.72	56.36
A	Ist trimester (N = 14)	3.63	3.63	5.45
B	IIInd trimester (N = 49)	7.27	17.27	20.00
C	IIIrd trimester (N = 47)	0.00	11.81	30.90

NPNL = Non Pregnant Non Lactating

During lactation, the extra energy requirement in Indian women as per ICMR [2,3] recommendations, is 550 and 400 Kcal/day. This need is even greater than that during pregnancy. It is obvious that mothers with body weight below 40 kg will be hard pressed to provide adequate nourishment for their infant, compromising her health also.

Generally, these tribal women belonged to lower socio-economic status. During pregnancy and lactation period, requirements are increased. Low body weight causes higher incidence of toxemia, prematurely, malnutrition, low-birth-weight baby, prenatal mortality, and poor lactation performance shows a close association with poor weight gain.

In respect of weight, ICMR[3] reported pregnant maternal weight below 40 kg has greater impact on low-birth-weight in all the Income groups. Since low maternal weight is an indicator of maternal nutritional status, one can assume that poor energy intake in

pre-pregnancy status has a greater impact on the weight. Weight gain during pregnancy may be a much better indicator of foetal growth.

Amin et al[4] found that education is a very important factor about low weight. They indicate poor educational level affected material weight and was also associated with birth weight. In this study, these tribal women's educational level is very low (4.55%). Taneja et al [5] studied on Banjara tribe in Madhya Pradesh. They noted that 62.5 per cent of the women had a body weight less than 45 kg in third trimester, indicating the greater chances of having low-birth-weight babies.

Thus, the weight is very important for the growth of mother and child. It reflects better health and nutritional status of mother. Awareness is particularly needed in these areas.

The distribution of tribal women according to height is given in Table II. Height shows a definite Improvement. ICMR[2,3,7] reported that the height of Indian reference women were 151 cm. 53.93 per cent women had more than standard height, and 46 per cent were below normal height. In the study by Chadha et al[6], two-thirds of the newborns were low-birth-weight when maternal height was below 150 cm. ICMR[3,7] reported that women with greater height in low income group also have some incidence of low-birth-weight. ICMR[7], further reported that height below standard contributed to greater incidence of low-birth-weight (< 2.5 kg.wt.) which suggests that maternal height does not have any significance on birth weight in low income group.

**TABLE II**

Height of Women	
Height	Percent of Women
151	46.06
151	53.93

Witter and Luke[8] said that the mother's height is positively linked with weight and length at birth. in a study on scheduled castes by Amin et al[4], mothers who delivered low- birth-weight babies was 47.1 per cent. As regards maternal height, 61.7 per cent mothers with height below 150 cm, delivered low-birth-weight babies, as compared to 43.6 per cent mothers with height <sup>3</sup> 150 cm, who delivered low-birth-weight babies.

Table III presents the body mass Index of women. BMI is being increasingly used as a measure of nutritional adequacy in adults, and is considered to be a better indicator of chronic energy deficiency [9]. It is also a good index to assess the current forms of malnutrition in a community [10].

**TABLE III**

Body Mass Index of Women	
Height	Percentage of women
0.00- 16.0 (Severe Grades)	7.27
16.0 - 18.5 (Moderate Grades)	74.83
18.5 - 20.0 (Low Weight - Normal)	12.72
20.0 - 25.0 (Normal Grade)	2.72
25.0 - 30.0 (Healthy)	2.42

Data reveals that only 2.42 per cent women were in healthy category and 2.72 per cent women were having normal grade of BMI. It shows that nearly 95 per cent women were malnourished. Naidu et al[11] found in their study that most of the mothers belonged to low and lower middle income groups. The incidence of low weight ( $<2500$  g) was highest (53%) in the chronic energy deficiency (CED) or severe group ( $<16.0$  BMI), and gradually declined as the BMI status of mothers improved its incidence. Programme of socio-economic improvement are not only long term measurements, but are also of doubtful consequence as far as women's nutritional status is concerned. Lactation is considered to be a physiological process that is robust and hence preserved well in spite of the poor nutritional status of mothers. However, there is some evidence to show that poor maternal status exemplified by a low BMI, is associated with poor lactational performance and poorer growth in infants [12]. Naidu *et al* [11] reported the incidence of low-birth-weight which is an indicator of "Intrauterine Malnutrition", is higher among mothers with a low BMI status.

According to report on "Women in India", [13], 11.3 per cent women are moderately malnourished. In the present study, nearly 75 per cent women, were moderately malnourished, and 2.42 per cent in normal grade only 5.1 per cent women were healthy in the above report. It means that the situation in tribal context is very delicate and dangerous in terms of women's health as well as child survival.

## Summary and Conclusion

The findings reveal that the Bhil tribal women are living in a state of great deprivation due to poor socio-economic status. Anthropometric measurements show that the weight deficits were maximum compared to height. BMI values indicated higher prevalence of moderate forms of malnutrition.

Thus, it is evident from the present study that almost three- fourths Bhil women in all physiological groups belonging to lower socio-economic status were in moderate grade of malnutrition. This is likely to have an adverse long term impact on their own health as well as on the welfare of the entire family. There is, therefore, an urgent need to create awareness about this, and strategies to combat it among the community at large, and the women in particular.

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