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Preliminary Anthropometric Assessment of Nutritional Status for Rural Women in Shivpuri and Datia Districts of Madhya Pradesh State in India

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Abstract: ***This paper presents certain preliminary findings what are observed from real ground conditions on prevailing health and nutritional indicators for rural women which are socioeconomically deprived and living their life in constraint full conditions in two of the backward districts (Shivpuri and Datia) districts of Madhya Pradesh state of India. An effort is made to generate real ground information on prevailing status of rural women in regards to their health and nutritional status. Values of certain basic anthropometric indicators of nutrition were derived and reported herein to show the average situation of rural women by incorporating as much as 10 villages. The overall results have indicated the prevalence of under nutrition in both the regions, even being much higher than minimum global values. Findings reveal that the rural women in both the region are in a state of great deprivation due to poor socio economic status and lack of awareness about their health and nutrition. Anthropometric measurements showed that the heights deficits were more as compared to weight. BMI indicated that the half of the population on an average is nutritionally low in terms of their assessment and prevalence of underweight type of malnutrition is very much evident. It is recommended that there is an urgent need to create awareness about these deficits, and suitable regional strategies need to be implemented to combat them, among the communities at large, and the women in particular.***

Keywords:

1. Introduction

The World Health Organization (WHO) cites anthropometric aspects as one of the important tool to assess the nutritional status of a particular person. Anthropometric measurements, like height, weight and BMI are among the most frequently applied methods for assessing nutritional status in women, they are also recognized as effective tools in the prevention of many kind of indicators which decides the women's overall health which also remains a burning issue in tropical countries like India. Many developed countries are undergoing epidemiological and health transitions with rapid increases in the incidence of overweight, obesity and chronic diseases across all age groups as a result of changes in dietary and physical activity patterns. When nutritional intakes are not adjusted to Dietary Reference Intake (DRI), some malnutrition type may exist, as in energy-rich diets and with low intakes of vitamins and minerals, essential nutrients for the organism to adequate function, which affect women's health and development. If we look into case of nations like India, it gives a diverged scenario, where the nutritional status of women is extremely diverse, over different segments of society, cities, states and regions, being extremely heterogeneous in accordance to prevailing socioeconomic situations. Over all the country continues to have grave level of prevalent hunger, forcing it to be ranked lowly (being 97th rank among 118 developing countries) when compared in terms of global health index during 2016 (Times of India, October 13, 2016). Upon comparing the other affected countries, it becomes apparent that the countries which are next below the status of India are only the extremely poor African countries like Niger, Chad, Ethiopia, Sierra, Leone, Afghanistan, and Pakistan. Even some of the smaller neighboring nations like Sri Lanka, Bangladesh, Nepal and China are well ranked above India.

The International Food policy Research Institute (IFPRI) makes the annual calculations of GHI, followed by several background perceptions and projections (WHO, 1995). A critical review on recent estimations and relevant inferences on updated data, showed that the 2016 GHI for India was found inferior owing to several inherent reasons like (1) Estimated population is undernourished- lacking in adequate food intake, both in quantity and quality, (2) Endemic poverty, (3) Unemployment, (4) Lack of sanitation and safe drinking water and (5) Lack of effective health care across states and region in the country.

At many of the situations, the under nutrition also refers to underweight, stunting, wasting, and deficiencies of essential vitamins and minerals. Beside these attributes of malnutrition there remains a truly applicable important term "severe malnutrition" which often reflects towards sever protein energy malnutrition clubbed with micronutrient deficiency. Onimawo et al. (2006) stated that "malnutrition arises from a complex of nutritional, social and biological deprivation and is manifested in various forms such as stunting, underweight, muscle wasting, growth retardation, diminished subcutaneous fat and ill health with high mortality rate. Above described problems are very much common in Indian women, who use to be the sound element of families dealing with both the family tasks/responsibilities and agricultural farming related activities, where a greater fraction of their time, energy, and inputs make the family under a survival stage. While achieving this stage, the women use to face a lot of hidden and indirect stresses on them, which had severe consequences on their health and nutritional status.

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Upon traversing the existing status of women (Mardones and Rosso, 2005; Angus and Jean 2009; Mohanty et al, 2006)in particular to their nutritional, health and anthropometry based reflections it remained a vital fact that at different stages of growth, the problems related to nutritional awareness and its prevailing level are an important area of research. Same has been very thinly touched in state like Madhya Pradesh. This particular state being the central part of country has very diverse scenario in this regards, due to the fact that it encompasses variety of physiographic, climatic, socioeconomic, and agro climatic situations, having influences of many other states which are having borders with this innermost state of India.

In the view of high prevalence of hidden hunger and malnutrition among rural women in Madhya Pradesh and also realizing the big gap in availability of sound ground based data showing spatial and temporal variability across communities, regions, districts or even the villages. A cross sectional survey was accomplished to look upon these issues and having deep insights towards such chronic indicators in two specifically identified districts of MP state namely Shivpuri and Datia. Certain real ground information and its relevant inferences are attempted based upon observed information from various villages in these backward districts of state. The prevailing health and nutritional status in regards to different categories of rural women are studied to offer a food for thought on this sensitive aspect of research.

2. Material and Methods

Description of Study Area

Two specific districts of Madhya Pradesh, namely Shivpuri and Datia were adopted in this study. Both the districts uses to be relatively poor and backward areas where the situation of women in particular their health and nutrition is of momentous nature. Shivpuri is a part of GwaliorDivision of northwest Madhya Pradesh and is the administrative headquarters of Shivpuri District. It is situated at an altitude of 1,515 feet (462 m) above sea level, and shares border with Jhansi in Uttar Pradesh towards the east and Rajasthan towards the west. It has nine tehsils: Badarwas, Karera, Kolaras, Narwar,Pichhore, Pohri, Bairad, Shivpuri and Khaniyadhan, out of which 5 specific villages were earmarked for this study. The sample women population was selected for retrieving the planned observations on the objectives of this study. Most of the women remained actively engaged in agrarian activities and sole governor to their family acts and responsibilities.

Similarly, the Datia was too a district headquarters located in north central Madhya Pradesh 70 km away from famous city of Gwalior. Datiais located at 25.67°N 78.47°E and has an average elevation of 302 metres (990 feet) above mean sea level. As of the 2011 India census, both the districts had low population in the range of 1 to 2 lakhs only, with most of the population being agricultural based with majority of them as small and marginal farmers. Most of the farming activities of this study region are taken care by women as well who use to be about 47-48 % of total population.

The prevailing levels of literacy, health, nutrition and overall socioeconomic strength of study region have vast scope of improvement to bring it to even at an average level. The sample of the present study was collected from ten villages (Aawas, Sewdikalan, Jargua, Janakpur, Daburdehi) of Shivpuri and (Garera,Sanora, Karag, Barodi, Dobiapura) of Datia district of Gwalior region in Madhya Pradesh. The population of these areas consists of about 1,097 in shivpuri and 845 in Datia district. For the present study 100 women were selected from Shivpuri region comprising of 20 per village and 100 from Datia district comprising of 20 per villages. Women from reproductive age group 18-42 were selected excluding pregnant and lactating phase women

Description on Observations

Anthropometric measurement height and weight were recorded by adopting IBP recommendations (Weiner and Lourie, 1981). In this study the indicator used to assess chronic deficiency malnutrition in women is Body Mass Index (BMI) This indicator is the most frequently used standardized indicator of thinness (wasting) to assess the progressive loss of body energy in developing countries. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m^2). Cut-off points suggestive of chronic energy deficiency (CED) in adults (BMI < 18.5) have been established by the International Dietary Energy Consultative Group (James et al., 1988). Height is a measure of past nutritional status and reflects in part the cumulative effect of social and economic outcomes on access to nutritional foods during childhood and adolescence. Women less than 145 centimeters in height are considered too short or stunted; this has been determined to be a useful cut-off point in several studies (ACC/SCN, 1992; Krasovec and Anderson, 1991). This indicator was also used to assess the vicious cycle of malnourishment from child to maternal stage and again giving birth to malnourished children.

3. Results and Discussions

This paper aims to study the nutritional status by anthropometry of rural women of Shivpuri and Datia district, discussing the various parameters related to their health, i.e. weight, height and Body Mass Index which affects there over all 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. 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. The observations in regards to prevailing education status of sampled women are illustrated in Table 1, which are self explanatory.

Table 1: Observed Educational Status of the Respondents

Educational Status	Shivpuri Region N=100	Datia Region N=100	Average (%)
Illiterate	52	49	50.5
Literate	21	15	18
Primary	16	19	17.5
Secondary	11	8	9.5
>HSC	0	9	4.5

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Literacy rate among the rural women showed a declining trend in both the regions. In Shivpuri region 52% were illiterate and 21% were literate (able to read and write his name) where as 16% had passed primary schooling (till 5Th class) and 11% (till 8th class) and none were found in the category of >HSC. Little different trend was seen in Datia region where 49% felled in the illiterate category, and 15%in literate category, 19% were respondents who received primary education and 9% were in >Hsc category. This depicts that rural women in both the regions did not have proper formal education. Lack of proper education failed to inculcate in them the basic understanding of health care practices which are required for life time.

Women who receive even a minimal education are generally more aware than those who have no education of how to utilize available resources for the improvement of their own nutritional status and that of their families. Education may enable women to make independent decisions, to be accepted by other household members, and to have greater access to household resources that are important to nutritional status (ACC/SCN, 1990). The findings of present study (Table 2) had amply confirmed the results what were reported in a comparative study on maternal malnutrition in ten sub-Saharan African countries (Loaiza,1997) and a study in the SNNPR of Ethiopia (Teller and Yimar, 2000) showed that the higher the level of education, the lower the proportion of undernourished women. This study also coincided with these findings.

Table 2: Representing the anthropometric measurements of both the regions

S.N	Anthropometry variables	Shivpuri	Datia	Average
1.	Height (in cms)	Frequency (n=100)	Frequency (n=100)	(%)
	145 & below	12	28	20
	146 to 155	59	45	52
	156 & above	29	27	28
2.	Weight (kgs)			
	40 &less	11	17	14
	41-50	83	76	79.5
	51-60	6	5	5.5
	61& above	0	2	1
3.	BMI (kg/m²)			
	<18.50 (under wt)	57	40	48.5
	18.50 – 24.99 (normal)	39	51	45
	>_25.00 (over wt)	4	0	2
	25.00-29.99 (pre-obese)	0	8	4
	>_30.00 (obese)	0	0	0

The results shown in above table revealed that the number of women respondents falling in each BMI category as per the standard given by WHO (1995, 2004). Overall levels of malnutrition in women are very well depicted through these findings.

The interpreted results in regards to weight gains/loss, showed that 57 women use to be in the reproductive age group (18-42), are actually fall below the standard cutoff limit of 18.5 from Shivpuri region that is they are underweight. This altogether indicated that the level of chronic energy deficiency is relatively high. However, 39 women had normal range (18.50 to 24.99) in ttis regards and only 4 women respondent were found falling in over weight category (>_25). Similarly, if we compare the body weight patterns (in terms of BMI), in Datia region 40 women were falling in underweight category, 51 in normal range and 8 in pre-obese category. Here, none of the respondents were in overweight and obese category.

The results obtained altogether indicated the prevalence of under nutrition in both the regions, even being much higher than the sub-Saharan average prevalence of 20 %. According to the findings it was very well depicted that the mean height of women in these region was 156 centimeters and about 52% of women were shorter than 155 centimeters and 20% were below 145 centimeters The percent of women whose height was below 145 centimeter was highest (28%) in villages in Datia district, while being 12% in sampled villages Shivpuri district.

Overall the stunting was very much prevalent in the study region, and further it can be concluded that it is very well correlated with the low nutritional status in the prevailing situation. It was also found that household economic status, education of parents, number of prenatal care visits of the mother (as a proxy for access to health services), child's age, birth order and preceding birth interval are important determinants of a person's stunting. Low dietary intake, lack of access to nutritious foods, lack of knowledge and awareness, morbidity of diseases, poor sanitation facility all lead's to such poor health and low nutritional status.

Table 3: Observed Marital Status of rural women

Marital Status	Shivpuri Region	Datia Region	Average
	n=100	n=100	(%)
Single	12	15	13.5
Married	88	82	85
Divorce	0	0	0
Separated	0	0	0
Widow	0	3	1.5

The observed marital status (Table 3) for regions under study depicted that in Shivpuri region, about 12% women were single followed by 88% married. None of sampled respondent were found in the divorce, separated and widow category. On the same line for Datia region too, a similar trend was observed where 15% were unmarried women were 15 %, and 82% as married in addition to 3% of widow women, but none under the category of Divorce and separated. These results are displayed categorically in Table3.

On an average 13.5 percentage of the never married women were found adolescent (18-24 years). It was established that the adolescent age group (18-24 years) and older women in the age group 35-42 years in this region were at a significantly higher risk of CED malnutrition. This altogether reflected the fact that the problem is worse for rural women of these indicated age groups. In adolescence, a young woman's nutritional needs was suppose to be increased because of the spurt of growth that accompanies puberty and the increased demand for iron that is associated with the onset of menstruation.(Girma, and Timotiows 2002) Early marriages, Inadequate diet, illness, and heavy physical demands (to assist with household and family chores) during

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this period can jeopardize the health and physical development of young women resulting in delayed or stunted skeletal growth and anemia. Early childbearing can further increase the health risks of women and also have a negative impact on their nutritional status and growth. The higher risk of malnutrition in older age women (35-42 years) may be in part due to maternal depletion syndrome that may be associated with closely spaced births and the cumulative effects of a lifetime of nutritional deprivation, heavy work and low self-esteem.

4. Conclusion

Nutritional intervention and educational strategies are of prime importance. Anthropometry remains one of the most widely used methods for assessing and monitoring health status, nutritional status, as well as child growth in individuals and communities.

The overall results reveal that rural women in both the region are in a state of great deprivation due to poor socio economic status and lack of awareness about their health and nutrition. Anthropometric measurements showed that the heights deficits were more compared to weight. Observed BMI values indicated that the half of the population on an average is nutritionally low in terms of their assessment and prevalence of underweight type of malnutrition is very much evident. Also it is established that almost half of the population of rural women from both the region in 18-42 reproductive age group irrespective of any economic status were suffering from 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 need to be implemented to combat it among the communities at large, and the women in particular. Nutrition Education is the key note answer to this prevailing status. This altogether will promote healthy eating and to correct inadequacies, not only this region but also the adjacent areas and thus a true and faster awareness generation to identify and mitigate the issue.

The preliminary results from this study provide a baseline for future intervention programs to prevent rural women from suffering nutritional deficiencies and acquiring suitable eating habits. Indeed, it makes clear that the nutrition situation in study region is full of “puzzles”. We hope that the puzzles, if not resolved, are at least made clearer with this small effort. Here the limitations of intake-focused nutritional assessments reinforce the case for supplementing intake data with outcome-focused indicators, such as anthropometric measurements. Though anthropometric data have their own limitations, moreover the real ground based information and observations collected in this study are going to be extremely valuable and important for generating a true awareness and seeking true solutions at micro scale, with which due development could be ensured.

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