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## **Existing Nutritional Practices of Rural Women in Assam, India**

**Ingita Gohain<sup>1</sup>, Juliana Sarmah<sup>2</sup> and Dipak Nath<sup>3\*</sup>**

<sup>1</sup>SMS (Home Sc.), KVK South Tripura, B.C. Manu, Tripura, India.

<sup>2</sup>Professor, Department of Extension and Communication Management, College of Community Sc., AAU, Jorhat, Assam, India.

<sup>3</sup>Dy. Director of Extension Education, CAU, Imphal, Manipur, India.

### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author IG designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors JS and DN managed the analyses of the study. Authors IG and DN managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

Health and nutritional status of Indian women are worsening due to the prevailing culture and traditional practices in India. Indian women are generally vulnerable to poor nutrition, especially during pregnancy and lactation. It has been pointed out that the impact of nutritional status of the mother is more pervasive than the impact of other factors on birth weight. The study was carried out in the state of Assam (India) with 270 randomly selected rural women of 3 districts, viz., Tinsukia, Nagaon and Barpeta districts to find the existing practice of respondents on nutrition. Majority of the respondents (67.41%) belonged to 'moderate' category of practices regarding nutrition followed by 21.85 percent of respondents belonged to 'poor category' of practices in Assam. Majority of the respondents belonged to 'moderate category' of practice on nutrition, namely Barpeta (61.11%), Nagaon (63.33%) and Tinsukia (62.22%). It may be concluded that healthy lifestyle and high intake of nutritious food can provide good health throughout life to the humans. The poor nutrition and unawareness of health facilities during the childhood and reproductive age are the major factors responsible for the poor health status.

\*Corresponding author: E-mail: [spd020@yahoo.co.in](mailto:spd020@yahoo.co.in);

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## 1. INTRODUCTION

Health and nutritional status of Indian women are worsening due to the prevailing culture and traditional practices in India. Indian women are generally vulnerable to poor nutrition, especially during pregnancy and lactation. It has been pointed out that the impact of nutritional status of the mother is more pervasive than the impact of other factors on birth weight [1]. It was observed that the dietary intake of rural pregnant women was lower than the recommended level. The incidence of anaemia was found to be highest among lactating women followed by pregnant women and adolescent girls [2]. Epidemiological studies pointed out that worldwide 50 percent of all pregnant women are anaemic, and at least 120 million women in less developed countries are underweight. Millions of women and adolescent girls around the world are affected by deficiency of calorie, protein, vitamins and minerals. Malnutrition, a serious health concern, threatens the survival of Indian mothers and their children. Adequate nutrition is essential for maintaining a healthy health condition of an individual, especially for women. The two most common nutritional deficiencies in the women worldwide are iron deficiency and anaemia. Around 80% of the Indian pregnant women suffer from iron deficiency anaemia [3]. India has the highest number of under-weight children under five in the world and 70 percent of children are anaemic. The proportion of undernourished people in the overall population has fallen from 21.5 percent in 2004-06 to 17 percent in 2011-13 according to International Food Policy Research Institute (IFPRI) estimates [4]. Good health is a key criterion that contributes to human wellbeing and economic growth. Adequate nutrition for women would help them to serve as productive members of the society for developing the consequent health generation. The health conditions of rural women can be improved by educating and creating increased awareness on nutrition, and its needs among the rural women [5]. Nutrition is a basic human need and a prerequisite to a healthy life. A proper diet is essential from the very early stages of life for proper growth, development and to remain active. Food consumption, which largely depends on production and distribution, determines the health and nutritional status of the population (Raju Kowsalya, Shanmugam Manoharan, 2017). The major food issues of concern are insufficient/ imbalanced intake of foods/nutrients.

The common nutritional problems of public health importance in India are low birth weight, protein energy malnutrition in children, chronic energy deficiency in adults, micronutrient malnutrition and diet-related non communicable diseases.

## 2. METHODOLOGY

The present study was carried in the state of Assam. Stratified random sampling method is used for selection of respondents for the study. Three parts of Assam had been included, namely Upper Assam, Middle Assam and Lower Assam for the study. Three districts viz., Tinsukia, Nagaon and Barpeta were selected randomly from the three parts of Assam. From the three districts, three subdivisions namely: Tinsukia subdivision from Tinsukia district, Nagaon subdivision from Nagaon district and Sorbhog subdivision from Barpeta district were selected randomly. One development block from each selected subdivision, one gaon panchayat from each selected block and three villages from each selected gaon panchayat were selected randomly. Finally, nine villages were considered for carrying out the study. Selection of respondents was done by equal distribution method. Thirty respondents in the reproductive age group (15 yrs – 49 yrs) (according to WHO, reproductive age group is usually defined as 15-49 years or 12-49 years) were selected randomly from each village. Thus, there were two hundred seventy (270) numbers of respondents for assessing the existing knowledge of the respondents on nutrition. The data were collected personally by the investigator through personal interview method with the help of the prepared interview schedule. For measuring existing practices, an interview schedule was prepared to identify the practices on nutrition. Based on the scores obtained by the respondents they were categorized in poor ( $< \text{mean} - \text{SD}$ ), moderate ( $\text{mean} - \text{SD}$  to  $\text{mean} + \text{SD}$ ) and good ( $> \text{mean} + \text{SD}$ ) category in overall and district wise. The existing nutritional practices were studied in terms of 'Basics of Nutrition', 'Conservation of Nutrients' and 'Nutrition for Mother and Child'.

## 3. RESULTS AND DISCUSSION

The existing practice level of the respondents were measured in terms of overall existing practice on nutrition and district wise existing level of practice on nutrition as mentioned below.

### A. Existing level of practice on nutrition (overall)

The distribution of respondents according to their overall existing level of practice on nutrition is shown in Table 1.

It is revealed from the Table 1 that majority of the respondents (67.41%) belonged to 'moderate' category of practices regarding nutrition followed by 21.85 percent of respondents who belonged to 'poor category' of practices. Again it is also revealed that only 10.74 percent of respondents belonged to 'good category'. It might be due to the fact that the knowledge level on nutrition of the respondents under study was medium. Therefore, the level of practice of the respondents under study was also found to be moderate with almost same frequency and percentage as that of the knowledge level on nutrition.

### B. Existing level of practice on nutrition (district wise):

The distribution of respondents based on existing level of practice on nutrition (district wise) is presented in the Table 2. The data presented in Table 2 shows that in the three assessed districts, majority of the respondents belonged to 'moderate category' of practice on nutrition,

namely Barpeta (61.11%), Nagaon (63.33%) and Tinsukia (62.22%).

From the Table 2, it is also observed that Nagaon district had the highest number of respondents that belonged to 'poor category' (25.56%) of practice on nutrition in comparison to the other two districts Barpeta (20.00%) and Tinsukia (17.78%). It might be due to the fact that Nagaon district had the highest number of respondents with 'low level of knowledge' on nutrition in comparison to the other two districts Barpeta and Tinsukia. The data on Table 2 also shows that among the three assessed districts, Tinsukia had the highest percentage of respondents (20.00%) that belonged to 'good category' of practice level on nutrition and Nagaon had the lowest percentage of respondents (11.11%) that belonged to 'good category' of practice level on nutrition. This might be due to the fact that the respondents of Nagaon district had rare contact with extension personnel which leads to less awareness and exposure to good nutritional practices and had rarely visited urban areas. Another reason might be that the respondents had low educational qualification. All these might be the reasons for having highest number of respondents belonging to low level of knowledge on nutrition.

The existing practices of respondents regarding Nutrition are also presented in Table 3.

**Table 1. Distribution of respondents based on overall existing level of practice on nutrition N= 270**

Category	Score Range	Frequency	Percentage (%)	Mean	SD
Poor	< 7.15	59	21.85	12.60	5.45
Moderate	7.15 – 18.05	182	67.41		
Good	> 18.05	29	10.74		

**Table 2. Distribution of respondents based on existing level of practice on nutrition (district wise)**

Name of district	Category	Score Range	Frequency	Percentage (%)	Mean	SD
Barpeta (N=90)	Poor	< 6.18	18	20.00	11.34	5.16
	Moderate	6.18 – 16.50	55	61.11		
	Good	> 16.50	17	18.89		
Nagaon (N=90)	Poor	< 7.39	23	25.56	13.91	6.52
	Moderate	7.39 – 20.43	57	63.33		
	Good	> 20.43	10	11.11		
Tinsukia (N=90)	Poor	< 8.36	16	17.78	12.54	4.18
	Moderate	8.36 – 16.72	56	62.22		
	Good	> 16.72	18	20.00		

**Table 3. Percentage distribution of respondents' existing practice on Nutrition N = 270**

Sl. No.	Statements	Percentage	
		Practiced	Unpracticed
<b>Basics of nutrition</b>			
1.	Preserving of rice, wheat and flour in a container with lid in a dry place.	66.67	33.33
2.	Consumption of manually pound rice/ dhenki rice.	34.07	65.93
3.	Consumption of dal daily.	30.37	69.63
4.	Consumption of green leafy vegetables regularly.	28.52	71.48
5.	Consumption of meat, fish, egg as a source of body building and repairing.	20.74	79.26
6.	Consumption of rice and wheat regularly as energy giving foods.	17.04	82.96
7.	Consumption of Amla as a source of Vit. C	14.81	85.19
8.	Use of same water to cook dal (washed) where it is being soaked.	11.11	88.89
9.	Consumption of carbohydrate as a source of energy giving food.	8.52	91.48
10.	Consumption of rice, wheat, potato as a source of carbohydrate regularly.	8.52	91.48
11.	Taking of potato, ghee and butter as a source of energy for our body.	4.81	95.19
<b>Conservation of nutrients</b>			
12.	Consumption of boiled vegetables than fried vegetables.	46.67	53.33
13.	Not stirring of foods frequently while cooking.	45.56	54.44
14.	Not reusing of the already cooked oil.	35.56	64.44
15.	Not using of soda for prompt cooking of vegetables.	34.81	65.19
16.	Chopping of vegetables in big size before cooking.	34.44	65.56
17.	Not deep frying of foods.	30.00	70.00
18.	Peeling of vegetables thinly.	28.89	71.11
19.	Cooking of foods in low flame.	26.67	73.33
20.	Using of lid while cooking.	25.18	74.81
21.	Cooking of vegetables in minimum water.	24.07	75.93
22.	Peeling of the skin of some vegetables instead of scrapping.	22.96	77.04
23.	Not draining off the excess water of vegetables after cooking.	22.59	77.41
24.	Covering of foods while cooking.	22.59	77.41
25.	Consumption of papaya, carrots, tomatoes in cooked form.	21.85	78.15
26.	Cooking of foods in pressure cooker.	21.48	78.52
27.	Washing of vegetables before chopping them.	20.00	80.00
28.	Sieving of wheat flour once before consumption.	14.81	85.19
29.	Not consumption of overcooked vegetables.	13.33	86.67
30.	Not draining off the excess water of rice after cooking.	12.22	87.78
31.	Cutting the pieces of vegetables just before cooking.	9.26	90.74
32.	Storing of vegetables in basket covering with a damp cloth.	8.89	91.11
33.	Using of the excess water of cooked vegetables for cooking other foods.	8.89	91.11
34.	Not consumption of reheated foods.	96.67	3.33
35.	Washing of rice once or twice before cooking.	1.85	98.15
<b>Nutrition for mother and child</b>			
36.	Continuation of breast feeding to a child when it starts supplementary food.	42.59	57.41
37.	Breast feeding of a child as long as possible.	41.11	58.89
38.	Feeding of mixture of rice and dal to a 7-8 months old baby.	38.14	61.85
39.	Breast feeding of a new born child just after delivery.	38.14	61.85
40.	Breast feeding of new born baby.	35.19	64.81
41.	Drinking of more water by a lactating mother during lactation period.	28.89	71.11
42.	Taking of Tetanus Toxoid injection by a pregnant woman.	28.14	71.85

Sl. No.	Statements	Percentage	
		Practiced	Unpracticed
43.	Inclusion of all the food stuff in a pregnant women's diet.	26.29	73.70
44.	Weaning a child before one year of age.	25.18	74.81
45.	Not weaning a child before 6 months of age.	24.81	75.19
46.	Not feeding of cow's milk to a new born child in absence of mother's milk.	24.81	75.19
47.	Consumption of foods in lesser amounts at a time during pregnancy.	22.22	77.78
48.	Consumption of one fruit daily by a pregnant woman.	20.37	79.63
49.	Taking of Iron and Folic Acid tablets as Iron supplement by a pregnant woman.	16.67	83.33
50.	Consumption of extra food for the growth of the foetus.	16.67	83.33
51.	Feeding of complementary foods to a child after six months of age.	11.48	88.52
52.	Feeding of Colostrum to a new born baby soon after birth.	10.37	89.63
53.	Feeding of Colostrum, which is rich in fat.	10.00	90.00
54.	Consumption of iron rich foods during pregnancy.	6.66	93.33
55.	Taking of baby's weight regularly.	6.29	93.70
56.	Consumption of dry fruits such as dates, raisins (khismis) by pregnant mother.	4.81	95.19

A perusal of Table 3 under the aspect 'Basics of Nutrition' shows that a large majority (95.19%) of respondents did not have practice of taking potato, ghee and butter as a source of energy for the body. Ninety one percent of respondents did not have practice of consuming of rice, wheat, potato as a source of carbohydrate regularly. Again, 91.48 percent of respondents did not have the practice of consuming carbohydrate as a source of energy giving food. This might be due to the fact that as the respondents did not have knowledge (Table 3) on these above information, therefore they did not put into practice.

It is interesting to note that under the aspect 'Conservation of Nutrients', majority (98.15%) of respondents did not have the practice of washing of rice once or twice before cooking. This might be due to the fact that as the respondents did not have the knowledge, A major (96.67%) percent of respondents had the practice of consuming reheated foods. This might be due to the fact that the respondents were not aware about the nutrient loss of foods on reheating. It is also observed from the Table 3 that 91.11 percent of respondents did not have the practice of storing vegetables in basket covering with a damp cloth. It might be due to the fact that as they did not have the knowledge (Table 3) therefore they did not practice.

The Table 3 also revealed under the aspect "Nutrition for Mother and Child" that 95.19 percentages of respondents did not practice the consumption of dry fruits such as dates and

raisins (khismis) and 93.33 percent of respondents did not practice consuming of iron rich foods during pregnancy. It might be due to their lack of knowledge that iron (Fe) and other minerals are necessary during pregnancy, therefore they did not practice. It is alarming that 90.00 percent of respondents did not have the practice of feeding colostrum, which is rich in Vitamin A, Protein and fat. This might be due to their traditionalism that the first secretion of milk from mother's breast contains dirty milk and this should be discarded. Again the respondents might not be aware about the importance of feeding colostrum and the effect of not feeding colostrum. Therefore, frequent trainings and interventions on these aspects are very important to make these rural women aware.

#### 4. CONCLUSION

The improvement in the overall economy at the macro level and concomitant improvements in purchasing power (though unevenly distributed) among households have not led to the expected levels of improvement in the nutritional and health status of Indians. It is very obvious, that, there is an 'awareness and information deficit', among the rural sections of the population, about nutrition knowledge and good dietary practices and their linkage with good health. This deficit should be narrowed and eliminated by harnessing all traditional as well as modern technological vehicles of communication. It may be concluded that healthy lifestyle and high intake of nutritious food can provide good health

throughout life to the humans. The poor nutrition and unawareness of health facilities during the childhood and reproductive age are the major factors responsible for the poor health status. Though government of India has been taking several efforts to improve the health status of the women, poverty, gender discrimination and low education in the population are the major problems associated with the implementation of appropriate interventions.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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