

Nutritional Status and Traditional Food Practices of Karbi People Attached to Behali Reserve Forest, Assam

Biplob Ozah & Dipankar Borah

¹Department of Chemical Sciences, Tezpur University, Assam,
²Department of Botany, Rajiv Gandhi University, Arunachal Pradesh

Abstract:

Nutritional study of any community gives us several knowledge of food habit, nature of food adoption and their impact on health. Agriculture based and forest depended nutrition always an unknown mystery to solve. The present study is based on such a situation of Karbi people of Bongaon village which is attached to Behali Reserve Forest, Assam. Several parameters like socio economic status, food habit, anthropometric measurement and health condition and forest dependent nutraceuticals were used to assess the epidemiological study. Result has shown 80% of entire family still in the income range \leq Rs. 5,000. There were 53% members of families crossed the HS level of education and 88% family livelihood was based on paddy agriculture. Rice is used as staple food by 100% families and many wild vegetables are used by them in their daily diet. Analysis of anthropometric parameters showed 70% and 53% normal BMI in adults of male and female respectively. The overall medical condition of both sexes showed that there was a prevalence of diseases like diarrhea, jaundice, food borne allergies and headache/migraine in that area. Therefore, the overall study may be concluded with the comparison of all interdependent parameters of adults of Karbi families with a hope to further research in this area using different age groups with other parameters.

Keywords

Behali Reserve Forest, Karbi, Socio Economic Status, food habit, BMI.

Introduction

Food is one of the basic necessities of our life. It is vital for maintaining our health and to perform our regular activities. Still today forested landscapes provides source of micronutrient rich food for millions of people around the world [1]. Forests are inevitable source for sustaining life and about 2.6 billion people, or 62% of the total population in developing countries, live in rural regions and directly obtain most of their food from their local environment (FAO, 1992) [2]. India is such one country with a total of 802,088 sq.km forest cover i.e. ca. 25% of the total geographical area, and Northeastern part of it covers the fourth of it [3]. It is a part of one of the four global biodiversity “hot spots” present in our country, the Eastern Himalayas [4]. Right from the high mountains to the low-lying undulating hills ending in vast plains, the eastern Himalayas provide homage to an incredible number of plants, animals and ethnic tribes. Behali Reserve forest is

located at the foothills of the Eastern Himalaya, conjoining the border of two sister states (Assam and Arunachal Pradesh) [5]. The foothills, as natural borders between the plains and the hills, occupy a crucial position in the socio-political and economic landscape of northeast India [6]. Many villages cover the forest from both the sides. ‘Bongaon’ is such one – it is a small village of with 51 numbers of households inhabited by one community “The Karbi’s” of Assam. The ethnic and cultural practice of a community also has an impact on the food consumption pattern of the community [7]. It is estimated that 20-25% of rural peoples’ income is obtained from environmental resources in developing countries [8]. Poverty and limited access to modern medicine are the main factors for their dependence on medicine, particularly in rural areas [9]. The purpose of nutritional assessment of a particular tribe or community is to discover facts about nutrition and health [10]. This study is based upon the socio economic status as well as nutritional status and their inter relationship of the Karbi adults of Bongaon village. The study investigated the traditional approach of food and the impact of agricultural dependency on overall life of those people.

Methodology

A food & health frequency questionnaire was developed at the beginning of the epidemiological survey [11]. The questionnaire consists of four parts viz. identification particulars, socio-economic status of family, dietary pattern of the family and overall health status. With the help of two anthropometric measures- height and weight, BMI of the adults were calculated. The subjects were selected from entire Bongaon village. The study was conducted taking 80 (40 male + 40 female) adults of 51 Karbi families. For the anthropometric purpose measuring tape and weight balance were used to measure and the Body Mass Index (BMI) was calculated separately for males and females. The ratio of weight (in kg)/ Height (m)² referred to as BMI. The BMI has a good correlation with fatness (over weight or obesity) [12]. The use of BMI as an anthropometric indicator of nutritional status can be more appropriate in a country with diverse ethnic groups, such as India [12]. In case of adults, the following classification suggested by James and coworkers as given in Table 1 is extensively used at present [13, 14].

Result and Discussion

A very low income range was found amongst the family of Bongaon. 80% of entire family still in the income range \leq

Rs. 5,000 per month. Widening income inequality is the defining challenge of our time [15]. Therefore, in order to strengthening their economic status needs further research. In case of level of education, there were 53% members of families crossed the 12th level i.e., more than half families has not any higher education. During the research various things were found which may happen due to lack of proper education and knowledge. The number of joint families was found to be less in compare to nuclear. 88% family livelihood was based on agriculture. Only paddy does not fulfill their daily needs so that they depend upon forest for some plant based food items (Table 2). Income, level of education and types of family always influence the dietary pattern of a family.

Rice is used as staple food by 100% families where consumption of wheat only shown by in minimum numbers. Green leafy vegetables were used extensively acquired from nearby forest area i.e. Behali Reserve Forest, kitchen gardens and local markets. Forests are important in the livelihoods of local people in most developing countries [16] and available evidences support that the forests are the natural habitats of the Karbi community and they are dependent on it for almost all their requirements [17]. Many wild vegetables are used by Karbi people in their daily diet, which compensates their calorie requirements [18]. The intake of 350-400 g vegetables per caput per day is associated with reduced incidence of many common forms of cancer, and diets rich in plant foods are also associated with a reduced risk of heart disease and many chronic diseases of ageing. Vegetables contain phytochemicals that have anti-cancer and anti-inflammatory properties which confer many health benefits [19]. Almost at least one member of each family consumes tobacco and "hor-lang"- a Karbi traditional alcoholic drink. It is prepared for daily household consumption, in festivals, rituals and also to generate a little income.

The adult age group was taken for anthropometric measurement like height and weight to calculate BMI. It has been observed that various tribal populations have high to very high rates of chronic energy deficiency (CED) based on their body mass index (BMI) values [20]. Results showed 70% normal BMI in male and 53% in female adults. 15% of female adults were in obese grade-I where only 3% male adult found to be in the same. This indicates that most of the male adults are healthier than female. Low Body Mass Index (BMI) and high levels of undernutrition (based on BMI) are the major public health problems especially among rural underprivileged adults of developing countries [21]. Here 15% and 20% of male and female adult weight was in the low normal category. Lack of knowledge of the balanced diet and improper lifestyle was the main reason behind this. The overall medical condition of both sexes showed that there was a higher prevalence of water borne and infectious diseases like diarrhea, jaundice and food borne allergies in that area. Migraine was found in both sexes. It is to be noted that cardiovascular and cancers like diseases were not found among adults, which indicate a better health condition of them.

Conclusion

In the conclusion, it can be said that the nutritional health status of Karbi people was quite well. Lack of proper knowledge about healthy hygienic practices and improper sanitation might be responsible for many types of diseases like diarrhea, malaria, typhoid etc. Hard work, pollution free environment and consumption of forest based nutraceuticals rich in several nutrients and antioxidants that keep the adult population healthy. The relationship between Socio Economic Status and the healthiness of the diet was not abundantly assumed so that it needs further research.

Table 1. BMI for Adult

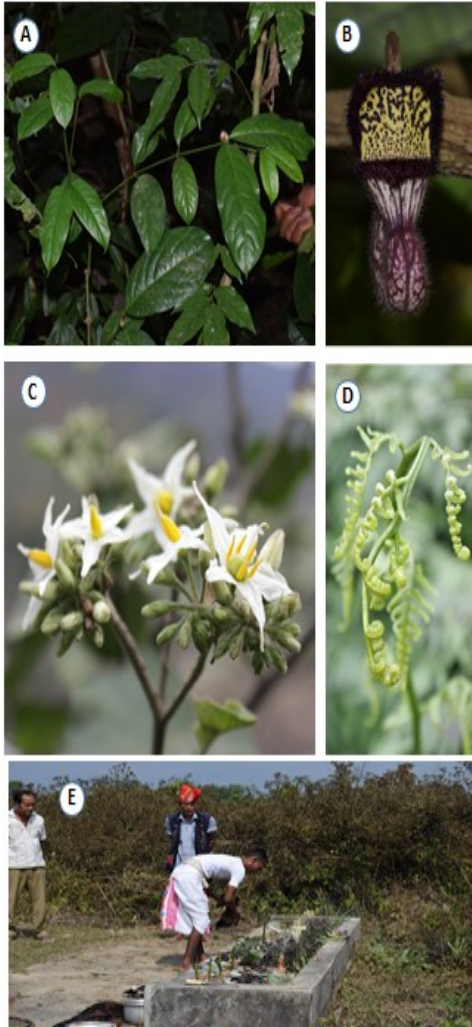
BMI class	Presumptive diagnosis
< 18.5	Chronic energy deficiency
18.5-20.0	Low normal weight
20.0-25.0	Normal
25.0-30.0	Obese grade I
>30.0	Obese grade II

Table 2. Commonly used plants for forest based nutrition

Sl. No	Name of plant	Used as
1	Local: Hanthu Scientific: <i>Gnetumgnemon</i> L. [Gnetaceae]	As leafy vegetables in daily diet
2	Local: Mehek Scientific: <i>Rhynchotechumellipticum</i> (Wall. ex D. Dietr.) A. DC. [Gesneriaceae]	As leafy vegetables in daily diet
3	Local: Rui-etpi Scientific: <i>Aristolochiasaccata</i> Wall. [Aristolochiaceae]	As medicine for stomach disorders [The corm is dried, and when needed it is dipped in water and the soaked water is taken]
4	Local: Bamchouk Scientific: <i>Phlogacanthustubiflorus</i> Nees [Acanthaceae]	Flowers are edible as a vegetable and also to treat worms.
5	Local: Cler-clum Scientific: <i>Clerodendrum glandulosum</i> Lindl. [Lamiaceae]	Leaves are edible as vegetable and also to treat high pressure.
6	Local: Lorop Scientific: <i>Musa velutina</i> H. Wendl. & Drude [Musaceae]	Inflorescences are edible.
7	Local: Plim-plam Scientific: <i>Dilleniaindica</i> L. [Dilleniaceae]	Fruits are edible.
8	Local: Dungkek Scientific: <i>Diplaziumesculentum</i> (Retz.) Sw. [Athyriaceae]	Young shoots are edible.

9	Local: Thero-rongman Scientific: <i>Solanum torvum</i> Sw. [Solanaceae]	Young fruits are edible.
10	Local: Dampijuk Scientific: <i>Baccaurea miflora</i> Lour. [Phyllanthaceae]	Fruits are edible.

Photographic plates



A. *Gnetum gnemon* B. *Aristolochia saccata* C. *Solanum torvum*
D. *Diplazium esculentum* E. "Rongker" - A Karbi festival celebrated in the month of February every year

Figure1. Income (Monthly)

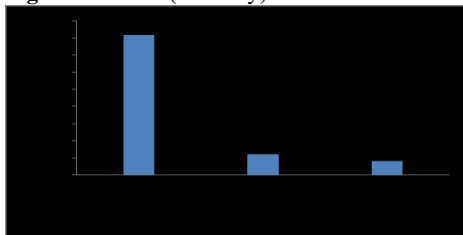


Figure2. Educational Qualification

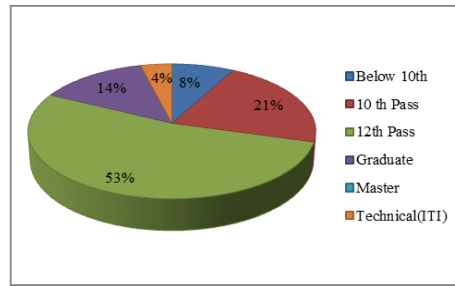


Figure3. Types of Family **Figure4.** Occupation

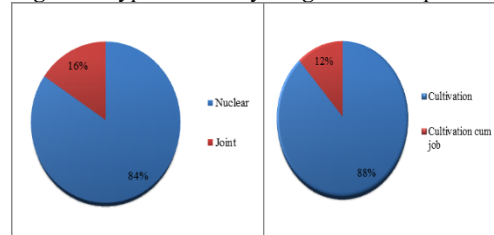
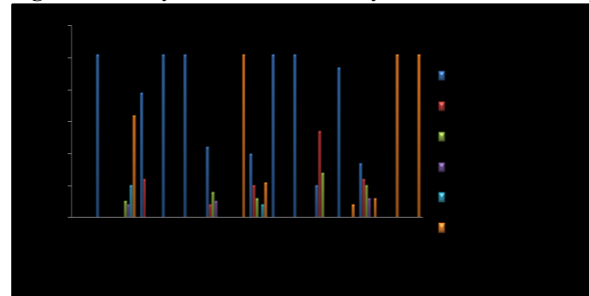


Figure5. Dietary Pattern of the Family



[A= Rice B=Wheat C= Pulses & Legumes D= Green Leafy Vegetables E= Roots & Tubers F= Other vegetables G= Fruits H= Milk & Milk Products I= Sugar & Juggery J= Oils & Fats K= Flesh Foods L= Tobacco M= Alcohol (Laupani, Hor) N= Fruit Juice O= Carbonated beverages]

Figure6. Health Status of Adult

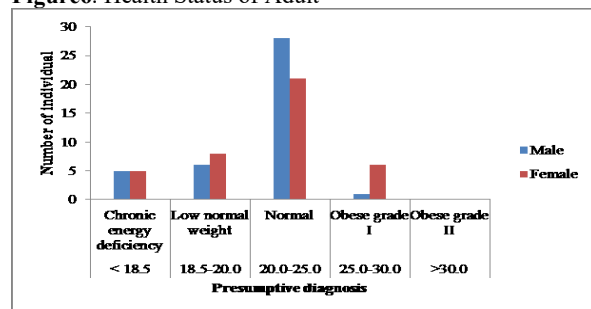
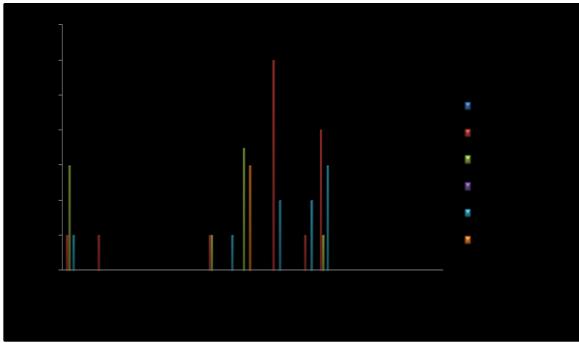


Figure7. Overall Medical Condition



[A=Allergies B= Anemia C= Arthritis D= Blood in stools E= Cancer F= Chest pain G= Cramp in feet H= Depression I= Diabetes J= Diarrhea K= Difficulty in urinating L= Headache/Migraine M= Heart disease N= Jaundice O= Liver disease P= Malaria Q= Nausea/vomiting R= Renal disease S= Sleeplessness T= Stomach problem U= Thyroid V= Typhoid W= Ulcer]

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