International Journal of Humanities and Social Science Research
ISSN: 2455-2070
Impact Factor: RJIF 5.22
www.socialsciencejournal.in
Volume 3; Issue 11; November 2017; Page No. 40-43

Food habits and nutritional status in forest based tribes: A case of *soligas* of Chamarajanagar district in Karnataka

Geetha M Yankanchi, Channesh TS
Department of Tribal Studies, Kannada University, Hampi, Vidyaranya, Karnataka, India

Abstract
Soligas, live in foothills of *Biligiri Rangana* Hills (B.R.Hills) and *Male Mahadeshwara* Hills (M.M. Hills) of Chamarajanagar district. *Soliga* is one of the rare and popular tribes of Karnataka. The *soligas* lived here for centuries and have had a continuous and intimate interactions with the forest, deriving most of their basic requirements such as food, fodder, fuel and fibre from the forest. Agriculture is the major occupation and collection of forest produce is another means of their livelihood. Finger millet is the major staple crop grown and its foods form an important item in their daily diet. They have also dependent on variety of gathered food from the forest. These foods include roots and tubers, greens and fruits. They live in unique physical, socio-economic and cultural environment, isolation from general population. In view of their habitat the food intake is influenced by vagaries of nature with large seasonal variation depending upon the availability of agricultural and forest produce. Therefore an attempt was made to assess their diet and nutritional status. The results reveal that the mean intakes of all the nutrients, except calcium were lower than the recommendation of the Indian Council of Medical Research.

Keywords: *soliga* tribe, socio-economic status, food habit, food intake and nutritional status

Introduction
Food is pre-requisite not only for attaining good health but also for maintaining adequate growth and body equilibrium. The choice of food is deeply related to affordability and access to food of an individual and majorly dependent upon the cultural practices of his living environment. Tribes constitute an important segment of the population of India representing 8.6 per cent of the total population of the country (Census of India, 2011) [3]. Several studies conducted on various tribal populations living in different parts of India have reported that they are socially and economically disadvantaged groups and their diets to be nutritionally deficient. It is necessary to understand each tribe because their living style is different from each other, to arrive at any decisions to meet their requirements. It is obvious that food problems and habits of different tribes are bound to be different from those living in urban and rural area. So also amongst them, individual tribe differs to each other tribe. In view of realizing the status and pattern to make any decisions, the present study has been carried out to view the food consumption pattern, dietary habits and nutritional status of *soliga* tribe. The *soliga* tribe is one of the indigenous tribes settled in and around the *Biligiri Rangaswamy* Temple Hills of Chamarajanagar district of Karnataka. They have maintained a continuous and intimate interaction with the forests. Therefore their essential needs are mostly supported by the forest of their area.

Materials and Methods
The study area
The study covers a wide area located in and around *Biligiri Rangaswamy* Temple (BRT) wildlife Sanctuary in Chamarajanagar district in the state of Karnataka. The BRT wildlife sanctuary is endowed with rich biodiversity. The BRT wildlife sanctuary in south west India is the home of an aboriginal tribe, *Soliga.* The *soligas* have lived in the BRT forests for centuries, practising shifting agriculture, hunting wildlife and gathering a wide variety of products from the wild habitats. Progressive interventions in the forest laws during the later part of the century made some changes on the lives of forest tribes. The shifting agriculture was progressively curtailed and completely banned by 1972, when the area was declared a wildlife sanctuary. The *soligas* are now being given small pieces of land to practice settled agriculture. The rights allow *soligas* to continue gathering a wide variety of Non-Timber Forest Products (NTFPs) from the state owned forest lands in the sanctuary (Hegde *at al*., 1996) [5]. However the dynamics of opportunities for livelihood necessitates the understanding of food patterns amongst people dependent on forests directly. *Soligas* are those who form a major population who requires food security in the changed environment, which forms a major objective of this study.

The study method
The present study was undertaken in six villages of Chamarajanagar district of Karnataka at different locations representing forested, trans forested and away from the forest area. Pre tested study guidelines were used while interacting with the place and the population. The natural resources of their habitation, interactive behaviour of human population were recorded. A close outlook of food and health within their lifestyles were explored. All possible interfaces of their emotions with the systems that offer livelihood were

examined. The insights of issues regarding the certain practices probed and tried to find evidences by experiencing them.

Socio economic background of the family i.e., type of the family, family size, education level of the respondent, landholding, occupation were collected by interviewing the family members. Nutritional status of the women respondent was assessed by dietary survey. The food intake of the families was assessed by 24 hours recall method. The mean individual intake in terms of raw food was calculated using the formula,

$$\text{Intake of raw foods} = \frac{\text{Raw quantity (g) of each preparation by the family X Subject intake}}{\text{Total cooked amount (vol.) of each preparation}}$$

The nutrient adequacy was calculated by comparing the intake with Recommended Dietary Allowance (RDA) for Indians of different age and gender (Anon., 1993) [1]. Percent adequacy of nutrients viz., energy, protein, fat, calcium, iron and vitamin C were calculated for each child using formula given by Gopalan *et al*.(1996) [4].

$$\text{Per cent nutrient adequacy} = \frac{\text{Nutrient intake X 100}}{\text{RDA of the nutrient}}$$

The data obtained on nutritional status was statistically analysed. Mean and per cent distribution were calculated for each studied parameters.

Results and discussion

Socio Economic Profile

The socio economic profile of the *soliga* families were presented in the table 1. Majority of the families were of medium size. The large size families were only 10 per cent. It was observed that number of nuclear families was higher than the joint families. In majority of the families composed of husband, wife and children. This is because after marriage they usually leave in separate house out from their parents. It may be due to a sort of wild life way of living style; where in individual when able to make his/her own family should become independent. So as the livelihood securities are to be born individually.

The literacy position of the respondents revealed that about 80 per cent had no formal education while only 20 per cent of the respondents were found to be educated. Amongst the educated also their education was limited to primary school education. This was less than half of the average literacy rate of Karnataka which is 75.36 per cent (Censes report 2011) [2]. Anganawadis (preschool) and primary schools were only education institutions found nearby soligas home in settlements generally called as podi or hadi. For middle school and higher education they have to travel at least 2-5 km. Recently Government has opened 10 residential schools in Chamarajanagar district near the residences of tribes. These schools provide education up to tenth standard. The Vivekananda Girijana Kalyana Kendra (VGKK) a non-government organization located at B.R. Hills, Chamarajanagar district. It was founded by a medical doctor called Sudharshan, with a passion to serve the tribes has created opportunity for higher education. It is incidentally made a fruitful awareness among the *soliga* people and making the best use of it.

Majority of the families were dependent on Agriculture, collection of Non Timber Forest Products (NTFP) for their livelihood and these formed the main occupation. Few of them were also work as wage labours in the fields of nearby villages. Only countable numbers of people were doing Government jobs such as forest guard, hostel warden, anganawadi ayaa etc. Once they were practising shifting cultivation because of government intervention they have shifted to settled agriculture. To bring them to main stream Government gave each family 2 to 2 & ½ acre land. Finger millet, maize, field bean, cowpeas are the crops growing by these families. They practice organic farming and they do agriculture for the household consumption not for the purpose of marketing. Families living in the forest area were dependent largely on forest for daily essentials of the life such as food, fuel, fodder. They also collect some of the NTFP such as honey, wax, soap nut, Goose berries to support the livelihood.

Table 1: Socio-economic profile of *Soliga* tribe

S. No	Details	Socio-economic status	No. families (N=90)
1	Type of the family	Nuclear	86.66
		Joint	13.33
2	Size of the family	1-4members	36.66
		5-10members	53.33
		>10members	10.00
3	Education	Illiterate	78.00
		Primary level	14.44
		Middle school	4.44
		High School	-
		>College and above	1.11
4	Land Holding (acre's)	Landless	33.33
		<2.5	57.77
		2.5-5	08.88
		>5	
5	Occupation	Agriculture	33.58
		Gathering of forest products	26.32
		Lab ours	17.28
		Animal husbandry	7.19
		Others	15.63

Food Consumption Pattern

The food habit of *soliga* tribe is very simple but with monotonous dietary pattern. They have a practice of three meals a day. In general for morning/breakfast they use millet dumpling and *samber* -prepared usually with any one type of pulse/gram and vegetables preferably some locally available greens. Afternoon for majority of the time they consume same meal prepared at morning or the food given at work place. The school going children were used to have the meal given at the school (Mid-Day Meal). In the night they have rice or finger millet dumpling with leftover *samber* prepared at morning. All the families have the habit of taking tea in the morning and occasionally in the evening time. Though they have habit of taking black tea they prepare tea without milk for such tea in local term they call it as *Bargapi.* Table-2 presents the detailed food consumption pattern of *Soligas*.

Though every day meal pattern was almost similar, however diversity was found in usage and consumption of green leafy

vegetables, fruits, roots and tubers in the families living within the jurisdiction of forest and in the foothill of forest area. As these families were use to gather nearly 8-10 types of green leafy vegetables, 10-12 types of fruits and 4-5 types of roots and tubers from forest depending upon the season of the year. These non-conventional food items are listed in Table-4. Along with gathering from the forest they also have a practice of maintaining kitchen garden in front of the house or at backyard depending on availability of space. They cultivate some fruits such as banana, jack, guava and vegetables like pumpkin and guards. It may be noted that usage of these foods gave the value to their diet and enhanced the micronutrient supplementation as it adds some diversity to their diet sources. Majority of the families were non vegetarians. However the consumption of any non-vegetarian food is not regular. It was limited to certain occasions like festivals and family functions. Most of the time, Hen's reared at backyard and fishes collected from nearby ponds were formed the non-vegetarian food. They rarely purchase these foods from market.

Food habits of *soliga* tribe is mainly dependent on the crops they grow in their field, fruits and vegetables gathered from forest and animals get by hunting in the forest.

Finger millet formed a staple food in diet of *soliga* tribe as they grow it as a main crop. Rice is also becoming the part of their diet of many families because they are getting nearly 25-30kg rice per month at subsidiary price under the public distribution system (PDS).

Fieldbean, horsegram, redgram and cowpea were found to be regularly consuming pulses in the diet of majority of the families, as they grow these crops along with finger millet in multiple/mixed cropping system. They use these pulses along with vegetables mainly in the form of *samber* to consume with rice or finger millet dumpling. The quantity of consumption of these pulses is further dependent on the availability and season of the year. The usage of milk and milk products were very limited in the diets of the families surveyed.

Table 2: Regular dietary pattern of *Sologa* tribe

Table	Food items
Morning	*Bargape* (Black Tea prepared without milk)
Morning breakfast	Finger millet dumpling/Rice with either green leafy vegetable *samber*/Grams samber/dal+vegetable *samber*
Afternoon	The food prepared at morning/ Food given at work place, for children food given at school
Evening	Buiscets/ bread occasionally with *Baragape*
Night	Finger millet dumpling and Rice with left over *samber* prepared at morning

Table 3: Nutritional Status of women respondent of *Soliga* tribe

Nutrients	ICMR Recommendation	Intake	Percent Adequacy
Energy(k.cal)	2250	1630	72.44
Protein(gm)	50	35.6	71.20
Fat(gm)	20	08.5	42.5
Iron(mg)	30	21.0	70.0
Calcium(mg)	400	483	120.75
Vitamin C	30	27.4	91.33

Table 4: Use of unconventional foods (food gathered from forest) by *Soliga* tribe

I	Green leafy vegetables	II	Fruits
1	*Seege soppu*	1	*Solle hannu*
2	*Honagone soppu*	2	*Byalada hannu*
3	*Kadu soppu*	3	*Kudugali hannu*
4	*Karwadi soppu*	4	*Nellikai(Amla)*
5	*Kumbala soppu*	5	*Nerale hannu(Jamoon fruit)*
6	*Heddar soppu*	6	*Geru hannu(Cashew fruit)*
7	*Ganake soppu*	7	*Sotte hannu*
8	*Kurusane soppu*	8	*Kambi hannu*
9	-	9	*Hippe hannu*
10	-	10	*Ale hannu*
11	-	11	*Nagare hannu*
III	Roots and Tubers	IV	Animal Food
1	*Samber genasu*	1	Pig
2	*Mara genasu*	2	Hen
3	*Bidira genasu*	3	Wild pig
4	*Nare genasu*	4	Rabbit
5	*Noore genasu*	5	Gouza

Mean Nutrient Intake and Per Cent Adequacy

Food consumption is one of the important factors that determines the nutritional status of an individual or any population. In this study nutritional status of the women respondent of the *soliga* tribe was assessed by 24 hours recall method. The cooked amounts were converted in to raw ingredients and nutrients present were computed using food composition table. The mean nutrient intake and the per cent adequacy calculated for the subjects are depicted in the table-3.

In general the mean intake of all the nutrients except calcium was found to below the Recommended Dietary Allowances (RDA). The mean nutrient intake of the subjects was found to be as follows energy- 1630 kilo calories, protein-35.60 g, fat-8.5 g, calcium 483 mg, iron-21mg and vitamin C-27.4 mg. The mean percent adequacy of energy and protein were 72 and 71 per cent respectively. Around 42 per cent of the requirement for fat was met on an average. The low intake of fat is mainly due to they use oil only for seasoning the food preparation. The consumption of fried foods and snacks were very limited. It was interesting to note that the intake of calcium was found to more than RDA (120 percent). This might be due to regular consumption of finger millet as staple diet with vegetable *samber*, as it is one of the rich sources of calcium (340mg/100g). Similarly the intake of vitamin C was 91 per cent almost nearing to the requirement; this may due to consumption of many wild fruits which are rich in vitamin C. The adequacy of iron was 70 per cent. Though they consume greens regularly the quantity of consumption of these foods were insufficient to meat the requirement. These findings fall in line with the findings of Reddy and Papa Rao (1995) [6]. Compared to all other nutrients calcium intake was found to be adequate. The calcium dietary pattern in the present study was in line with the findings of Aruna and Megha (2001) [2] who reported that intake of calcium was higher compared to

RDA because of finger millet was the staple food for tribals.

The low intake of nutrients by the subjects observed in the study area might have several factors which are interrelated. Those factors include income, education awareness to food. The low socio economic status of the family, non-availability of adequate quantity of foods throughout the year may also add to their status of food consumption pattern. In changing scenario of *soliga* tribe from forest based lifestyle to civilised lifestyle they are in a dilemma between modern society and their traditional way of living. This change made influence on their livelihood as well as food intake. The study conducted in this line reveals that the mean intake of all food stuffs especially the income elastic foods such as pulses, milk and milk products, oils & fats and sugars were lower than the RDA. The study suggests that regional need based effective intervention programmes should be implemented to improve the nutritional status of these people.

References

1. Anonymous. Dietary allowances for Indians Indian Council of Medical Research, Hyderabad, 1993.
2. Aruna P, Megha A. A study of nutrient intake of hill Koravas – A primitivetribe of Chattisghar. Nutrition Society of of India Proceedings, Annual meeting. 2001; 34:61.
3. Census of India, 2011. Available from: http://www.censusindia.gov.in/2011census/population_enumeration.aspx
4. Gopalan C, Ramasastry BV, Balasubramanian SC. Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad, 1996.
5. Hegde RS, Surya Prakash, Achuth L, Bawa KS. Extraction of Non Timber Forest Products of Biligiri Rangana Hills, India, Contribution to rural Income. Economic Botany (New Yark: The New yark Botanical Gaurden). 1996; 50(3):243-251.
6. Reddy PYB, Papa Rao A. Protein calorie adequacy status among the Sugalis– A Tribal population Of Andrapradesh. Indian Journal of Nutrition and Dietetics. 1995; 32:60-64.