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Assessment of Factors Affecting Food Security in Tribal Community

Ambati Pooja[1]*, M. Rajeswari[1], V. Lakshmi[2]

Abstract

Food security means ensuring food that is available, accessible, and affordable to all the people at all times. Food security is of global concern affecting most of the people in the society at some point of time. In comparison to other population groupings, tribal communities are more vulnerable groups and face socioeconomic disadvantages and food insecurity and are "at risk" of undernutrition. This is mainly due to lack of knowledge, geographical isolation, and suboptimal utilization of health services. Objectives of this study are to determine sociodemographic profile of tribal community, to assess nutritional status, to assess and evaluate the availability, accessibility of various foods, and factors influencing food security in tribal communities. It was a community-based study carried out by random sampling procedure in different villages of Paderu division, Alluri District, Andhra Pradesh by taking permission from the Integrated Tribal Development Agency Project Officer and Administrative Officer for conducting the study. Consent was obtained from the heads of the concerned households and data were collected from the participants who were willing to participate in the study. Information on sociodemographic details, anthropometric measurements, availability of various food items, severity of food insecurity, and factors affecting food insecurity were assessed using pretested schedule which included health and lifestyle related Knowledge, Attitude, and Practices (KAP). The mean body mass index was 21.6 ± 3.3 kg/m^2, in which most of the men are normal, whereas women are undernourished. The KAP survey revealed that subjects possessed knowledge and attitude on health and hygiene to some extent but poorly practiced. Food insecurity experience scale revealed that the people were facing moderate to severe food insecurity. This study concludes widespread food insecurity among tribal population and there is need for proper implementation of various programs and schemes to prevent food insecurity and its consequences.

Keywords: Body mass index, Food security, Geographical isolation, Knowledge, attitude and practice, Undernutrition, Vulnerable groups

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Introduction

The World Food Summit (1995) declared, "Food security at the individual, household, regional, national, and global levels exist when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life".[1]

Food insecurity can result in hunger, low standard of living, undernutrition, and associated diseases. The total number of undernourished people was 172.4 million in 1990–92 which rose to 237.7 million in 2005–07, that is, nearly 38% increase in undernourished people.[2,3] At present, India has 189.2 million (14%) undernourished people according to FAO estimates in 'The State of Food Security and Nutrition in the World', 2020 report. The Global Hunger Index 2020 ranks India at 101 out of 116 countries on the basis of three leading indicators – prevalence of wasting and stunting in children under 5 years, under five child mortality rate, and the proportion of undernourished in the population.[4]

The causes of current food insecurity can be better viewed under three concepts, namely, the: "traditional concept" which includes factors such as food scarcity and low purchasing power; "sociodemographic concept" comprising illiteracy, unemployment, overcrowding, poor environmental conditions, and gender bias; and "oliticodevelopmental concept" which includes factors such as lack of intersectoral coordination and political will, poorly monitored nutritional programs and inadequate public food distribution system.[5]

National Human Rights Commission has interpreted the fundamental right to life entrenched in Article 21 of the constitution to encompass the right to live with human dignity, which includes the right to food and other basic necessities. Article 47 of the Directive Principles of State Policy states that boosting the level of nutrition and the standard of living of its citizens, as well as promoting public health, are among the state's primary duties.

Government of India has launched some important food intervention programs for food security. They include Public Distribution System (PDS) later converted as Targeted PDS (TPDS) including Antyodaya Anna Yojana for food grains, nutrition programs such as mid-day meals, and Integrated Child Development Services (ICDS), employment programs such as Food-for-Work, and NREGS to improve food and nutrition security. Food insecurity can result in decreased cognitive function, poor work performance, and significant productivity losses. All of these factors have the potential to hinder the growth and development of national economy.[5] Therefore, India still requires plans to increase employment and social security for poor people. There is a need for

[1]Department of Food, Nutrition and Dietetics, Andhra University, Visakhapatnam, Andhra Pradesh, India.

[2]Department of Human Genetics, Andhra University, Visakhapatnam, Andhra Pradesh, India.

Corresponding Author: Ambati Pooja, Department of Food, Nutrition and Dietetics, Andhra University, Visakhapatnam, Andhra Pradesh, India. Phone: +91-9381227140. E-mail: poojaambati186@gmail.com

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exploring the gaps in various food security programs which still leave one-third of India's population lacking in basic diet diversification, women empowerment, health promotion, safe drinking water, and sanitation and in the provision of basic hygiene.[6]

Specific objectives of this study were to determine sociodemographic profile of tribal community, assess nutritional status, to assess and evaluate the availability and accessibility of various foods, and to assess their awareness and utilization of health and nutrition services and ascertain factors influencing food security in tribal communities.

Methodology

Study Area

It was a community-based study which was carried out from different villages, namely, Lagisapalle, Uggamgoyyi, Sampangigaravu, Peddagangagudi, Dumbriguda, cheemalapadu, K. Pedabayalu and Chompi in Paderu division, Alluri District, Andhra Pradesh.

Selection of Subjects

A total of 100 households (HHs) were randomly selected by random sampling procedure. Written permission was obtained from ITDA Project Officer and Administrative Officer for conducting the study. Informed oral consent was obtained from the village leaders and heads of the concerned HH, before conducting the survey. Tribal men and women who were willing to participate were included in the study and were assured of confidentiality of the information collected. Research was carried out by observation, personal interviews with the tribes.

Data Collection

Data were obtained from the participants related to concerning factors affecting food security using a pre-tested schedule comprising sociodemographic particulars, anthropometric measurements, assessment of accessibility to basic amenities, and evaluation of availability of various foods in the household at the time of data collection.

Knowledge, Attitude, and Practices (KAP) of the Community

In addition to sociodemographic information and other ancillary data, KAP of the study population was also collected. Food Insecurity Experience Scale (FIES) was used to assess the severity of food insecurity faced by the tribal community.

Assessment of Factors Affecting Food Security

The following factors have been studied as a part of assessing factors affecting food security. These include Illiteracy, unemployment, affordability to buy food, improper nourishment, hygiene and sanitation, lack of access to health-care programs, and schemes.

Statistical Analysis

Data were entered into Microsoft Excel and the results were analyzed by standard statistical methods.

Results and Discussion

Sociodemographic Profile of the Study Group

Table 1 shows the sociodemographic profile of the study population. The age group of the subjects ranged between 18 and 60 years. Around 34% of the study participants were in the age group of 18–35 years, 28% were in the age of 36–45 years, and 38% in 46–60 years age. In the study population, 48% were male and 52% were female. About 40% were illiterates. Around 26% and 19% were educated up to primary and secondary school, respectively. Only 15% were educated up to graduation or above. Type of family include both nuclear and joint family, in which 17% and 83% of HH having family size of 4 and >4, respectively.

Out of 100 HHs, 82% were below poverty line and only 18% were above poverty line. The annual income of 82% of subjects ranged between INR Rs.10,000/- and Rs.20,000/-. Study population in this investigation belonged to Bagata (48%), prime tribe group (PTG) (30%), and Valmiki (22%) community. The study population mainly follow two religions Hinduism and Christianity. Majority (88%) belong to Hindu religion and 22% population belong to Christianity. A study conducted by Nayak and Sreegiri has shown that majority (78.7%) belonged to Hindu religion and remaining 21.3% belong to Christianity.[7]

Table 1: Sociodemographic characteristics of study population

Parameter	*Number (%)*
Age group	
18–35 years	34
36–45 years	28
46–60 years	38
Gender	
Male	48
Female	52
Education	
Illiterate	40
Primary	26
Secondary	19
Higher education	15
Occupation	
Farming	86
Coolie	11
Other	3
Family size	
4	17
>4	83
Type of house	
Kutcha	73.3
Semi-pucca	18.1
Pucca	8.6
Size of Land holdings (Acres)	
Landless	38.8
Marginal farmers (<2.5)	22.6
Small farmers (2.5-5.0)	24.8
Large farmers (≥5.0)	13.8
Economic status	
Above poverty line	18
Below poverty line	82
Community	
Bagata	48
PTG	30
Valmiki	22

PTG: Prime tribe group

Assessment of Accessibility to Various Basic Amenities

The major source of drinking water was nearby water body and only a few have access to tap water. Inaccessibility to pure drinking water would result in increase in the frequency of water borne infections. About 80% of the HHs rely on firewood for cooking purpose. Only 20% of the HHs used liquid petroleum gas (LPG) for cooking. The majority of them were reluctant to use LPG, because they believed it might cause gastritis. Figure 1 shows the assessment of accessibility to various basic amenities by the tribal community. Majority of HHs (95%) had electricity facility. About 20% of the HHs had sanitary latrine and 80% of the HHs defecate in open. In a study conducted by Ghosh *et al.*, in another tribal community reported that 90% of the community defecate in the open areas.[8]

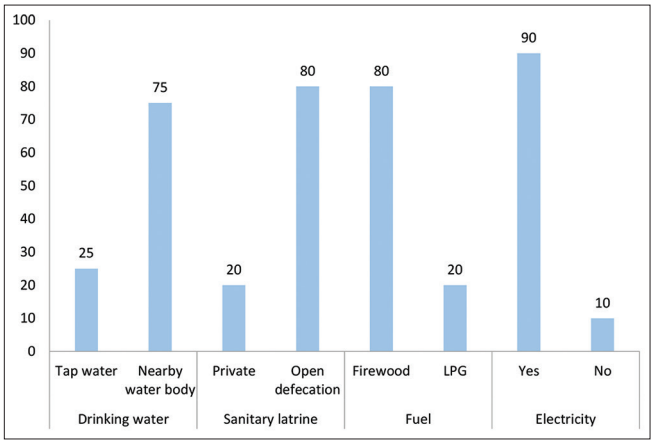

Figure 1: Assessment of accessibility to various basic amenities

Anthropometric Assessment of Selected Subjects

Anthropometric measurements such as height and weight were measured and body mass index (BMI) was calculated. The mean height and weight of the subjects were 154.3 ± 7.3 cm and 50.7 ± 7.7 kg, respectively. The mean BMI was 21.6 ± 3.3 kg/m^2. Most of the men have normal BMI, whereas women were found to be undernourished.

Evaluation of Availability of Various Foods

Figure 2 depicts the availability of various food items in the house. Cereals were available in almost all the HH-62% reported availability of rice, 38% had ragi, and 32% had both rice and ragi. Only 12% of the HH had other cereals such as wheat, foxtail millet, and semolina. Pulses were present in 52% of the HH, and 30% of them reported having only one pulse. Of the respondents, 32% reported having one or more vegetables. Fruits were reported to be present by 10% of the respondents. Availability of fish, nuts, and meat was reported by only 5% of the study population. Around 16% of the HH reported the availability of egg. Only 14% of the respondents reported the availability of milk and milk products.

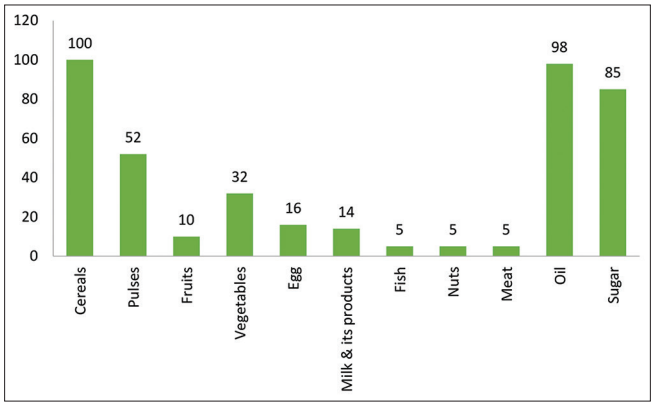

Figure 2: Evaluation of availability of various foods

Government Initiatives

Government of India has initiated many schemes to provide food security and to ameliorate the nutritional status of the tribal population. Tribal Welfare Department and Integrated Tribal Development Agency (ITDA) are committed for the overall socioeconomic development of scheduled tribes in the state through formulation of policies and programs to combat malnutrition, to achieve food security, to ensure access to water and sanitation, and to promote well-being for all at all ages. There was significant association between undernutrition, that is, underweight and stunting in children with HH food security status. Although schemes and programs such as Antyodaya Ann Yojana under PDS and supplementary feeding under ICDS exist, but heir utilization was not satisfactory. Despite of receiving beneficiaries, foods such as egg and milk which are rich in protein and calcium were not properly utilized by the people. The main reason for not utilizing properly was spoilage of the food items due to lack of storage facilities as they were distributed in bulk for a period of 15 days. Sometimes, they were sold in the market to fetch money. This tribal group had low food security and unless there is enough food in the HH, any specific program may not be able to bring about substantial improvement in the nutritional status. Thus, food security aspect of this population needs special attention.

Knowledge, Aptitude, and Practices

The questions on knowledge regarding importance of food, affordability, availability and accessibility to food, dietary practices and hygiene related knowledge, their attitude toward them, and related practices were asked as yes or no format. Table 2 represents the responses of the participants. They had the good knowledge on health and hygiene aspects, and ill effects of consumption of alcohol, smoking, and chewing of tobacco. About 89% of the subjects had the habit of skipping meals and had only two square meals in a day. The subjects were aware of the beneficial effects of foods that they consumed but lacked the knowledge regarding macro and micro nutrients present in the food items. Majority (89%) of them were unaware about causes and symptoms of anemia. The KAP questions revealed the characteristic traits in knowledge, attitude, and behaviors about health and hygiene-related factors, which is very essential to improve knowledge and also to bridge the gaps between knowledge and implementation.

Assessment of Food Insecurity

FIES was used to assess the severity of food insecurity faced by the tribal community. FIES was used to assess and classify respondents at different levels of severity with respect to food

Table 2: Knowledge, attitude, and practices of the study population

S. No.	Questions related to knowledge, attitude, and practice	Yes (%)	No (%)
1	Food is important for health	76	24
2	Do you believe in the saying "You are what you eat"?	62	38
3	Do you know the causes and symptoms of anemia	11	89
4	Do you have an idea regarding iron rich foods	24	76
5	Do you think that you are compromising on the quality and variety of food?	32	68
6	Do you think smoking, consumption of alcohol, or tobacco and its products are injurious to health	89	11
7	Do you think quality of water effects health?	16	84
8	Do you prepare meals with iron rich foods	22	78
9	Do you follow three major meals per day	18	82
10	Do you skip any meals	89	11
11	What is the reason for skipping meals?		
	Lack of money	62	-
	Lack of enough food at home	38	-
12	Do you drink boiled water?	14	86
13	Do you consume the following?		
	Milk	11	-
	Tea	8	-
	Decoction	81	-
14	Do you wash hands before eating	82	18
15	How often do you consume fruits?		
	Daily	5	-
	Weekly	18	-
	Occasionally	77	-
16	Do you have toilet facility at home	20	80
17	How often do you eat outside food?		
	Daily	18	-
	Weekly	42	-
	Occasionally	40	-
18	Do you wash hands after defecation?	85	15

insecurity. This revealed that 19% of the subjects were worried about procurement of food, 22% were compromising on quality and variety of food consumed, 36% of the subjects were skipping at least one meal in a day, and 23% were experiencing hunger. Majority (98%) of the respondents reported not having sufficient money for buying food as the reason for not having as much food as they would want. Nearly half of the respondents (37%), especially women in the family, reported skipping a meal just to feed the children in the family. Gender inequality places women at a disadvantage compared to males and causes them to suffer more, because they are last to eat and considered less important.[9,10]

Factors Affecting Food Security

Food insecurity can affect health and well-being in many ways, with potentially negative consequences on physical, mental, and social well-being. Figure 3 represents the factors affecting food security and its consequences on health of the human beings. Lack of knowledge was the primary factor responsible for food insecurity. Necessary measures should be taken to educate and

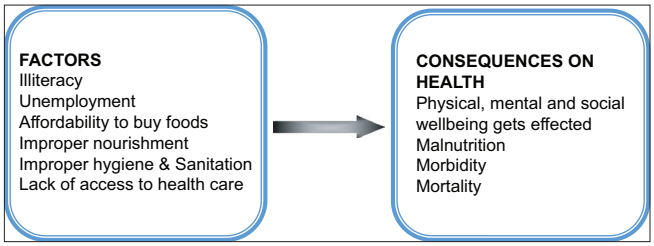

Figure 3: Factors affecting food security and its consequences on health

to create awareness regarding role of food in health and disease. Unemployment and lack of sufficient money was another factor hindering food security.

Higher prevalence of undernutrition in tribal population is due to poverty, lack of awareness, and failing to utilize the available nutrition supplementation programs from government. In addition, poor environmental sanitation and lack of safe drinking water increased morbidity from water-borne infections, environmental conditions that favor vector-borne diseases, and lack of access to health-care facilities resulting in increased severity or duration of illnesses.[11] The most direct way to ameliorate the health consequences associated with food insecurity is to reduce food insecurity.[12]

Conclusion

It is found to be portraying adversity in diversity. Need-based information, education and communication (IEC) strategy and training should be given to create awareness. Dissemination of information regarding the benefits available under various schemes of the ministry and guidance should be given to the tribal community on how to access them. Local community education on key family health and nutrition practices using participatory and planned communication methodologies will be helpful. Incorporating health and nutrition education into formal school curriculum for students and adult literacy programs could greatly improve health and nutritional status of the community. Although a number of programs with improving nutrition as their main component are planned in the country, these are not properly implemented in tribal areas. Therefore, implementation of appropriate nutritional intervention strategies and improvement in household food security through PDSs, food intakes, socioeconomic condition, literacy of parents, and personal hygiene may help in improving the nutritional status of tribal community.

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