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Original Article

FOOD SECURITY AND NUTRITION CONSUMPTION AMONG HOUSEHOLDS IN THE SEMI-URBAN FIELD PRACTICE AREA OF K.S. HEGDE MEDICAL ACADEMY, MANGALORE : A PILOT STUDY

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Abstract :

Introduction: Food security is defined as "Access by all people at all times to enough food for an active, healthy life". The deprivation of basic need represented by food insecurity and hunger are possible precursors to nutritional, health, and developmental problems

Objectives: To assess the food security and the pattern of nutrient intake among the households of field practice areas and to describe the relationship between food security with various socio demographic factors and select diseases like diabetes and hypertension.

Methodology: A cross sectional study was conducted in households of Kuthar and Manjanady villages of Dakshina Kannada district from June- August 2014. The Food Security Core-Module Questionnaire in the Guide to Measuring Household Food Security (Revised 2000) prepared by United States Department of Agriculture was used in this study. The questionnaire was translated to local languages (Kannada and Malayalam) and linguistic validation was done. The data was analysed using SPSS software.

Results: Around 53% of the houses studies were food secure followed by households with food insecurity with no hunger. Majority of the houses had carbohydrate and protein as their predominant nutrient intake. Majority of the households spending 26-50% of the total income on food were food secure. Among the food secure households, diabetes was present in nearly half the houses

Conclusions: The study area does not have hunger as a problem but still food insecurity exists, with upto 50% of income spent on food.

Keywords: food security, nutrition consumption pattern, diabetes, hypertension

Introduction :

Food security is defined as "Access by all people at all times to enough food for an active, healthy life"[1,2,3]. Food security includes at a minimum: the ready availability of nutritionally adequate and safe foods, and an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies)." Food insecurity is defined as "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways." Hunger is "the uneasy or painful sensation caused by a lack of food. The recurrent and involuntary lack of access to food and hunger may produce malnutrition over time. Hunger is a potential, although not necessary, consequence of food insecurity." Food insecurity and hunger are conditions resulting from financial resource constraint. Hunger can occur in many situations, including dieting and being too busy to eat. But USDA considers only the insecurity caused due to financial constraints or non-availability[1].

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Food insecurity has been associated with poverty, unemployment, poor access to education among others. Experience of food insecurity when measured alongside anthropometric, dietary and socio demographic data, can provide insight on vulnerabilities and can help in the planning of relevant interventions to target food insecurity populations. Poverty and food insecurity may be the root cause for both under nutrition and overweight, although

apparently paradoxical.[4]

Poverty and inability to purchase adequate food leading to under nutrition and micronutrient deficiencies persist even today among the poor segments of population5. There is disproportionate impact on food and nutrition security on those who can least afford it. Rising food costs, along with other shocks such as drought, floods and economic crises can have a major impact on food and nutrition security. The most vulnerable households are the rural households and the female-headed households"[6].

According to the most recent survey done by FAO, in 2011-13, a total of 842 million globally people were estimated to be suffering from chronic hunger, regularly not getting enough food to conduct an active life. Even though in developing regions the per capita availability of fruits, vegetables, livestock, vegetable oils, and hence diet, has increased, the benefit is not fully evident in Africa and South Asia. In India, in 2011-2013, the total number of people undernourished was 213 million as compared to 227 million in 1990-92 and 240 million in 2000-022

According to the National Food Security Bill, 2013, every person belonging to priority households, shall be entitled to receive five kilograms of food grains per person per month at subsidised prices from the State Government under the Targeted Public Distribution System. Also the pregnant and lactating women and children receive supplementary nutrition through the anganwadi. If the entitled food grains are not supplied, the person is eligible for allowance under this act.[7]

Review of the progress towards food security in India show that in food production and household access to food (low hunger rates) India has fared well, in U5MR India compares well with developing countries with similar health profile, and in underweight in under five children India fares poorly with rates comparable to that of Sub-Saharan Africa.[5]

Since not many studies have been done on this topic in India and since food security is one of the indicators of malnutrition, and the food security is usually under reported, this study was undertaken to assess the food security among the households in Kuthar and Manjanady villages in Mangalore, to determine the pattern of nutrient intake among the households and to describe the relationship between food security with various socio demographic factors and select diseases like diabetes and hypertension

Methodology

A cross-sectional study was done between 1 June 2014 and 31 August 2014 by purposively sampling 35 households in Kuthar and Manjanady, the field practice area of K.S.Hegde Medical Academy under the GRAMA KSHEMA project.

Method of data collection:

The Food Security Core-Module Questionnaire in the Guide to Measuring Household Food Security (Revised 2000) prepared by United States Department of Agriculture1 was used in this study. The questionnaire was translated to local languages (Kannada and Malayalam) and linguistic validationwas done by back translating to English.

The data was collected by door to door, interview method. The students pursuing 2nd year MBBS in K.S. Hegde Medical Academy, Mangalore were recruited for questionnaire administration after adequate orientation.

The data was collected after taking verbal consent for participation in the study.

The households were divided into Above poverty line (APL) or Below poverty line (BPL) as per the standards prescribed by the Tendulkar committee8. Socio-economic status was determined according to modified B G Prasad classification of 2013[-9]. If a household consumes predominantly a rice based diet atleast twice a day for more than 4 days a week with very little consumption of sources of other nutrients, it was said to have a carbohydrate predominant diet. If the household consumes meat/ other dietary sources of proteins atleast 4 days a week along with carbohydrate sources, the household was said to have proteins with carbohydrate predominant nutrition. If the household consumes meat/ other sources of proteins at least 4 days a

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week, they were categorised to have adequate protein intake. Only known cases of diabetes and hypertension were considered in this study as no diagnostic tests were done.

Statistical analysis:

Data entry and management was done in excel. The data sets were transferred into SPSS version 20.0 after data cleaning and recoding with data definitions. Chi square test was done to check for significance. Percentages were calculated to represent the data.

Ethical Considerations

The following ethical issues were considered for this study:

1. There was no physical harm for the participants as there was no intervention.
2. Confidentiality will be maintained throughout the study by coding the data and anonymity.
3. Verbal consent was obtained from all the participants before enrolling into the study.

Results:

A total of 35 households were interviewed in the two villages. Majority of the households belonged to the Muslim religion and children were present in 67% of the households. About one third (34%) of the families belonged to the BPL category and majority (31%) of the households belonged to Class IV SES followed by Class V SES according to B G Prasad classification 2013 standards. 60% of the households spent 26-50% of their per capita income for procuring food.(Table 1)

Almost half the households (51%)were found to be food secure followed by the households with food insecurity with no hunger and food insecure with moderate hunger. None of the households surveyed had the most severe form of food insecurity i.e. food insecurity with severe hunger. (Fig 2)

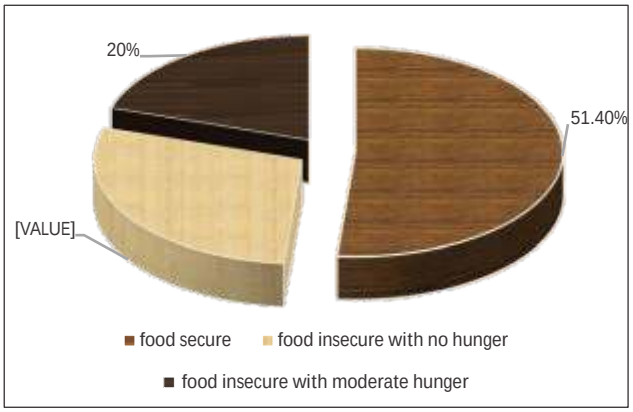
Table 1 : Table showing the basic demographic data of the households

	Frequency	Percent
A] Religion		
Hindu	13	37.1
Muslim	20	57.1
Christian	2	5.7
Total	35	100
B] Presence of Children in the house		
Present	24	68.6
Absent	11	31.4
Total	35	100
C] APL/ BPL		
BPL	12	34.3
APL	23	65.7
Total	35	100
D] Socio economic Status		
Class V	10	28.6
Class IV	11	31.4
Class III	8	22.9
Class II	4	11.4
Class I	2	5.7
Total	35	100
E] Percentage of Per capita income spent on food		
<25	7	20
26-50	21	60
51-75	4	11.4
>75	3	8.6
Total	35	100

Table2 : Table showing the nutrient intake among the households.

	Frequency	Percentage
A] Predominant Nutrient intake		
Carbohydrate	17	48.6
Protein and carbohydrate	18	51.4
Total	35	100
B] Protein Intake		
Adequate	19	54.3
Inadequate	16	45.7
Total	35	100

Figure 1 : Pie chart showing Household Food security.



Nearly half the households have a predominantly carbohydrate rich diet and have inadequate protein intake. As shown in fig 2, diabetes was present in around 29% of the households and hypertension in 40% of the households.

Figure 2 : Bar diagram showing non communicable disease profile among the households

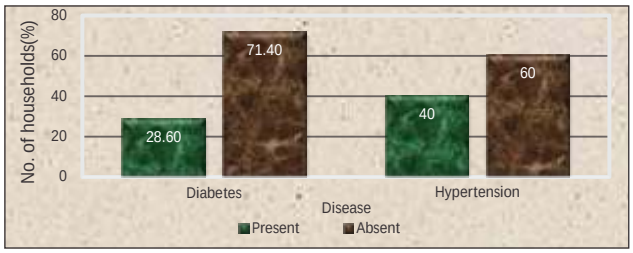


Table 3: Table showing the food security in relation to the various factors

	Food Secure	Food Insecure with no hunger	Food Insecure with moderate hunger
A] Region			
Kuthar	7(43.8%)	4(25%)	5(31.2%)
Manjanady	11(57.9%)	6(31.6%)	2(10.5%)
Total	18(51.4%)	10(28.6%)	7(20%)
B] Religion			
Hindu	38.50%	30.80%	30.80%
Muslim	60.00%	30.00%	10.00%
Christian	50.00%	0.00%	50.00%
Total	51.40%	28.60%	20.00%
C] Presence of Children			
Present	12(50%)	7(29.2%)	5(20.8%)
Absent	6(54.5%)	3(27.3%)	2(18.2%)
Total	18(51.4%)	10(28.6%)	7(20%)
D] APL/ BPL			
BPL	6(50%)	1(8.3%)	5(41.7%)
APL	12(52.2%)	9(39.1%)	2(8.7%)
Total	18(51.4%)	10(28.6%)	7(20%)
E] Socio economic class			
Class V	4(40%)	1(10%)	5(50%)
Class IV	6(54.5%)	4(36.4%)	1(9.1%)
Class III	5(62.5%)	2(25%)	1(12.5%)
Class II	1(25%)	3(75%)	0
Class I	2(100%)	0	0
Total	18(51.4%)	10(28.6%)	7(20%)
F] Percentage of Per capita income spent on food			
<25	4(57.1%)	3(42.9%)	0
26-50	12(57.1%)	3(14.3%)	6(28.6%)
51-75	2(50%)	2(50%)	0
>75	0	2(66.7%)	1(33.3%)
Total	18(51.4%)	10(28.6%)	7(20%)

APL/ BPL status was the only statistically significant measure found. None of the other determinants were statistically significant.

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Figure 3 : Bar diagram showing the nutrient intake and presence of non-communicable disease in relation to food security

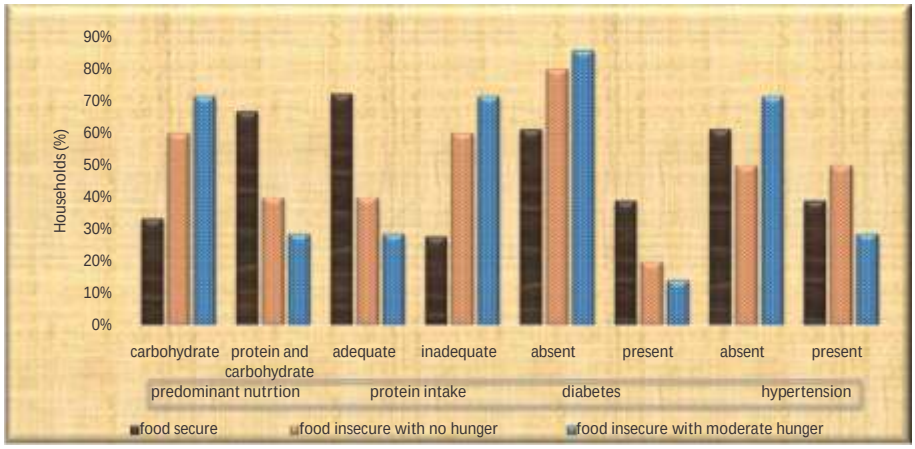

Figure 4 : Bar diagram showing the nutrient intake and presence of non-communicable disease in relation to the percentage of per capita spent on food

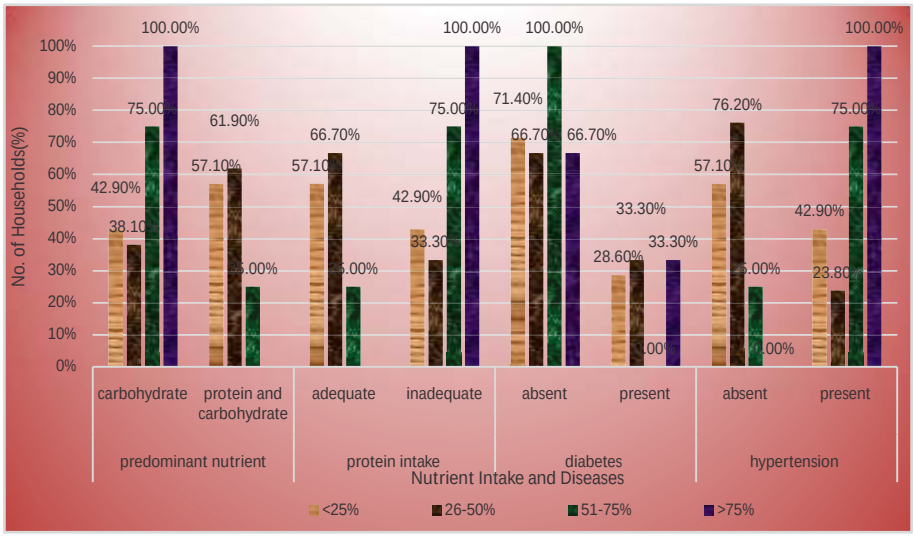

Figure 5: Bar diagram showing the nutrient intake and presence of non-communicable disease in relation to the socioeconomic status

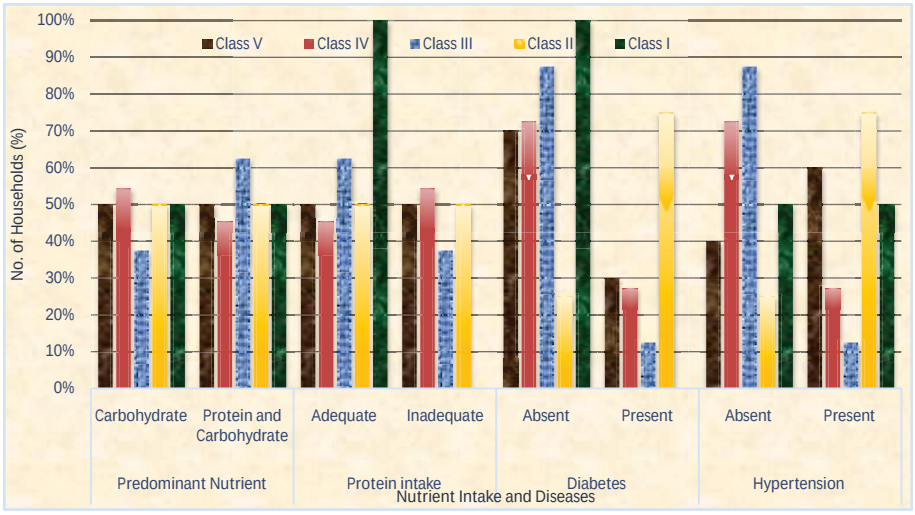

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Fig 3, 4, 5 and Table 3 show that a few families belonging to BPL category and Class IV and V SES spent more than 50% of their income on carbohydrate predominant diet and were still food insecure with or without hunger. It was also observed that the APL families spending less than 25% of per capita income on food were food insecure and also relied predominantly on carbohydrate rich diet and also diabetes was more common among them.

Discussion:

In our study, we found that around 50% of the households were food secure. It is similar to the findings of the study conducted by MoloudPayabet al. 10 But unlike in their study, where they found food insecure households with severe hunger, our study sample had no severe form of food insecurity. The percentage of food insecure households without hunger was also almost similar in that study. The findings regarding food security was almost similar to the percentage found by a previous study.[11]

But the results found in our studies are different from the reviews conducted by John Cook et al[12] and the study conducted by Seligman et al[13], where they found lower levels of food insecurity than the present study. This might be because these studies were done in US where the standards of living are better.

The results were also different from the findings of M. Mohamadpour 14 and those of Oberholser and Tuttle[15] where they found that food insecurity levels were higher in the households than the present study. This might be because the former study participants had more number of children in the family which is not the case in our study area. The latter study was done among low income families only and this might be the reason for the high food insecurity. The study conducted by Judith E Neteret al16 also had higher levels of food insecurity in all categories than the present study. The reason for this too might be due to the fact that it was done among low income families.

In the study conducted by Payabet al10, 83% of the high SES families were food secure. In this study, we found that 100% of the class I SES households were food secure but only 25% class II SES households were food secure. This might be because of the fact that the rest 75% of the families, who have the mildest form of food insecurity, spend less than 25% of their per capita income on food. If they channel more income towards food, this problem can be solved.

We did not find much difference in the presence of food insecurity among households with or without children unlike Judith E Neteret al16who found that food insecurity was higher among the households with children, the reason possibly being the study being done among low income families.

Nearly half the households in our study area had a carbohydrate rich diet. This might be due to the reason that rice is the staple diet in coastal Karnataka. Other nutrient deficiencies may be caused due to foodinsecurityand inadequate consumption of certain foods as suggested by a research17.

Most of the determinants were found to be statistically not significant in this study. This might be due to the small sample size in the present study.

The prevalence of diabetes was slightly higher among the food secure households in our study, though by a very small margin. Few other studies[18,19]have found that the odds of the food insecure getting diabetes was higher. In a review by Barbara A Laraia et al20, the findings of chronic diseases being more common in food insecure is contradictory to the findings of the present study. This might be due to the fact that Indians are more prone for non-communicable diseases like diabetes. We could not find any study conducted in India regarding this to compare our results with.

Limitations of this study were that it was done on a small sample and purposive sampling was done. As this was a pilot study, asimilar study is being planned on a larger scale with better representation of the households so asto get a better picture and the results published at a later date.

Conclusion :

Food insecurity was more common among the households belonging to socioeconomic status class IV and V and also among the higher SES households who spend very little for obtaining food. Carbohydrate predominant diet was seen among half the households with inadequate protein intake. Non communicable disease profile was more common among the food secure households.

Recommendations :

It was observed in our study that a few families belonging to BPL category and Class IV and V SES spent more than 50% of their income on carbohydrate predominant diet and were still food insecure with or without hunger. The nutritional programmes should be aimed at such households so as to improve their food security. Also the families can be motivated to cultivate vegetables in their kitchen gardens. This will facilitate more spending on major nutrient sources. It was also observed that the APL families spending less than 25% of per capita income on food were food insecure and also relied predominantly on carbohydrate rich diet and also diabetes was more common among them. These households should be educated to redirect more expenditure towards obtaining food items. Both the groups should be educated on the importance of balanced diet so as to provide better nutrition and help reduce the NCD burden.

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