Assessment of Food and Nutritional Security of the Rural Women in Telangana State

Research Article

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Abstract

Agricultural interventions are often intended to promote economic empowerment of women and are planned exclusively for income-generating opportunities, which increased work burden on women unintentionally. In other terms,affects their health and nutritional status. Frequently multiple linkages of nutrition are forgotten while planning of policies. Thepresent study evaluates the food consumption and nutrient intake of the rural women. Hundred women were selected from Sriramnagar village from Ranga Reddy District of Telangana. Data on socio-economic profile, dietary diversity and 24 hour recall was collected by using the developed questionnaire. It is evident that majority of the respondents were middle aged (between 35-55 years), agricultural labors, Data on dietary diversity indicates that majority (85% and 82%) of the respondents fell under poor category of food consumption scores, in both daily and occasional or festival intake. Except for the carbohydrate, other nutrients such as protein, calcium and iron was noticed to be very less as compared with the Recommended Daily Allowances (RDA). The results suggest that the food security policies in India should be planned in a way that not only empower women's capacities through income but also imparts nutrition education to produce better outcomes.

Keywords: Dietary Diversity; Food Consumption; Nutrient Intake; Recommended Daily Allowances (RDA); Rural Women; Socio-Economic Profile.

Introduction

Food security continues to be one of the critical policy issue in India. While food availability has substantially increased in India over the past decades, mainly due to the productivity gains from 'green revolution', the challenge of providing adequate food and nutrition to each and every citizen of the country is far from being resolved [4].

Dietary diversity is the sum of the number of different food groups consumed over a given reference period [1]. It is considered as a proxy to household food security. Diversity in diet is an important outcome in and of itself. A more diversified diet is associated with a number of improved outcomes in areas such as, birth weight, child anthropometric status and improved hemoglobin concentrations [5]. Diversity in the diet is highly correlated with factors such as calorie and protein adequacy, percentage of protein from animal sources and household income. Information about food consumption and diversity in diet is important from the program point of view as it has the potential to effectively change, modify or improve programme activities. Understanding the baseline consumption pattern of the poorest of the poor households and the extent of their dietary diversity is important to assess the impact of the programme, in terms of poverty alleviation as well as improvement in their food security, and health & nutritional well-being. Also, it helps inpolicy design or programmes for specific population which depends on geographical or household characteristics. Hence this study attempted to assess the food and nutritional security of the rural women.

The study was conducted with the following objectives - 1. To assess the socio-economic profile of the respondents 2. To assess the dietary diversity of the selected rural households. 3. To compare the nutrient intake adequacy with the Recommended Daily Allowance (RDA) for the Indian population by National Institute of Nutrition (NIN) [3].

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Methodology

The study was carried out in the adopted village of MANAGE, Hyderabad namely Sriramnagar under Moinabad Mandal, Ranga Reddy District of Telangana with 100 rural women as the respondents for this study. Data was collected through semi-structured interview schedule.Profile information pertaining to socio-economic and personal attributes of the respondents such as age, occupation, marital status, drinking water accessibility and hygienic practices adopted by the respondents was collected.Food consumption pattern at household level was computed using Dietary Diversity Score (DDS). Food consumption pattern of the respondents at the household level (daily) and occasional or festival time was noted and later decoded.The respondents were asked to recall the food they had consumed the previous day and the same was recorded meal wise i.e. breakfast, mid snack, lunch, evening snack and dinner along with the ingredients used and with the respective quantities. This amount was used to calculate nutritional value of the ingredients (calculated using nutritive value tables by NIN, 2012) used in the meal of the respondents, the previous day. The calculated RDA of the nutrients were compared with the RDA table under the categories of adult moderate worker and adult heavy worker separately. For assessment of nutritional adequacy, the values of RDA for a particular nutrient was calculated at 50%, 70% and 90% by using ICMR- NIN, 2010 table. Then the respondents were categorized into the following four different categories, based on the degree of nutritional inadequacy viz. <50%, 50-70%, 70-90%, >90%.

Results and Discussion

Socio-economic Profile of the respondents

The socio-economicprofile of the respondents were studied in order to know the socio-economic status and personal attributes of the respondents (Table 1).

From the above data it was evident that majority (47%) of the respondents were middle aged (between 35-55 years), followed by young age (46%) and only 7% of the respondents belonged to old age category (i.e. above 55 years) (Table 2).

The results of table no. 2 indicates that majority of the respondents (67%) were non-matrici.e. low education levelfollowed by 26% with matriculate, 4% Graduate and 3% with Intermediate level of education respectively. Hence there is a need to educate these women through adult education program so that they can improve their functional literacy level and also can be effectively educated on nutritional aspects (Table 3).

Majority of the women (46%) were agricultural labours followed by 29% of them as homemakers, 21% farm women and only 2% of the respondents were in service and business i.e. running small shops etc. each (Table 4).

Majority of the respondent's spouse (53.6%) was doing farming, followed by 31.57% as agricultural labours, 7.36% as driv-

Table 1. Classification of the respondents based on their Age.

Category		Frequency (n=100)	Percentage (%)
Young	upto-35	46	46
Middle	35-55	47	47
Old age	>55	7	7
	Total	100	100

Table 2 Classification of the respondents based on their education.

Category	Frequency (n=100)	Percentage (%)
Below 10th	67	67
10th passed	26	26
Intermediate	3	3
Graduate & above	4	4
Total	100	100

Table 3. Classification of the respondents based on their occupation.

Category	Frequency(n=100)	Percentage (%)
Farming	21	21
Agricultural labours	46	46
Home makers	29	29
Business	2	2
Service	2	2
Total	100	100

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ers,5.26% in service and only 2.1% in real-estate. The results suggests that agriculture is the major occupation of the respondent's spouse whereas the respondents were mostly working as agriculturallabors, as the primary source of income (Table 5).

Majority of the respondents (93%) were married. A negligible percentage were widow and unmarried with 5% and 2% respectively Most of them got married while studying and hence could not pursue their further studies and hence have low education level. There were no divorced cases reported from the respondents (Table 6).

The data shows that majority of the respondents (76%) had nuclear family and the remaining (24%) lived in joint family system. This indicates the trend of transformation from the joint family system to the nuclear family,which is now slowly creeping into rural areas also (Table 7).

The findings depicts that majority of the respondents (75%) had small family size (up to 4 members) followed by large (14%- above 6 members) and medium (11%- 4-6 members) family size. This is explained by the growing popularity of the nuclear family concept

and also an awareness about small family norms (Table 8).

Agriculture is the primary source of income for majority of the respondents (57%) followed by daily-wages (26%) and service (15%). A negligible percentage of the respondents depend on other sources such as pension (2%) and pastor (1%) as seen from the data of the above table (Table 9).

Out of the 100 respondents, majority of them (46%) were working for daily-wages as their secondary source of income, where as 25% of themdidn't had any secondary source of income. 14% of the respondents depended on tailoring as additional source of income to the family. The results suggest that there is a need to impart training on dairy, poultry, mushroom cultivation kitchen garden etc.to the respondents to ensure additional income, as well as for ensuring food and nutritional security of the respondent's family (Table 10).

From the results of table no. 10 on annual income, it was found that majority (77%) of the respondents fell under the category of medium income level, followed by low income level (13%) and10% of them had high income level. This explains that me-

Table 4. Classification of the respondents based on the occupation of their spouse.

Category	Frequency (n=95)	Percentage (%)
Farming	51	53.6
Agricultural labours	30	31.57
Driving	7	7.36
Service	5	5.26
Real estate	2	2.1
Total	95	100

Table 5. Classification of the respondents based on their marital status.

Category	Frequency (n=100)	Percentage (%)
Married	93	93
Unmarried	2	2
Divorced	0	0
Widow	5	5
Total	100	100

Table 6. Classification of the respondents based on the family type.

Category	Frequency(n=100)	Percentage (%)
Nuclear	76	76
Joint	24	24
Total	100	100

Table 7. Classification of the respondents based on their family size.

Category	Frequency (n=100)	Percentage (%)
Small (up to 4)	75	75
Medium (4-6)	11	11
Large (Above 6)	14	14
Total	100	100

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dium to low income level of the respondents may be a causative factor for the poor nutritional status of the respondents.If somesecondary source of income is introduced, it will improve the economic status as well as the nutritional status of the respondents.

The source of drinking water for cent percent of the respondents was from Panchayat Office. The distance varies based on the location of the respondent's house from the Panchayat Office. It implies that they had access to safe and clean drinking water was well within the reach i.e. less than500 meters. Majority of them (51%) had access within 250 meters from their home while for the remaining (49%) within 500 meters, whereas none of the respondents had to travel beyond 500 meters to get the drinking water (Table 11).

It was reported that nearly cent percent of the respondents (95%) practiced hygienic methods such as washing fruits and vegetables before cooking, washed hands after toilet, before taking food and useddustbins for garbage disposal (Table 12).

Dietary diversity of the respondents

The food consumption pattern at household level (daily) was computed using Dietary diversity score (DDS). Food consumption pattern of the respondents based on the dietary diversity score of foods consumed daily at household level is given in table no.13.

Majority (85%) of the respondents were observed to fall in poor category, in the food consumption score and the remaining (15%) had an acceptable value of food consumption score based on the household dietary diversity score (HDDS).

Similar data was also obtained for festive or ceremonial occasions, to find out the dietary diversity score at household level. The data indicates that majority (82%) of the respondents were having poorfood consumption score and the remaining (18%) of them were at borderline, based on the household dietary diversity score (HDDS). The food consumption pattern results showpoor health and nutritional status of the respondents. So it is suggested to conduct trainings and awareness generation activities to improve

Table 8. Classification of the respondents based on primary source of income.

Category	Frequency (n=100)	Percentage (%)
Agriculture	57	57
Daily-wage	26	26
Service	15	15
Pastor	1	1
Other (Pension)	2	2
Total	100	100

Table 9. Classification of the respondents based on secondary source of income.

Category	Frequency (n=100)	Percentage (%)
Daily wage	46	46
Driving	3	3
Service	2	2
Pension	3	3
Tailoring	14	14
Anganwadi mid- wifery	1	1
Cook (school)	2	2
Real-estate	2	2
Business(Shop)	2	2
No secondary income	25	25
Total	100	100

Table 10. Classification of the respondents based on annual income of the family.

Category	Frequency (n=100)	Percentage (%)
Low	13	13
Medium	77	77
High	10	10
Total	100	100

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Table 11. Classification of the respondents based on the distance of drinking water source from home.

Category	Frequency (n=100)	Percentage (%)
Upto 250 meters	51	51
250-500 meters	49	49
Beyond 500 meters	0	0
Total	100	100

Table 12. Classification of the respondents based on the Hygienic practices.

Category	Frequency(n=100)	Percentage (%)
Low	5	5
Medium	95	95
High	0	0
Total	100	100

Table 13. Classification of the respondents based on Food Consumption Score (FCS) at household level (daily).

FCS	Profiles	Frequency (n=100)	Percentage (%)
0-21	Poor	85	85
21.5-35	Borderline	0	0
>35	Acceptable	15	15
	Total	100	100

Table 14. Classification of the respondents based on Food Consumption Score (FCS) at household level (Festivals/ Occasions/ Ceremonies).

FCS	Profiles	Frequency (n=100)	Percentage (%)
0-21	Poor	82	82
21.5-35	Borderline	18	18
>35	Acceptable	0	0
	Total	100	100

Table 15. Recommended Daily Allowance (RDA) for Heavy Worker (Female).

Energy (kcal)	Protein (g)	Carbohydrate (g)	Calcium (mg)	Iron (mg)
2850	55	130	600	21

Source: ICMR-NIN, 2010

Table 16. Classification of the respondents based on 24 hours re-call method for Heavy.

Category	Energy (kcal)	%	Protein (g)	%	Carbohydrate (g)	%	Calcium (mg)	%	Iron (mg)	%
<50%	<1425	97.01	<27.5	62.69	<65	4.48	<300	52.24	<10.5	67.16
50%-70%	1425-1995	1.49	27.5-38.5	20.9	65-91	4.48	300-420	26.87	10.5-14.7	14.93
70%-90%	1995-2565	1.49	38.5-49.5	11.94	91-117	1.49	420-540	13.43	14.7-18.9	5.97
>90%	>2565	0	>49.5	4.48	>117	89.55	>540	7.46	>18.9	11.94
	Total	100	Total	100	Total	100	Total	100	Total	100

Worker

their knowledge regarding food consumption pattern and also to carryout intervention programmes to improve their nutritional status (Table 14).

Nutrient intake of the respondents

The respondents were asked to recall the food that they had consumed the previous day and pen down meal wise i.e. breakfast, mid snack, lunch, evening snack and dinner along with the ingredients used and their respective quantities. This amount was used to calculate nutritional value of the ingredients used in the meal of the respondents. The calculated intake of the nutrients were compared with the RDA table under the categories of adult moderate worker and adult heavy worker separately. Then evaluated for nutritional adequacy, the values of the RDA for a particular nutrient was calculated at 50%, 70% and 90%. Then the respondents were categorized into the following four separate categories, based on the degree of nutritional inadequacy such as <50%, 50-70%, 70-90%, >90% (Table 15,16).

Based on the occupation of the respondents they were divided into heavy worker and moderate worker. Majority (97.01%) of

Table 17. ecommended Daily Allowance (RDA) for Moderate Worker (Female).

Energy (kcal)	Protein (g)	Carbohydrate (g)	Calcium (mg)	Iron (mg)
2230	55	130	600	21

Source: ICMR-NIN, 2010.

Table 18. Classification of the respondents based on 24 hours re-call method for Moderate worker.

Category	Energy (kcal)	%	Protein (g)	%	Carbohydrate (g)	%	Calcium (mg)	%	Iron (mg)	%
<50%	<1155	93.94	<27.5	54.55	<65	3.03	<300	51.52	<10.5	69.7
50%-70%	1155-1561	6.06	27.5-38.5	30.3	65-91	3.03	300-420	21.21	10.5-14.7	12.12
70%-90%	1561-2007	0	38.5-49.5	15.15	91-117	3.03	420-540	18.18	14.7-18.9	6.06
>90%	>2007	0	>49.5	0	>117	90.91	>540	9.09	>18.9	12.12
Total		100%		100%		100%		100%		100%

the respondents had less than 1425 Kcal. (<50%)energy intake in a day. Protein adequacy of the heavy working women showed that the majority (62.6%) of them consumed<50% of the RDA of protein (i.e. for 27.5g) followed by 20.9% of respondents consumed protein between 50%-70%, very less percentage of the respondents had protein intake between 70%-90% and above 90% i.e. 11.94 % and 4.48% respectively. Carbohydrate intake was observed to be adequate for89.55% of the respondents i.e. above 117gm (>90%).It indicatesa poor quality of food consumption by the respondents. Major energy requirement is met through food groups of cereals, roots and tubers.

Calcium and irondata showed that 52.24% and 67.16% of the respondent's intake was less than 50% of RDA of calcium and iron respectively. Lack of calcium and iron in the diet leads to deficiency disorders like osteoporosis and anemia. Therefore, there is a need to educate them to include sufficient amount of calcium and iron rich foods in their diet by utilizing locally available foodseg. ragi, locally available leafy vegetables etc (Table 17).

The findings revealed that majority(93.94%) of the respondents had less than 1155 kcal of energy/day followed by 6.06% with energy intake between 1155-1561 kcal/day. It depicts that they had low energy intake when compared with the RDA.Protein intake of 54.55% of the respondents was low, i.e. <50%. Calcium intake showed that 90.91% of the respondents had low intake i.e. <50%. Iron intake for majority(51.52%) of the respondents had low intake i.e. <50% (Table 18).

Carbohydrateintake data showed that 90.91% of the respondents had >117gm/day of carbohydrate. It means that they were consuming carbohydrates in adequate amount but lackedin energy, protein, calcium and iron level. It is necessary to provide proper knowledge about the intake of balanced food [2].

The 24 hour dietary recall data from the 100 rural women also showed similar results that their diets were deficient in protein, dietary fiber and iron. An overall assessment of food security indicated that their diets need qualitative improvement and despite being engaged in agriculture, protective foods were missing from their diets as reported by Vatsala, L., Prakash, J and Prabhavathi, S, 2017 [6].

Conclusion

The assessment of food & nutritional security of the respondents showed poor nutritional status, as was reflected from their 24 hour recall method and dietary diversity score as well. The respondent'sfood consumption does not meet the recommended energy, protein, calcium, and iron levels. The findings suggests long-term malnutrition, vested in the form of stunting and wasting, non-communicable chronic diet related disorders, increased morbidity and mortality and reduced physical work output. It is a great economic loss to the country and undermines development. So it is necessary to educate rural people, particularly the women on importance of proper and balanced food, its local sources and ways/forms in which it can be consumed. Trainings may be conducted to improve their knowledge regarding food consumption pattern and also to carryout intervention programmes to improve their nutritional status. Majority of them were agricultural labors, so it is apt toimpart training on Poultry, Dairy, Mushroom cultivation etc. to improve their income levels and nutritional status also.

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