Nutritional Assessment of Farm Women under Nutri-Smart Village Programme

ABSTRACT

The objectives of the programme were to promoting nutritional awareness, education and behavioural change in rural area involving farm women and school children, harnessing traditional knowledge through local recipe to overcome malnutrition and implementing nutrition sensitive agriculture through homestead agriculture and nutri-garden. For this study, All India Coordinated Research Project on Women in Agriculture, MPUAT, Udaipur adopted five villages of Badgaon Panchayat Samiti to make Nutri Smart Villages i.e. Madar, Thoor, Brahmano ki hunder, Feniyon ka guda and Loyra. Regarding nutritional, health and hygiene practices, 57.07 per cent of the respondents followed poor practices. Majority of the rural women were vegetarian. Regarding BMI of respondents, 40.53 per cent women were pre-obese and18.12 per cent were obese. Awareness generation is required regarding importance of good nutrition.

Keywords: Nutritional awareness; nutritional assessment; smart village programme; overweight and obesity.

1. INTRODUCTION

India is at the crossroads, the problem is not the availability of food, but access to right kind of food. Nutrition - sensitive agriculture is the new concept, to address food and nutritional security. This is the need of the hour, as more than half of the global population is not adequately nourished and is suffering from hunger, micronutrient deficiencies, overweight and obesity. The nature and causes of malnutrition are multidimensional and complex. Additional challenges such as changing demand for agricultural products as well as climate change and natural resource degradation complicate the situation even more.

POSHAN Abhiyaan is a Prime Minister's overarching scheme for holistic nourishment and multi-ministerial convergence mission with the vision to ensure attainment of malnutrition free India by 2022. The objective of POSHAN Abhiyaan is to reduce stunting in identified districts of India with the highest malnutrition burden by improving utilization of key anganwadi services and improving the quality of anganwadi services delivery. POSHAN Abhiyaan is a scheme to improve the nutritional outcomes for children, pregnant women and lactating mothers by holistically addressing the multiple determinants of malnutrition and attempts to prioritize the efforts of all stakeholders on a comprehensive package of intervention and services targeted on the first 1000 days of a child's life.

As part of Azadi Ka Amrit Mahotsav, to commemorate the 75th year of Independence of India, Dr. Narendra Singh Tomar (Union Agricultural Minister) flagged the smart village initiative to strengthen Poshan Abhiyan. The primary motive of this initiative was to create awareness about the importance of nutrition among the people living in remote areas of India. Children and women were taken into main consideration under this scheme because their number is the highest among the malnourished in the country. Also, women working on farms were prone to the risk of malnourishment thus under this scheme, they were taught some traditional recipes with high nutrition value. This new initiative aims to reach out to 75 villages across India through the network of All India Coordinated Research Project on Women in Agriculture (AICRP-WIA). 13 centers across the 12 states of India were allocated to AICRP and each center has been adopted 5 villages. Thus the remaining villages come under the authority of ICAR. The objectives of the programme were to promoting nutritional awareness, education and behavioural change in rural area involving farm women and

school children, harnessing traditional knowledge through local recipe to overcome malnutrition and implementing nutrition sensitive agriculture through homestead agriculture and nutri-garden.

2. METHODOLOGY

The study was conducted in Udaipur district of Rajasthan to promoting nutritional awareness, education and behavioural change in rural area involving farm women and school children, harnessing traditional knowledge through local recipe to overcome malnutrition and implementing nutrition sensitive agriculture through homestead agriculture and nutri-garden. For this study, All India Coordinated Research Project on Women in Agriculture, MPUAT, Udaipur adopted five villages of Badgaon Panchayat Samiti to make Nutri Smart Villages i.e. Madar, Thoor, Brahmano ki hunder, Feniyon ka guda and Loyra. These villages are 20 KM away from district head quarter. After the selection of villages, preliminary survey of 629 rural women was done to assess socio economic profile of women, nutritional status, food habit, food purchasing pattern, food consumption pattern, morbidity status, Nutritional knowledge, attitude and practices. For statistical measures computation of some descriptive statistical measures such as frequency, percentage distribution and mean for variables was performed.

3. RESULTS AND DISCUSSION

Data in Table 1 reveals that more than half of the respondents (56.43%) belonged to the age group of 20-32 years followed by 31.95 per cent of the respondents in the age group of 32-44 years and rest 16.85 per cent belonged to the age group of 44-56 years. Majority of the respondents (97.77%) were married whereas 1.58 per cent respondents were single and 0.31 per cent were widow and divorced. Regarding educational level of the respondents, Table indicates that 31.31 per cent respondents were illiterate, 18.60 per cent of the respondents were educated up to middle school, 17.96 per cent respondents educated up to primary school, 14.78 per cent had education up to high school and 7.79 per cent of the respondents were graduate, 5.72 per cent of the respondents were functional literate. Only 3.81 per cent respondents were educated up to intermediate. According to the field survey conducted by Sangeeta [1] most of the respondents are in the age group of 30-40 year. Majority of the respondents get their marriage in their 20 years. The findings of Kafura [2] indicate that “most of the respondents were young aged (54%), having secondary education (48%), small family (65%) and farm size (53%) followed by short-term service experience (62.2%)”. Kumawat and Bansal [2] also reported in their study, 47 per cent respondents belonged to age group of 31-45 years.

Perusal of the Table 2 indicates that cent per cent respondents had contacts with Kisaan Call Centre and visited to agri exhibitions/fairs occasionally. About 68 per cent of the respondents using mobile phones regularly whereas only 8 per cent of the respondents were accessing internet, 42.29 per cent watch television on regular basis and 24 per cent read newspapers daily. None of the respondents were using radio.

The data of Table 3 revealed that 51.66 per cent of the women had contact with Anganwadi Worker and ANM in every 15 days. Majority of the respondents (80-88%) contacted extension agents like Agricultural Line Dept. Personnel and KVK Personnel in every month. More than half of the respondents (50.55-59%) rarely approached with NGO personnel, KVK personnel and agricultural scientists. About half of the respondents (49.44%) never contacted to NGO personnel and KVK personnel.

Table 1. Distribution of the respondents by their personal variable n=629

S. No.	Categories	Frequency(f)	Percentage (%)
1.	**Age**		
	20-32 years	322	51.19
	32-44 years	201	31.95
	44-56 years	106	16.85
2.	**Marital Status**		
	Single	10	1.58
	Married	615	97.77
	Widow	2	0.31

	Divorced	2	0.31
	Separated	0	0
3.	**Education**		
	Illiterate	197	31.31
	Functional literate	36	5.72
	Primary school	113	17.96
	Middle school	117	18.60
	High School	93	14.78
	Intermediate	24	3.81
	Graduate and above	49	7.79

Table 2. Distribution of the respondents on the basis of their mass media contact n=629

S. No	Mass media contact	Regular		Occasionally		Never	
		f	%	F	%	f	%
1.	Radio	0	0	0	0	629	100
2.	Television	266	42.29	128	20.34	235	37.36
3.	Mobile	428	68	170	27	31	5
4.	Internet	48	8	279	44	302	48
5.	Kisan Call centre	0	0	629	100	0	0
6.	News papers	150	24	6	1	473	75
7.	Visits to Agri. Exhibitions/Fairs	0	0	629	100	0	0

Table 3. Distribution of the respondents on the basis of their contact with extension personnel n=629

S. No	Type of Extension Personnel	Weekly Once		Once in Fort Night		Monthly Once		Rarely		Never	
		f	%	f	%	F	%	f	%	f	%
1.	Anganwadi Worker (AWW)	0	0	325	51.66	212	33.70	76	12.08	16	2.54
2.	ANM	0	0	315	50.07	220	34.97	86	13.67	8	1.27
3.	Agril. Scientists	0	0	0	0	168	27	371	59	90	14
4.	KVK Personnel	0	0	0	0	553	88	318	50.55	311	49.44
5.	Agril. Line Dept. Personnel	0	0	0	0	505	80	124	20	0	0
6.	NGO Personnel	0	0	0	0	0	0	318	50.55	311	49.44
7.	Any other	0	0	0	0	0	0	0	0	629	100

Table 4. Mean Anthropometric measurement of rural women n=629

+	Parameter	Mean	SD
1.	Weight	53.67	10.04
2.	Height	154.19	7.11
3.	Waist circumference (cm)	44.46	21.93
4.	Hip circumference (cm)	51.79	26.17

Table 5. Distribution of the respondents according to their food habit n=629

S. No	Food Habit	f	%
1.	Vegetarian	556	88
2.	Non Vegetarian	60	10
3.	Ovo-vegetarian	13	2

Table 6. Body mass index of rural women n=629

S. No	BMI Analysis	f	%
1.	Underweight (<18.5)	19	3.02
2.	Normal (18.5-22.9)	145	23.05
3.	Overweight (23-24.9)	96	15.26
4.	Pre-obese (25-29.9)	255	40.53
5.	Obese (>=30)	114	18.12

Table 6 depicts the body mass index of rural women. According to body mass index, women were categorized into normal, underweight, overweight, pre-obese and obese category. Data in Table 1 shows that 40.53 percent of respondents were pre-obese, 23.05 percent of them were normal, 18.12 percent of respondents were obese, 15.26 percent were normal and 3.02 percent were underweight.

The data presented in Table 4 show anthropometric measurements of the women. The mean body weight and height were about 53.67 kg and 154.19 cm, respectively. The mean waist circumference and hip circumference was about 44.46 cm and 51.79 cm, respectively. According to Srivastava and Singh [3] highest number of women with low body mass index (BMI) was in upper lower class 25.87 per cent followed by lower middle 19.57 per cent and upper middle 3.33 per cent.

The findings related to food habit of rural women, found that 88 percent respondents were vegetarian, 10 per cent non-vegetarian and only 2 percent was ovo-vegetarian (Table 5).

BMI can be used in estimating the prevalence of underweight as well as the prevalence of overweight and obesity. As per the definition given by World Health Organization, a BMI of less than 18.5 kg/m^2 is defined as underweight, indicating chronic energy deficiency. The body mass index of the selected respondents as presented in Table 6 reflects that 40.53 per cent women were pre-obese, 23.05 per cent were normal, 18.12 per cent were obese and 15.26 per cent women were overweight. Only 3.02 per cent women were underweight based on their BMI. Similar study conducted by Palo *et al*. [4] found that about 93.4 per cent were Grade II obese while 51.9 per cent were at risk according to their waist–hip ratio. According to Swarupa and Ashlesha [5] out of 100 respondents 68 per cent were having normal BMI.

Table 7. Distribution of the respondents according to their food consumption pattern n=629

Food Groups	Daily		Weekly		Monthly		Rare	
	f	%	f	%	f	%	f	%
Cereals /millets	629	100	0	0	0	0	0	0
Pulses	123	20	467	74	38	6	1	0
Oil	588	93	8	1	33	5	0	0
Sugar and Jaggery	592	94	11	2	26	4	0	0
Green leafy vegetables	201	32	425	68	3	0	0	0
Other vegetables	198	31	425	68	6	1	0	0
Roots and tubers	291	46	321	51	17	3	0	0
Milk	624	99	0	0	0	0	5	1
Curd & butter milk	490	78	130	21	9	1	0	0
Milk products: Ghee, butter, cheese	504	80	74	12	47	7	4	1
Meat	1	0	12	2	37	6	3	0
Fish and sea foods	0	0	8	1	15	2	2	0
Egg	6	1	17	3	27	4	0	0

Fruits		37	6	192	31	183	29	217	34
Nuts and oil seeds	17		3	34	5	153	24	40	6
Dry fruits	15		2	10	2	57	9	123	20
Any other : honey, herbs, health foods	3		0	2	0	23	4	115	18

Table 8. Morbidity status of rural women for past three months n=629

Morbidity Condition	f	%
Cold	275	43.72
Cough	263	41.81
Fever	305	48.48
Vomiting	45	7.15
Diarrohea	69	10.96
Back ache	445	70.74
Fatigue	629	100
Body ache	512	81.39
Gastritis	115	18.28
Tooth ache	121	19.23
Joint pain	92	14.62
Others	0	0

Table 9. Distribution of the respondents by their Nutritional Knowledge, Attitude, Practice (KAP)n=629

S. No.	Category	f	%
1.	**Good** (Above 66.66%)	178	28.29
2.	**Average** (33.33% - 66.66%)	345	54.84
3.	**Poor** (Less than 33.33%)	106	16.85

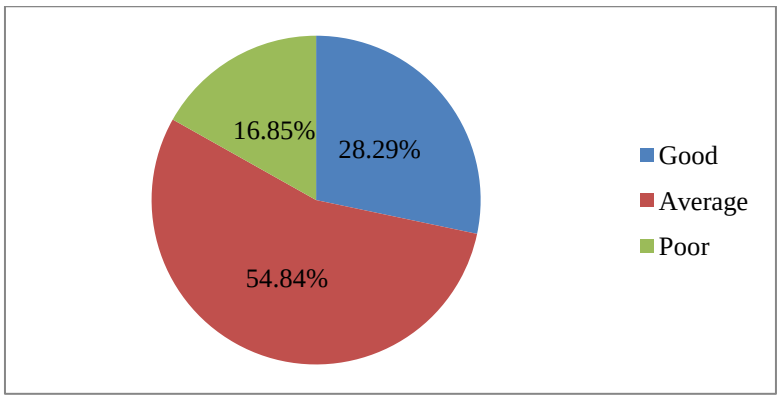

Fig. 1. Distribution of the respondents by their knowledge regarding nutritional practices

Table 7 shows the detail food consumption patterns of the women in the study area. The table prepared by measuring daily, weekly, monthly and rarely food consumption data. Wheat is the staple food of Udaipur so cent per cent of the respondents had cereals on daily basis. Majority of the respondents (93-99%) consumed oil, sugar and jaggary and milk regularly whereas 80 per cent respondents had milk and milk products on daily basis. Only 1 to 6 per cent of the respondents consumed meat, dry fruits and egg on regular basis. More than half of the respondents (51-68 %) consumed roots and tuber, green and other leafy vegetables.

Regarding consumption of dry fruits and fruits. According to Umallawala et al. [6] consumption of cereals (98%) was found to be highest among pregnant women, whereas consumption of pulses and fruits, which are rich in proteins and vitamins, was inadequate. Overall, the consumption of fruits was inadequate among adolescent girls (56.5%). Moreover, inadequate consumption of green leafy vegetables (36.4%) was noted among children.

The physical indicators based on stress in study population are depicted in Table 8 that out of 629 women cent per cent of them had fatigue, 81.39 per cent suffered from body ache, 70.74 per cent suffered from backache whereas 41-48 per cent suffered from cold, cough and fever. About 7.15 to 19.23 per cent of the respondents suffered from vomiting, diarrhea, joint pain, gastritis and tooth ache.

Data in Table 9 and Fig. 1 reveal that 54.84 per cent of the respondents exhibited average knowledge, 28.29 exhibited good knowledge and 16.85 per cent of the respondents had poor knowledge about good nutritional practices. Bariya *et al.* [7] reported that majority of women (73%) had medium level of knowledge about nutrition. Suchitra and Kumar [8] conducted study on a sample of 120 rural women and revealed that majority of respondents were in the category of medium level knowledge level regarding nutrition practices.

Table 10 highlights the attitude of women towards good dietary practices. The results showed that 96 per cent agree that we should cut nails regularly and we should maintain personal hygiene, 90 per cent of the respondents think that consumption of super foods is not essential for getting phytonutrients, 72 per cent think that nutri thali is not essential for all age group and we should consume balanced diet, 41 per cent agree that millets helps in management of lifestyle disorders and only 26 per cent had favourable towards consuming balanced diet and kitchen garden is necessary to get fresh fruits and vegetables. About 31 per cent disagree that

Table 10. Distribution of the respondents by their attitude towards Nutritional, health and hygiene practices n=629

Dietary practices	Agree		Uncertain		Disagree	
	f	%	f	%	f	%
Consumption of super foods is essential for getting phytonutrients	0	0	568	90	61	10
Millets helps in management of lifestyle disorders	60	10	465	74	104	17
Nutri Thali is not essential for all age group	72	11	429	68	128	20
We should consume balanced diet	163	26	429	68	37	6
Consumption of super foods is essential for getting phytonutrients	125	20	300	48	204	32
Millets helps in management of lifestyle disorders	255	41	229	36	145	23
Nutri Thali is not essential for all age group	455	72	155	25	19	3
We should consume balanced diet	450	72	145	23	34	5
We should not skip meals	133	21	411	65	85	14
We should cut nails regularly	604	96	25	4	0	0
We should maintain personal hygiene	604	96	25	4	0	0
There is no need to maintain ideal body weight	109	17	423	67	97	15
We should include green leafy vegetables in daily diet to prevent anaemia	127	20	441	70	61	10
We should avoid drinking direct tap water	48	8	441	70	140	22
We should not wash hands before food	55	9	380	60	194	31

Dietary practices	Agree		Uncertain		Disagree	
	f	%	f	%	f	%
intake						
Morning walk and jogging improves the health	169	27	405	64	55	9
Kitchen garden is necessary to get fresh fruits and vegetables	163	26	417	66	49	8
Protein rich food should be included in our diet	145	23	435	69	49	8
We should consume sprouted grains	145	23	429	68	55	9
Fried, baked foods should be restricted	133	21	423	67	73	12
Consuming raw vegetables is good for health	151	24	411	65	67	11
Junk and road side food are healthy and hygienic	24	4	441	70	164	26
There is no need for diet diversification	151	24	411	65	67	11
Diet should include variety of foods						
Diet should include cup of milk	151	24	411	65	67	11
Egg should be included in daily diet	66	10	423	67	140	22
The daily diet include grains, root and tubers	121	19	429	68	79	13
Nuts and oilseeds should be avoided in daily diet	18	3	447	71	164	26

Table 11. Distribution of the respondents by their nutritional, health and hygiene practices n=629

S. No.	Category	f	%
1.	**Good** (Above 66.66%)	58	9.22
2.	**Average** (33.33% - 66.66%)	212	33.70
3.	**Poor** (Less than 33.33%)	359	57.07

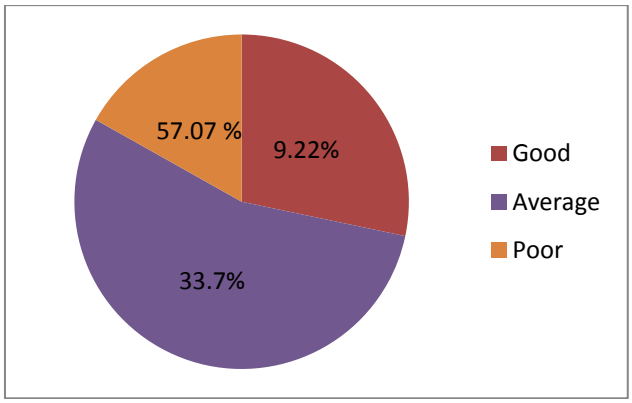

Fig. 2. Distribution of the respondents by their nutritional, health and hygiene practices

we should not wash hands before food intake, 26 per cent respondents think that junk and road side food are not healthy and hygienic and nuts and oilseeds should not be avoided in daily diet, egg should not be included in daily diet and we should not avoid drinking direct tap water (22%). Geeta et al. [9] reported that in rural area maximum difference for healthy habit score was existed between men (50.8%) and women (44.0%). Average unhealthy habits score was

more among women in rural (33.2%) and transition (35.4%) areas, whereas in urban, men had higher score (41.8%). Health and nutrition aspects indicated, fasting on religious belief was more practiced by women in transition area (56%). Consumption of health supplements was more among women, especially in urban (34%).
Data in Table 11 and Fig. 2 reveals that 57.07 per cent of the respondents followed poor nutritional, health and hygiene practices wehereas 33.70 followed average and 9.22 per cent of the respondents follow good nutritional, health and hygiene practices. Alia and Nallapu [10] found that in families with underfive children, 84.0% are consuming highly polished rice, daily intake of fruits is low (29.3%) and junk foods consumption in 49.3%.

4. CONCLUSION

From present study it can be concluded that there was knowledge, attitude and practice level of selected rural women is not far. More than half of the women exhibited average knowledge regarding good nutrition. Regarding nutritional, health and hygiene practices, 57.07 per cent of the respondents followed poor practices. Majority of the rural women were vegetarian. Regarding BMI of respondents, 40.53 per cent women were pre-obese and18.12 per cent were obese. Similar study conducted by Palo *et al*. [2] found that about 93.4 per cent were Grade II obese while 51.9 per cent were at risk according to their waist–hip ratio. Awareness generation is required regarding importance of good nutrition.

5. CONFERENCE DISCLAIMER

Some part of this manuscript was previously presented in the conference: 3rd International Conference IAAHAS-2023 "Innovative Approaches in Agriculture, Horticulture & Allied Sciences" on March 29-31, 2023 in SGT University, Gurugram, India. Web Link of the proceeding: https://wikifarmer.com/event/iaahas-2023-innovative-approaches-in-agriculture-horticulture-allied-sciences/

Such as lack of knowledge of proper nutrition, lack of awareness of malnutrition, low income, cultural and socio-economic factors. Lack of education, awareness and resources are the most common causes of malnutrition and are particularly problematic in the research area.

ETHICAL APPROVAL AND CONSENT

The study subjects sought written consent, and formal approval was obtained from ICAR-Central Institute of Women in Agriculture and all the committee members.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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