



# Impact of Nutrition Education on Knowledge, Attitude and Practices on Nutri-farms to Farm Women

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

The main focus of the study was to assess the impact of Nutrition Education on Knowledge, Attitude and Practices on Nutri-Farms to Farm Women. Pre-tested schedule was used for data collection from farm women of Chamarajanagara district. The results revealed that regard to food consumption practices, after intervention low level of practice was reduced to 10 per cent; medium level were increased to 50 per cent and high level practice were increased to 40 per cent. The chi-square test results showed non-significant for Knowledge, attitude and practice of Group I and Group II (Knowledge-0.234<sup>NS</sup>). Intervention studies have shown a positive impact on knowledge, attitude and practices on Nutri-farms.

**Keywords:** Nutrition education; knowledge; attitude and practice; nutria-farms; education intervention.

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## 1. INTRODUCTION

Women play a very important role in agriculture as agricultural labour, as farmers, co-farmers, (with male out-migration etc...) as managers of farms and farm entrepreneurs. Swaminathan [1], the famous agricultural scientist describes that “it was woman, who first domesticated crop plants and thereby initiated the art and science of farming. While men went out hunting in search of food, women started gathering seeds from the native flora and began cultivating. Women play a significant and crucial role in agricultural development through production, processing and value addition to meet the food and nutrition security of the family as well as nation”.

“Farm women in rural areas significantly contribute to agriculture and allied activities along with taking care of the family” [2] “Awareness on proper nutrition, nutritional value of food and healthy practices in food intake can build a difference in healthy society and nation as a whole. Deficiencies in nutritional practices may lead to unproductive life in farm women. Human body derives strength and protection against disease through the intake of balance diet. In Indian farming, farm women immensely contribute in food production, however, nutritional status as well as nutritional knowledge of women were unsatisfactory and needs interventions” [3].

“Nutrition education can be a tool for sensitization and alleviation of above mentioned challenges. Therefore, relevant messages related to importance of millets, anemia, nutrition garden and child nutrition were formulated” [2]. The present study was designed to assess impact of Nutrition Education on Knowledge, Attitude and Practices on Nutri-Farms to Farm Women: A Study in Chamarajanagar District of Karnataka State.

## 2. MATERIALS AND METHODS

The present study was carried out to assess impact of Nutrition Education on Knowledge, Attitude and Practices on Nutri-Farms to Farm Women. The study was conducted in Chamarajanagara district of Karnataka. Chamarajanagara district was purposively selected for the study, because it is one of the most backward districts of the Karnataka. Farm women aged between 20-40 years, engaged in household chores from agricultural families were selected by purposive random sampling. After the baseline data and nutritional status, assessment, 90 farm women were selected for

intervention study based on their willingness and resources. The subjects were divided into three groups for intervention study.

### 2.1 Assessing the Impact of Nutrition Education

“After the nutrition education programme for one month, the post test on health and nutrition knowledge and practices was conducted to the farm women in sample group by using the same questionnaire developed to assess the health and nutrition knowledge and practices” [4]. Experts made test was developed to measure the knowledge of the farm women about the selected nutrition and health practices. Knowledge of the farm women regarding recommended nutrition practices was measured by using 30 simple questions eliciting information on knowledge of nutrition practices. Each practice was given a score of ‘zero’ and ‘one’ for no knowledge and complete knowledge respectively. The total possible score was 30. An individual’s knowledge index was calculated by the following formula.

Thus, after computing the knowledge scores, the farm women were grouped into high, medium and low categories by taking the mean and standard deviation as a measure of check.

$$\text{Knowledge index} = \frac{\text{Score obtained}}{\text{Maximum obtained score}} \times 100$$

#### List 1. Score according to category

Category	Score
Low	Less than (Mean -1/2 SD)
Medium	Between (Mean ± 1/2 SD)
High	More than (Mean +1/2 SD)

The percentage increase in knowledge was calculated on the basis of difference between Knowledge after education and knowledge before education.

The percentage increase in knowledge was calculated as follows:

$$\% \text{ of enhancement} = \frac{\text{Knowledge after education} - \text{knowledge before education}}{\text{knowledge before education}} \times 100$$

## 3. RESULTS AND DISCUSSION

### 3.1 Overall Knowledge of Farm Women Regarding Food Consumption Pattern

The data in Table 1 reveals that, 29.67 per cent of farm women belonged to high knowledge

category whereas, 45.67 per cent of farm women belonged to medium knowledge category and the remaining 24.67 per cent belonged to the low knowledge category. Farm women who are not educated likely to have low and medium knowledge level on food consumption pattern. Educated farm women are demonstrated higher knowledge level of food consumption pattern.

### **3.2 Overall Attitude of Farm Women Regarding Food Consumption Pattern**

The data in Table 2 reveals that, 28.33 per cent of farm women belonged to high attitude category. Whereas, 40.33 per cent of farm women belonged to medium attitude category and the remaining 31.33 per cent belonged to the low attitude category.

### **3.3 Overall Practice of Farm Women Regarding Food Consumption Pattern**

The data in Table 3 reveals that, 32 per cent of respondents belonged to high practice category. Whereas, 37 per cent of respondents belonged to medium practice category and the remaining 31 per cent belonged to the low practice category.

### **3.4 Food Consumption Pattern Impact on Knowledge, Attitude and Practice**

Knowledge is an important component of behavior and it plays a major role in the covert and overt behavior of an individual. Once knowledge is acquired,

The food consumption pattern on knowledge, attitude and practice was classified as low, medium and high level. The farm women were randomized into three groups - I (control), II (nutrition education) and III (nutrition education and nutri-farm intervention). As per the knowledge of group I observed, 20 per cent of farm women belonged to high knowledge category whereas 40 per cent belonged to medium and low knowledge category, respectively. In Group I, no change was observed for the same after intervention. Further in Group II, 36.67 per cent of the farm women were comes under medium and high knowledge category respectively. After giving education, the trend of being high and medium was changed

slightly as depicted in Table 4. (Medium: 36.67 % to 40.00 % and high: 36.67 % to 43.33 %).

The possible reason for the kind of results might be due to the fact, majority of the farm women were having primary level education. Because of good education among farm women might have prompted the farm women to acquire more knowledge about food consumption practice. Therefore, every individual tried to acquire more knowledge about the health and nutritional practices to get healthy living.

According to attitude in Group I, equal per cent of farm women belonged to high and medium attitude category (30%) and remaining 40 per cent of farm women belonged to high attitude category. In Group II, higher per cent of farm women (50%) had medium attitude, followed by 33.33 per cent farm women in low attitude level and only 16.67 per cent in high attitude level before the intervention. There was a drastic change in the attitude of the farm women was observed after the intervention. The low level of attitude was reduced to 20 per cent; medium level was increased to 53.33 per cent and high level attitude was increased to 26.67 per cent. In Group III, higher percentage of farm women had low attitude level (40%), followed by 26.67 per cent farm women had medium attitude level and 33.33 per cent had high attitude before the intervention. This trend was changed after the intervention where low level of attitude was reduced to 16.67 per cent; medium level were increased to 30 per cent and high level attitude were increased to 53.33 per cent.

Younger age, household income, education level, being a caregiver, and nutrition knowledge were all significantly associated with a positive nutrition attitude. Similar results are observed by Choi et al. [5] where "nutrition attitude was influenced by household income and education level. Higher nutrition attitude score was observed for higher education level and higher monthly household income". According to Contento et al. [6] "people first acquire knowledge in nutrition which then changes their nutrition attitude; it is then that this change in attitude leads to dietary behavior change. Besides these influences, nutrition attitudes appear to be shaped by familial influences [7] as well as by life experiences, knowledge, and norms presented by the environment".

**Table 1. Overall knowledge of farm women regarding food consumption pattern**

<b>Knowledge categories</b>	<b>Frequency</b>	<b>Percentage</b>
Low (upto 3.89)	74	24.67
Medium (3.89-5.37)	137	45.67
High (above 5.38)	89	29.67
Total	300	100

**Table 2. Overall attitude of farm women regarding food consumption pattern**

<b>Attitude categories</b>	<b>Frequency</b>	<b>Percentage</b>
Low (upto 4.83)	94	31.33
Medium (4.83-6.11)	121	40.33
High (above 6.12)	85	28.33
Total	300	100

**Table 3. Overall practice of farm women regarding food consumption pattern**

<b>Practice categories</b>	<b>Frequency</b>	<b>Percentage</b>
Low (up to 3.90)	93	31.00
Medium (3.90-6.12)	111	37.00
High (above 6.13)	96	32.00
Total	300	100

**Table 4. Impact of nutrition education on food consumption pattern towards knowledge, attitude and practice**

Variable	Group I				$\chi^2$	Group II				$\chi^2$	Group III				$\chi^2$
	Pre		Post			Pre		Post			Pre		Post		
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
<b>Knowledge</b>															
Low	12	40.00	12	40.00	0.324 <sup>NS</sup>	08	26.67	05	16.67	0.234 <sup>NS</sup>	11	36.67	04	13.33	0.083*
Medium	12	40.00	12	40.00		11	36.67	12	40.00		10	33.33	15	50.00	
High	6	20.00	6	20.00		11	36.67	13	43.33		9	30.00	11	36.67	
<b>Attitude</b>															
Low	12	40.00	11	36.67	2.219 <sup>NS</sup>	10	33.33	6	20.00	0.010**	12	40.00	05	16.67	0.004**
Medium	09	30.00	10	33.33		15	50.00	16	53.33		08	26.67	09	30.00	
High	09	30.00	09	30.00		5	16.67	8	26.67		10	33.33	16	53.33	
<b>Practice</b>															
Low	13	43.33	12	40.00	0.451 <sup>NS</sup>	9	30.00	04	13.33	0.083*	07	23.33	03	10.00	0.011**
Medium	10	33.33	11	36.67		11	36.67	15	50.00		14	46.67	15	50.00	
High	07	23.33	07	23.33		10	33.33	11	36.67		09	30.00	12	40.00	

\*\* Significant at the 1 per cent level

\*Significant at the 5 per cent level

NS: Non-significant

With regard to food consumption practices, in group I, 43.33 per cent of farm women belonged to low practice category whereas, 33.33 per cent of farm women belonged to medium practice category and the remaining 23.33 per cent belonged to the high practice category. This was observed same after the intervention among Group I. Further in Group II, 36.67 and 33.33 per cent of the farm women were medium and high practice category respectively. After giving education, the trend of being in high and medium practice category was changed slightly as depicted in Table 4 (medium: 36.67 % to 50.00 % & high: 33.33 % to 36.67 %). In Group III, higher per cent of farm women (46.67%) had medium practice level, followed by 30 per cent farm women had high practice level and 23.33 per cent had low practice level before the intervention. This trend was changed after the intervention i.e., low level of practice was reduced to 10 per cent; medium level were increased to 50 per cent and high level practice were increased to 40%. The chi-square test results showed non-significant for Knowledge, attitude and practice of Group I and Group II (Knowledge-0.234<sup>NS</sup>), whereas significant for one per cent level was observed for the variables of Group III and Group II except Knowledge and practice of Group II.

The personal and socio-economic characteristics of the farm women revealed that most of the farm women in Group II and Group III were having primary level education (33.33 and 30% respectively). Because of good education of farm women, more knowledge about health and nutritional practices might prevailed. Further, majority of the farm women also consulted formal and informal sources of information which might have helped them to gain more knowledge on health and nutritional practices.

These findings are in line with the observation of Sudha Rani et al. [8] who reported that the knowledge levels among the women changed from 33.2 per cent to 69.3 per cent, attitude was changed from 28.6 to 64.8 per cent and practice level was changed from 30.2 to 62.9 per cent. Nutrition education is the pre-requisition for improving the nutritional status among all age groups.

Monga et al. [9] revealed that there was positive effect of nutrition counseling in group E (experimental) in terms of improvement in gain in scores and adoption of desirable eating pattern. It is suggested that there is great need of proper selection of foods in the daily dietaries which can

be imparted by educating the women by changing their attitudes regarding nutrition and health through nutrition counseling.

#### 4. CONCLUSION

The findings reinforce that imparting nutrition education Knowledge, Attitude and Practices on Nutri-Farms to Farm Women has a positive effect on knowledge level of the farm women. with lectures for imparting trainings could have resulted in significant improvement of knowledge. More messages should be formulated in simple language to increase awareness.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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## ANNEXURE

### 1. Knowledge, Attitude and food consumption practices

#### 1.1 Knowledge

Sl. No.	Knowledge	Yes	No
1.	Establishment of nutri-farms and consuming its products improves the health		
2.	Eating all food groups daily is essentially for a balanced diet.		
3.	Green leafy vegetables, dry fruits and nuts are rich source of iron		
4.	Vitamin-C, protein rich and iron rich food is necessary in our daily diet to combat anaemia.		
5.	Sprouting enhances the bioavailability of nutrients.		
6.	Yellow colour Fruits and vegetables are good for eyes.		
7.	Yellow fruits, Green leafy vegetables, Carrots foods are rich in Vitamin A.		
8.	Healthy eating is nothing but eating three meals in a day which consists of three basic food groups.		
9.	Vitamin C Rich foods (Oranges, Lemons, Green leafy vegetables) help the body to recover from illness		
10.	Iron rich foods (Liver, Beef, Green Leafy Vegetables, Beans) help to build/add blood in the body		

#### 1.2 Attitude

Sl. No.	Statement	Yes	No
1.	We eat food daily to be disease free and healthy		
2.	Our daily diet should be made of Cereal / Pulses / Vegetables / Fruits / Milk		
3.	Vegetables are to play protective function in the body		
4.	Cereals, fats and sugar are rich in energy		
5.	Citrus fruits are rich in Vitamin-C		
6.	Iron, folic acid, calcium nutrient requirement to be taken care during adolescence in girls		
7.	Skin allergy infections are more due to food		
8.	Difficulty in bowel movement / constipation is due to lack of fiber in food		
9.	Daily water requirement for the body 5-6 liter		
10.	Green leafy vegetables necessary for blood formation		



### 1.3 Practice

Sl. No.	Practice	Yes	No
1	Do you wash vegetables before cutting		
2	Do you get dewormed tablets once in six months or twice in a year		
3	Do you consume sufficient quantity of vegetables daily		
4	Do you use sprouted pulses regularly		
5	Do you cook vegetables with just sufficient water with lid covered on low flame		
6	Do you have the practice of drinking coffee/tea immediately after food		
7	Do you protect food from flies		
8	Do you cut vegetables into large size pieces and add in to boiling water.		
9	Do you cut your finger nails frequently		
10	Have your children ever been immunized by measles vaccine?		

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