



## Nutritional Enhancement of Rice Based diets in Gangavati and Raichur Taluks of Kalyana Karnataka Region

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**ABSTRACT:** Deficiency of micronutrients is rampant that too, specially, among the poor people all over the world, where daily intake of calories is limited mainly to a few staple cereals. Rice is a major staple food in Kalyan Karnataka region, it occupies nearly 50-60 percent of meal plate in majority of the families. This study was undertaken in Raichur and Gangavataluks of Kalyan Karnataka region, to create awareness about healthy diets including all the nutrients and to enhance the nutritive value of the daily diets of predominant rice users by conducting demonstrations and hands on training programmes. A total of 88 subjects were given two consecutive training programmes and thirteen method demonstrations were conducted to show the nutrient enrichment of rice- based diets. Pretest and posttest results revealed considerable improvement in the knowledge and practice of nutritional enhancement of rice based foods in the daily diet by incorporating pulses, whole grains, sprouts, milk and milk products, fermented foods.

**Keywords:** Diet, Meal, Nutrients, Micronutrients, Nutrition, Enrichment and Enhancement.

### INTRODUCTION

Deficiency of micronutrients is rampant that too, specially, among the poor people all over the world, where daily intake of calories is limited mainly to a few staple cereals. Rice is a staple food for majority of the world's population, but rice has very meager bioavailable micronutrients. Improvements of the plant-based diets are therefore critical and valuable to achieve the goal of healthy nourishment of a large portion of the population. Biofortification of the rice grain, genetic engineering etc., are striving to enhance micronutrient content of rice (Bhuller and Gruissem 2012). Whitepaper published by ICMR –NIN in 2023 states that anaemia is a major health concern in India among all age groups. NFHS 19-21 showed the prevalence of anaemia to the extent of 52-67 % across the ages (Hemalatha *et al.*, 2023). Another review study conducted in India points out that Malnutrition rate has decreased but anaemia prevalence is very high (Rohil *et al.*, 2021).

Creating awareness among people about enrichment of rice- based foods is a very natural and more effective way of addressing the nutritional problems and attaining the consumption of nutritionally rich diets. Rice is a major staple food in Kalyan Karnataka region, it occupies nearly 50-60 percent of meal plate in majority of the families. Kalyan Karnataka region was predominantly a millet eating belt which has gradually

turned into a rice eating region, due to increase in the rice production and there by its consumption.

Paddy is extensively grown in TB command area of Koppal and Raichur people are found to use rice as the major staple food in their daily diets. Long term usage of only rice leads to health problems such as diabetes, obesity and heart diseases. A study conducted in Korea about factors related to obesity supports this, as the specific diets, including white rice, sweets, high content of fats was attributed to obesity in the adults in Korea (Kim and Joung 2012). Whereas the risk of metabolic syndrome was found to be less when rice was consumed with beans or other multiple grains (Ahn *et al.*, 2013). Hence it was felt that the daily diets need to be enriched with other nutrients to combat the health problems. Therefore, the present study was undertaken to create awareness about healthy diets including all the nutrients and to enhance the nutritive value of the daily diets of predominant rice users by conducting demonstrations and hands on training programmes.

### MATERIAL AND METHODS

The 100 households were selected randomly in Gangavati and Raichur Taluks of Kalyana Karnataka region. Pretest was conducted by using a self developed questionnaire. After rejecting incomplete, vague answers and few dropouts, finally 88 respondents were selected. Two training programmes were conducted to enhance the nutritional knowledge and dietary practices of the

families. Thirteen method demonstrations were conducted to show the nutrient enrichment of rice-based diets. Subjects were asked to follow the instructions and dietary plan for one month after one month post test was conducted to know the knowledge and adoption of new practices.

## RESULTS AND DISCUSSION

It is clearly depicted by Table 1 that, due to nutrition education, training and method demonstrations, the nutritional knowledge of majority of the subjects was found to increase considerably. In the post test majority (88.63%) of the subjects had the knowledge of basic 3 food groups viz., Energy yielding foods, Body building foods and Protective foods. Addition of pulses, whole grains, sprouts, milk and milk products, fermented foods was consciously and effort fully practiced by this group

of subjects. There by enhancing nutrient content in the foods prepared at home. These results are in line with the studies conducted by Ahn *et al.* (2013) in Korea and Wada *et al.* (2022) in Japan. In the study conducted by Wada *et al.* (2022) found that rice consumption along with soy products and see weed was associated with lower risk of cardiovascular disease .

Knowledge of nutritional enrichment of different food items such as addition of pulses, sprouts, and green leafy vegetables along with rice, improved considerably, from 3.41% to 92.04% of the subjects.

Practice of incorporating different variety of foods in a given meal was found to improve significantly. Majority of the subjects (72.72%) of the subjects expressed that they have been consciously practicing these things in their daily diet.

**Table 1: Pretest and posttest about knowledge and practice of nutrient enrichment of Rice (n=88).**

Parameter	Pretest	Posttest	Remarks
Knowledge of basic 3 food groups	97.72 % of the respondents did not have knowledge	Only 11.36 % of the respondents did not have the knowledge Where as 88.63% had knowledge	Nutritional Knowledge had improved considerably
Knowledge of nutrient enrichment	Only 3.41 % had knowledge	92.04% had knowledge	Knowledge of nutritional enrichment of different food items improved Considerably
Practice	Unknowingly they were practicing few methods	72.72% reported that they have been consciously practicing nutrient enrichment of rice	Practice was found to improve considerably

**Table 2: Practices improved during study period.**

Sr. No.	Details	Frequency	Percentage
1.	Using variety of foods in daily diet	74	84.09
2.	Fermentation of rice to improve digestibility and palatability	61	69.31
3.	Increased frequency of using sprouted pulses to enhance nutrients likevit. C. in the diet.	63 (Once a week) 47 (Twice a week) 11 (Thrice a week)	74.01 (Once a week ) 53.40 (Twice a week } 12.50 (Thricea week )
4.	Increased frequency of using fruits in the daily diet	54	61.36%
5.	Increased frequency of using vegetables in the daily diet	57	64.77
6.	Cooking vegetables along with rice (Rice Bhatths)	43	48.86
7.	Mixing rice flour with other flours like Jowar Fox tail millet, pearl millet etc. (to make dishes like Thalipettu, idli, dose, Roti, Kadabu, biscuitsetc.)	47	53.40
8.	Overall improvement in the dietary habit	56	63.63

The data revealed on the rank order of the practices improved. Majority of the women expressed that their practice of using variety of foods in daily diet has been improved. Using variety of foods in daily diet occupied first place as expressed by majority (84.09 %) of the women (Table 2). These results are in line with the studies conducted by Ahn *et al.* (2013) in Korea and Wada *et al.* (2022) in Japan.

### Implications of the study

— A considerable level of nutrient enrichment was found to be practiced by women who underwent the training.

— Considerable change was found in the nutritional knowledge and dietary practices of the subjects in their day-to-day life.

— There was a significant improvement in their dietary habit in day-to-day life. They were found to make conscious choices of a variety of foods to incorporate in the diet after the training.

— This study helps the policy makers to incorporate nutrition education in the text books and adult education literature.

— This study clearly reveals that the people can be helped to make conscious food choices by educating the primary food providers *i.e.* the lady of the households.

## CONCLUSIONS

Training and method demonstrations were effective in creating awareness and enhancing knowledge of women in rural areas regarding nutritional enhancement of their predominantly rice- based diets. Their knowledge regarding preparation of nutritionally rich foods was found increase considerably. Overall improvement in the dietary habit was observed in 63.63 percent of subjects which is noteworthy.

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