

SPECIMEN FORMAT FOR THESES OF MONTH

Faculty : Home Science

Department : Food Science and Nutrition

Branch/ Area: : Community Nutrition

Sub Subject Heading: : -

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Title of the thesis : Prevalence of Micronutrient Deficiencies among Self Help Group Women and the Impact of Interventions

(i) In Roman Script -

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Centre/department/school in which research was conducted : Department of Food Science and Nutrition

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Abstract within 300 words:

Micronutrient deficiencies have huge impact on health of women and various strategies are being adopted to improve the condition. One thousand Self Help Group women aged between 30-40 years from 200 SHGs were selected from two Blocks of Coimbatore District, Tamil Nadu. Socio-economic status, dietary background and nutritional knowledge of all the women were assessed. Anthropometric measurements, clinical examination and biochemical estimation was carried out to identify the prevalence of micronutrient deficiencies. With the help of 24 hour dietary recall method the dietary intake of the women was found out. In order to correct the micronutrient deficiency and to improve the nutritional knowledge of the SHG women supplementation and nutrition education were planned. The effect of supplementation was evaluated by comparing the anthropometric, clinical and biochemical parameters and nutritional knowledge of the subjects before and after supplementation. Majority of the women belonged to lower socioeconomic status and their dietary practices were not satisfactory. The overall nutritional knowledge of the women on foods, nutrients and their importance in preventing deficiency diseases was found to be not satisfactory. The intake of micronutrient rich foods was found to be inadequate and the major micronutrients like vitamin A, iron and calcium was also found to be very less. Sixty five per cent of the SHG women were anaemic. About 8 per cent of the women had very low serum calcium levels of 7.0 to 8.0 mg/dl. Supplementation of the nutritious mixes to the selected SHG women with low serum calcium levels and anaemic women showed a significant increase in haemoglobin, serum iron, serum calcium levels ($P < 0.01$) and improved their overall health status. Nutrition education along with supplementation about nutrition, health, deficiency diseases and its consequences showed improvement in their knowledge, attitude and practice scores.

Objectives:

Baseline objectives

- ◆ To collect information on the general profile of selected SHG women
- ◆ To assess the health and nutritional status of the selected SHG women
- ◆ To determine the prevalence of micronutrient deficiencies among the SHG Women

Implementation objectives

- ◆ To formulate nutritious mixes using foods rich in micronutrients, conduct acceptability trials and analyse the nutrients and antinutritional factors and find out the shelf life and cost of the developed mixes.
- ◆ To supplement the developed mixes to the selected SHG women for a period of four months
- ◆ To plan and implement nutrition education

Evaluation objectives

- ◆ Evaluate the impact of supplementation of nutritious mixes and nutrition education among the selected SHG women.

Methodology:

One thousand Self Help Group women aged between 30-45 years from 200 SHGs were selected from two Blocks of Coimbatore District, Tamil Nadu. Socio-economic status, dietary background and nutritional knowledge of all the women were assessed. Anthropometric measurements such as height, weight, BMI and Waist Hip Ratio were measured using standardized procedures. They were clinically examined for signs of various nutritional deficiencies. Haemoglobin levels were also estimated for all women to identify the prevalence of anaemia. Based on the clinical symptoms revealed by the 1000 SHG women, 112 were screened for serum iron and 143 were screened for serum calcium levels. With the help of 24 hour recall method the information regarding the food intake of the selected women was collected for three days and this was used to calculate the mean intake per day. The raw equivalent weights of the foods consumed by the women were determined. From this, the intake of nutrients including micronutrients was computed using the Nutritive Value of Indian foods and compared with ICMR Recommended Dietary Allowances (2010) for women. Food and nutrient intake data revealed inadequate intake of micronutrient rich foods, hence in order to correct the micronutrient deficiency and to improve the nutritional knowledge of the SHG women supplementation and nutrition education were planned. Nutri mix I and II were developed using the low cost locally available foods and on analysis they were found to be rich in proximate principles, vitamins and

minerals and had anti-nutritional factors within safe limits. Acceptability scores were good and keeping quality was also good up to three months. The cost of the nutri mixes was also found to be cheap compared to commercial formulas. Supplementation of nutri mixes along with nutrition education was planned and implemented for a period of 4 months. The effect of supplementation was evaluated by comparing the anthropometric, clinical and biochemical parameters like haemoglobin, iron and serum calcium levels of the subjects before and after supplementation. The nutritional knowledge of the subjects was evaluated through KAP scores obtained before and after nutrition education. Statistical package for Social Sciences (SPSS) version 17.0 was used for data analysis.

Findings:

Majority of the women belonged to lower socioeconomic status and their dietary practices were not satisfactory. The overall nutritional knowledge of the women on foods, nutrients and their importance in preventing deficiency diseases was found to be not satisfactory. The intake of micronutrient rich foods was found to be inadequate and the major micronutrients like vitamin A, iron and calcium was also found to be very less. The mean haemoglobin levels of the selected SHG women was found to be 9.87g/dl which was lower than the standard values suggested by WHO. Sixty five per cent of the SHG women were anaemic. About 8 per cent of the women had very low serum calcium levels of 7.0 to 8.0 mg/dl.

Prevalence of clinical symptoms like dryness of skin, calf tenderness, mental confusion, restlessness, bleeding gums, general edema and white spots on nails, joint pain showed a reduction after the supplementation of nutritious mixes for four months among the selected SHG women.

The mean haemoglobin content of both control and experimental group was found to be 10.01 to 9.67 g/dl during the initial period. After four months supplementation of Araikeerai leaves powder incorporated nutri mix I along with nutrition education improved the haemoglobin content of the experimental group I to 11.12 g/dl and the difference was statistically significant at one per cent level. In both the groups the mean Packed Cell Volume was found to be lower than the reference value before the supplementation period, with a value of 31.20 per cent in experimental group and 30.64 per cent in control group. But due to supplementation the experimental group had recorded significant mean difference of 4.77 per cent. The Mean

Corpuscular Volume of experimental group before supplementation was 72.57 fl and it had increased to 84.25 fl after supplementation and it was statistically significant at one per cent level. The Mean Corpuscular Haemoglobin of the selected SHG women in both the groups was found to be less than the reference levels. Supplementation of the nutri mix I increased the MCH values of the experimental group from 22.31pg to 28.46 pg with a mean difference of 6.15pg. Prior to supplementation, the experimental and control groups had lower MCHC than reference values. But due to supplementation a maximum increment of 4.05 gm /dl was observed in experimental group. In control group the increment was found to be very minimal (0.04gm/dl). In both the groups the mean serum iron levels were found to be lower than the reference value before the supplementation period, with a value of 40.93 mcg/dl in experimental group and 41.77 mcg/dl in control group. Supplementation of the experimental group 1 with nutri mix I having Araikeerai leaves powder for a period of four months showed a considerable increase to 16.94 mcg/dl in experimental group and it was statistically significant at one per cent level. The mean serum ferritin levels of the experimental group before supplementation was found to be 4.01 ng/dl and it had increased to 4.72ng/dl after supplementation. In control group the initial and final serum ferritin was found to be 4.00ng/dl and 3.99ng/dl respectively. With regard to TIBC levels significant decrease was noticed in the experimental group with a mean difference of 31mcg/dl , whereas in control group there was an increase in the TIBC level with the mean increase of 8.04mcg/dl. Transferrin saturation of the experimental group was increased to 16.08 per cent, whereas in control group it was only 10.07 per cent. The serum calcium levels of the experimental group 2 with nutri mix II supplementation for a period of four months increased the mean serum calcium levels from 8.17 to 9.12 mg/dl and it was statistically significant at one per cent level.

Nutrition education given to the experimental groups showed a gain in KAP scores by 10.04, 7.65 and 8.97 with reference to knowledge, attitude and practice scores respectively . In the case of the control group, the gain in knowledge and practice score was negligible (0.38 and 0.13), whereas the loss in attitude score was found to be 0.1, which may be due to the absence of nutrition education to the control group. Imparting nutrition education helped to gain more scores in nutrition knowledge, attitude and practice and the findings proved to be a best strategy to increase awareness and improve nutritional status of populations.

Examiners

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