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Micronutrients Deficiences : Awareness among Mothers

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Abstract
Statement of Problem : "A Study To Evaluate The Effectiveness Of Structured Teaching Programme On Micronutrients Deficiencies of Under five Children Among Mothers In Selected Rural Areas, Bangalore"
Background and Objective: Micronutrients enables the body to produce enzymes, hormones and other substances. As tiny as the amounts are, however, the consequences of their deficiencies are severe. Awareness about this disease can lead to early detection and thereby decrease the morbidity and mortality. The objective of the study was to assess the knowledge of mothers on Micronutrient deficiencies of Under five children before structured teaching programme and thereafter to evaluate the effectiveness of teaching programme. **Materials and Methods** : In a Quazi experimental study, 80 mothers were interviewed regarding their awareness about occurrence of micronutrients deficiencies among under five children using self designed and validated questionnaire. A set of questions aiming to assess the levels of awareness of mothers regarding Micronutrients deficiencies (Iron deficiency Anemia, Childhood Blindness, Cretinism) Preventive aspects and Dietary allowances for under five children. Nutritional programmes supported by government. **Results:** This study presented demographic data about levels of awareness about disease that is increasing in under five population in India. The results showed that 68(85 percent) mothers had adequate knowledge and 12(15 percent) had moderately adequate knowledge**. Conclusion:** Micronutrients deficiencies awareness is low among underfive mothers in a rural areas of Bangalore. it is important to create public awareness and have wholehearted participation of the people and healthcare personal. In spite of many educational programmes targeting the vulnerable group of population such as mother and child, the health scenario of our country is far below from satisfactory.
Keywords : Micronutrients deficiencies, awareness, underfive children.

Introduction

India is the home to the largest child population in world. Children are regarded as the future hope of a nation and to nurture them and strive for their well being is essential. Micronutrients are the "magic wands" enhance the nutritional value of food and have a profound impact on a child's development[1]. UNICEF works with governments and a diverse group of public and private organizations to deliver essential micronutrients. Iodine, vitamin A and iron are most important in global public health terms; their lack represents a major threat to the health and development of populations the world over, particularly children in low-income countries[2].

Every day, more than 6,000 children below the age of five die in India. More than half of these deaths are caused by malnutrition mainly the lack of Vitamin A, iron, iodine, and folic acid. About 57% of preschoolers and their mothers have subclinical Vitamin A deficiency. Anemia prevalence among children under five years is 69% in a recently concluded national Study[3].

Iron deficiency is the most pervasive nutritional problem in the world. Between 4 and 5 billion people suffer from iron deficiency and an estimated 2 billion are anemic. Young children are most vulnerable. 40 to 50 per cent of children under five in developing countries are iron deficient; 2 million children may die unnecessarily each year because they lack vitamin A, Iron or other nutrients.[4]

Iodine is an essential trace element; the thyroid hormones thyroxine and triiodotyronine contain iodine. In areas where there is little iodine in the diet—typically remote inland areas where no marine foods are eaten—iodine deficiency cretinism, which results in developmental delays and other health problems. India is the most outstanding, with 500 million suffering from deficiency, two million from cretinism[5]

Vitamin A is likewise necessary for the Human eye. It protects us from xerophthalmia or severe dry condition of the Human Eye. Vitamin A deficiency (VAD) is the leading cause of preventable blindness in children and increases the risk of disease and death from severe infections. According to the World Health Organization, an estimated 1.4 million children are needlessly blind. Three quarters of those children live in the poorest regions of Africa and Asia. Each year almost half a million children go blind — approximately one child every minute[5].

Worldwide, the three most common forms of Micronutrient deficiency are Iron, Vitamin A and Iodine deficiency. Together, these affect at least one third of the world's population, the majority of who are in developing countries. Of the three, iron deficiency is the most prevalent. It is estimated that just over 2 billion people are anemic, just under 2 billion have inadequate iodine nutrition and 254 million preschool-aged children are vitamin A deficient[4].

OBJECTIVES OF STUDY

1. To assess the awareness of Micronutrients deficiencies of Under five children within mothers before structured teaching programme and to evaluate effectiveness of teaching programme on Micronutrient deficiencies and to identify the association between the knowledge level of mothers and selected demographic variables.

Study Hypothesis

$\mathbf{H_1}$ - Knowledge level of mothers will be increased after Structured teaching programme on Micronutrient deficiencies than before Structured teaching programme.

$\mathbf{H_0}$ -There will be significant association between knowledge score of mothers regarding the Micronutrients deficiencies and selected demographic variables.

Materials and Methods

This quantitative study adopted an evaluative approach to identify the effectiveness of structured teaching programme on knowledge regarding micronutrients deficiencies and the design used was quasi experimental pretest-post test group design. The study population was 80 mothers of under five children who resides in hesaraghatta Rural Area**,** Bangalore. The study was conducted from October 2010 to November 2010.

Inclusion criteria for the study was :

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- Mothers who are willing to participate
- Mothers who are available at time of data collection.
- Mothers who are able to understand Kannada or English.

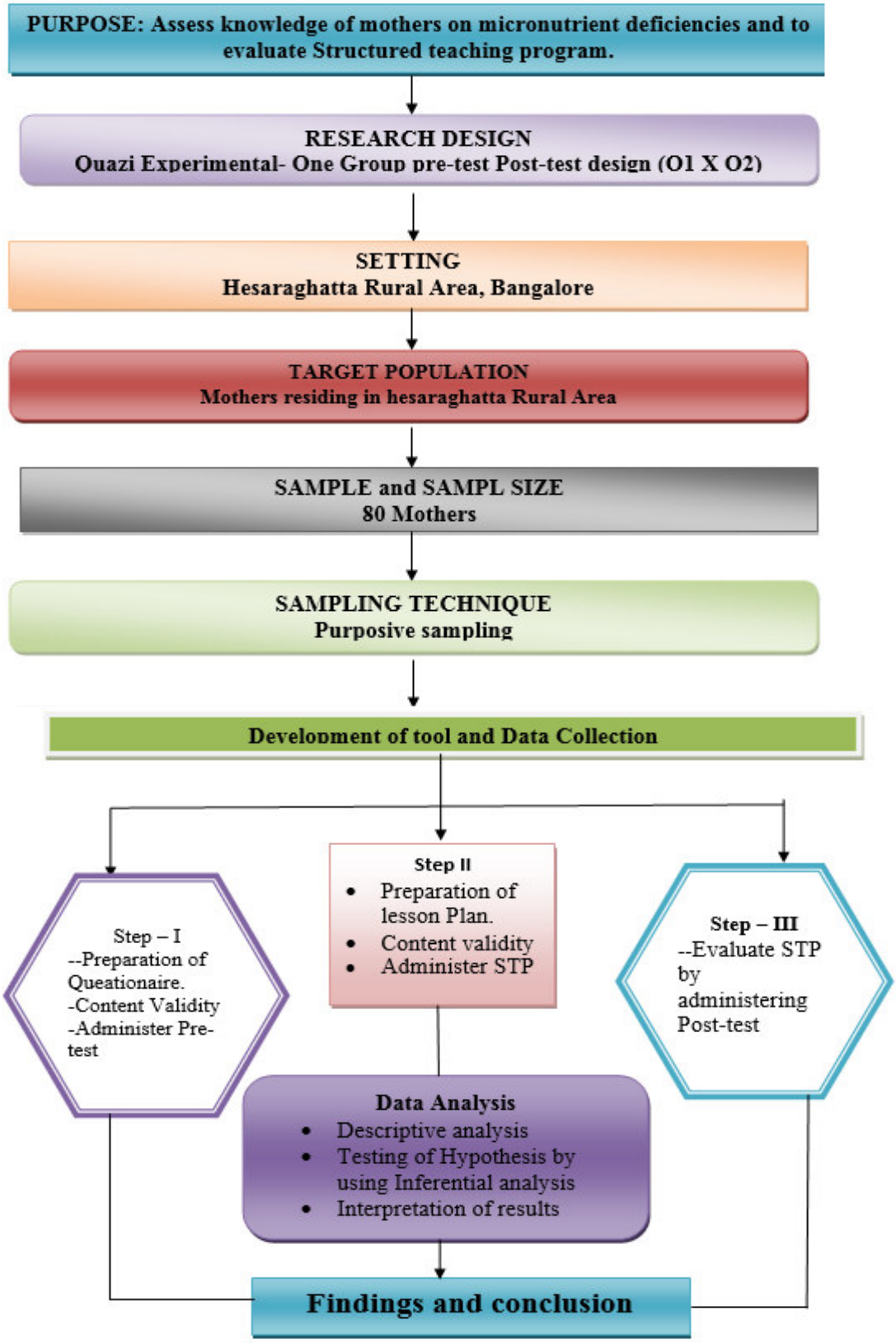
Exclusion criteria

- Mothers who are dieticians
- Mothers who are unable to hear .

Confidentiality was maintained during data collection. It was a Quazi experimental study in which participants were selected randomly. A total of 80 mothers were explained the purpose of the study as per the ethical guidelines of Helsinki. Ethics committee of the hospital granted a clearance to perform the study after thorough review of the synopsis. The people who agreed to participate in the study were requested to answer a self-designed questionnaire after assuring them of confidentiality.

Ethical issues : Purpose of the study was explained to all the participants and a written informed consent was obtained from them. The study protocol was accepted and passed through the ethics committee of Sarvodaya Hospital, Bangalore, India.

The schematic representation of the study is given in Figure 1



Statistical analysis

The data were analyzed using both Descriptive and inferential using Statistical package for Social Science version 16 (SPSS 16).

1. Descriptive statistics: Frequency and percentage distribution, mean and standard deviation were used to describe the sample characteristics.

2. Inferential statistics: Mann Whitney U test and paired t test was used to test the effectiveness of intervention between and within the group respectively.

Procedure

The study was carried out by administering Tool 1,It contains ten items for obtaining information's regarding Age of the mother, Education, Occupation, Income, Type of family, Number of children, Religion, Sources of information, Child's age and gender regarding Micronutrients. and Tool 2, which dealt with questionnaires (40 items). It had 4 responses, the respondents were requested to select the best possible option by encircling the correct answer. The minimum score was 1 and maximum score was 40. Knowledge score was arbitrarily classified as Inadequate Knowledge: 0 – 20 Moderately Knowledge: 21-30, Adequate Knowledge: 31- 40. The tool was validated by seven experts, translated in kannada and pretested among five mothers residing in a village. Firstly pretest was conducted; the health teaching by the researcher was given to selected mothers. The post- test knowledge was assessed over a period of 7-9 days after the intervention.

Results

In this study, majority of the samples, 31(38.75 percent) mothers were between 19-23 years of age, 26(32.5 percent) mothers were between 24-28 years of age and 23(28.75 percent) mothers were between 29-33 years of age respectively Higher proportions of mothers 59(73.75 percent) were residing in nuclear family and 21 (26.25 percent) mothers in a joint family. Among 80 samples 63 (78.75 percent) mothers belong to Hindu religion, 9(11.25 percent) mothers belong to Christian religion and 8(10 percent) belong to Muslim religion. In the educational status 32(40 percent) mothers were having higher secondary qualification, 22 (27.5 percent) mothers have primary education and 10 (12.5 percent) mothers are graduates, 9 (11.25 percent) mothers have high school and 7 (8.75 percent) mothers have Diploma qualification. Higher proportions of 46 (57.5 percent) mothers are housewife, 23(28.75 percent) mothers are in private job and 11 (13.75 percent) have government job. that 60(75 percent) mothers have family income of ≤ 5000 and 20(25 percent) mothers have income of > 5000 respectively. Out of 80 mothers, 51 (63.75 percent) have two children, 19(23.75 percent) have 1 children and 10(12.5 percent) have 3 children respectively. Higher majority of mothers 55(68.75 percent) use electronic media (TV/Radio) as source of information and 25 (31.25 percent) use Newspaper as source of information. Majority of mothers 44 (55 percent) have children with age group of 1-5 years of age and 36 (45 percent) with age group of less than one year of age and 43(53.75 percent) have male child and 37 (46.25 percent) have female child.

In this study pre-test knowledge scores of mothers and post-test knowledge scores of mothers were assessed on micronutrient deficiencies(Figure 1 and 2)

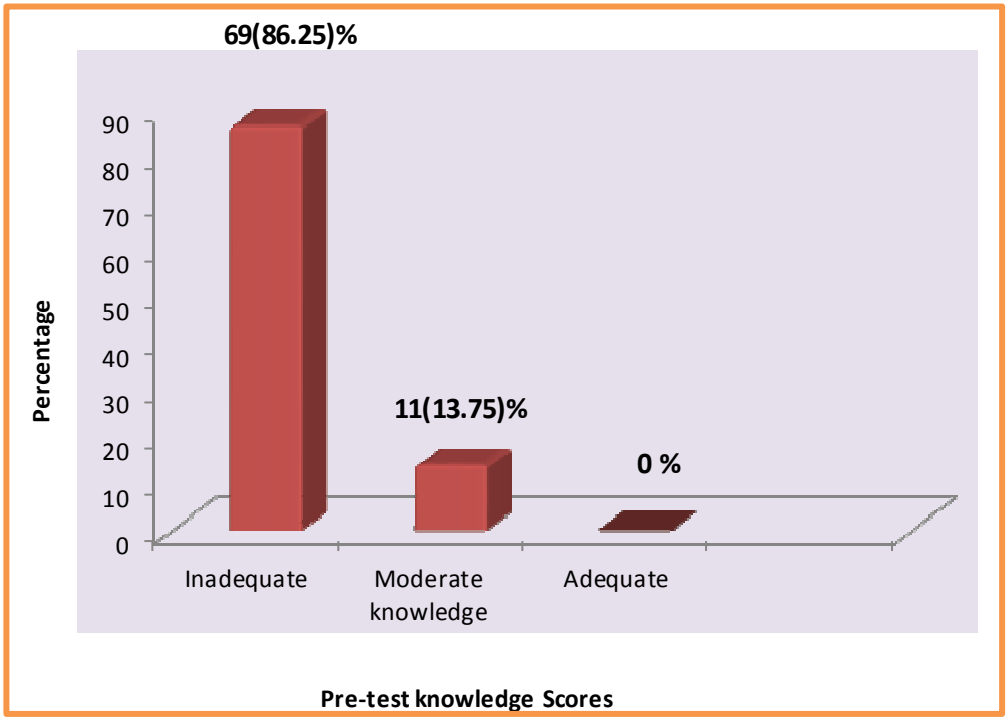


Figure 1: Bar diagram showing the pre-test knowledge scores of mothers

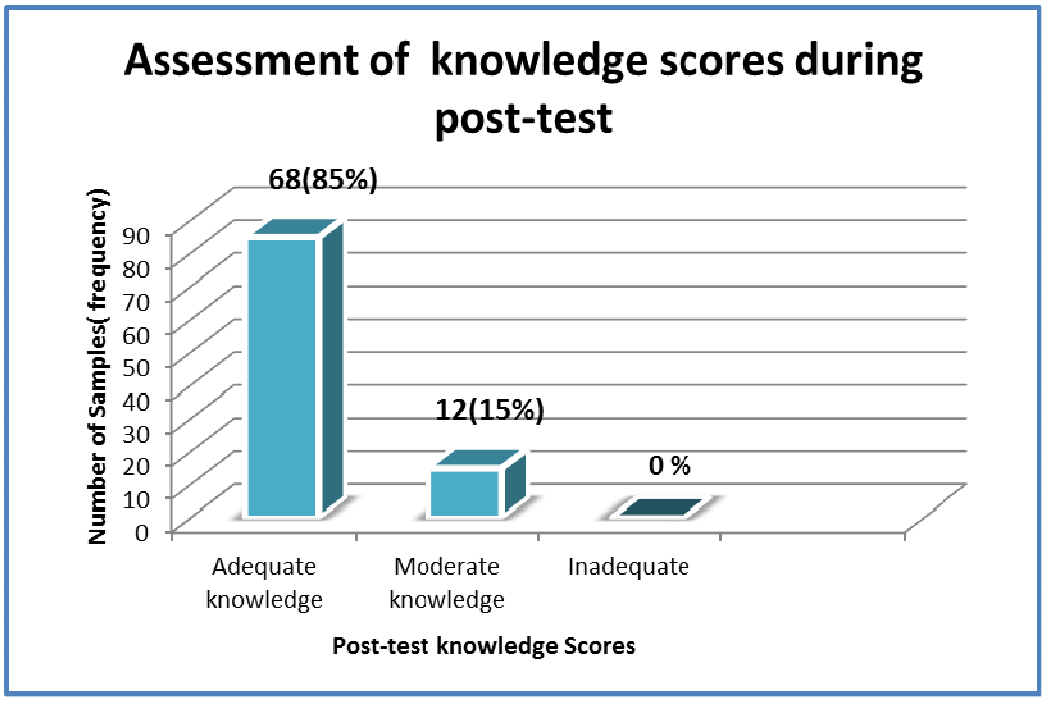


Figure 2 Bar diagram showing the post-test knowledge scores of mothers

N=80

Aspect wise analysis of knowledge score	PRE-TEST				POST-TEST			
	Inadequate		Moderately Adequate		Moderately Adequate		Adequate	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Knowledge of Nutrients	79	98.75	1	1.25	17	21.25	63	78.75
Iron Deficiency Anemia	68	85.00	12	15.00	12	15.00	68	85.00
Childhood Blindness	68	85.00	12	15.00	12	15.00	68	85.00
Cretinism	68	85.00	12	15.00	12	15.00	68	85.00
Combined score	69	86.25	11	13.75	12	15.00	68	85.00

Table : 1 Aspect wise pre-test and post-test knowledge level on Micronutrients Deficiencies

The data presented in the table: 1 reveals aspect wise pre-test and post-test knowledge level on Micronutrients Deficiencies.

The highest pre-test mean percentage score in aspect of childhood Blindness was 30.80 and SD was 1.63.The lowest pre-test mean percentage score in the aspect of knowledge of nutrients was 24.03 and SD was 1.06. The highest post-test mean percentage score in the aspect of Iron deficiency anemia was 82.16 and SD 0.70. The lowest post-test mean percentage score in the aspect of Knowledge of Nutrients was 67.78 and SD was 0.69. The effectiveness of structured teaching programme in terms of gain knowledge is presented in Table: 2 .

N=80

Knowledge assessment	Mean	Difference of mean	SD	df	Paired "t" valve	P value
Pre-test	**12.00**	**20.15**	**5.24**	**79**	**15.57**	**<0.001**
Post-test	**32.15**		**2.17**			

The 't' value was computed to determine the effectiveness of structured teaching programme on Knowledge. The stated hypothesis is :

H1: The knowledge level of mothers is increased after structured teaching programme on Micronutrient deficiencies than before structured teaching programme.

Data in table 2 illustrated that the mean post-test knowledge score (32.15) was higher than mean pre-test knowledge scores (12.00). The mean difference between pre-test and post-test score (20.15) of knowledge is significant at 0.001 level, as 't' =15.57(P<0.001). Hence the research hypothesis H1 was accepted. The difference of means observed is a true difference. Hence it can be concluded that structured teaching programme has an influence in improving the knowledge of mothers on Micronutrient deficiencies.

In this study that there is significant association between pre-test knowledge score and demographic

variable like child's gender (Chi-square = 7.557, df – 1,p = 0.006),but there was no significant association between the pre-test knowledge and any other demographic variables like income of family, number of children, source of information, and child's age

Discussion

Micronutrients have assumed great public health importance. Over 2 billion people, a third of earth's inhabitants, are affected by deficiencies of iron, vitamin A or iodine. One of the main outcomes of this process is greatly improved knowledge of human micronutrient requirements, which is a crucial step to understand.[5] In this study 80 mothers of underfive children were selected from Hesaraghatta rural area, Bangalore. The pre-test, knowledge scores of mothers on micronutrient deficiencies, 69(86.25 percent) mothers had Inadequate knowledge and 11(13.75 percent) had moderately adequate knowledge, and post-test knowledge scores were 68(85 percent) mothers had Adequate knowledge and 12(15 percent) had moderately adequate knowledge. Mean of knowledge score of pre-test mean (M= 12.00, SD=5.24) is much less than the post-test mean (M=32.15,SD=2.17) the improvement is noted after the intervention. Majority of mothers had adequate knowledge score.

An Article highlights "The impact of maternal knowledge and practice on the nutritional status of infants" 133 mothers of infants were interviewed to determine whether maternal knowledge and practice were associated with the nutritional status of the infants. 28 children were considered to be well nourished, while the remaining 95 children were determined to be in various degrees of malnutrition and iron deficiency anemia. Mothers whose infants were well nourished had a higher level of breast feeding knowledge than did those whose infants were moderate to severely malnourished The only mothers who had an excellent score for infant weaning awareness were 3 mothers whose infants had an excellent nutritional status.These findings show a decreasing trend between awareness and practice of Nutritional diet infant weaning, suggesting that further improvement of health education is needed to reduce iron deficiency and malnutrition for the success of any programme[7].

The healthcare delivery system at present is giving more emphasis on preventive aspects and health promotion. The study also implies that health personnel have to be trained well on how to teach the mothers regarding Micronutrients deficiencies. Awareness on nutrients can bring drastic changes, by improving wellbeing children.

Structured teaching program is an effective teaching strategy and should be encouraged. The pretest STP was prepared with the aim of improving knowledge of mothers on Micronutrient deficiencies among under five children. The mean percentage of post-test knowledge score 32.15(80.38 %) was apparently higher than its mean percentage of pre-test knowledge score 12.00(30%), suggesting that STP was effective in Increasing knowledge scores on Micronutrient deficiencies among mothers. The compared't' value 15.57(P<0.001) showed that there was significant difference between the pre-test and post-test mean knowledge scores (t_{79} =15.57,p=<0.001) hence Hypothesis H1 was accepted.

Conclusion

According to UNICEF current micronutrient status (2004) there is 75% estimated prevalence of Iodine Deficiency in children under five years of age. Estimated annual no of child's death.57% of estimated Vitamin A deficiency in children with under five year of age.[11] To establish criteria for defining the degree of public health severity of micronutrient malnutrition, and to develop prevention and control strategies. This study findings revealed that structured teaching programme was successful in improving the knowledge of mothers so that they can practice to provide balanced diet to their children which will be helpful in reducing the incidence of childhood mortality and morbidity rate.

Implications

The nursing curriculum should consist of knowledge related to micronutrients deficiencies, health personnel have to be trained well on how to teach the mothers using different methods of teaching. Nursing students should be taught to consider health education as a way of life and practice it in their day to day activities. The nurse administrator should create awareness among mothers in order to prevent diseases and to improve their knowledge on Micronutrient deficiencies, Treatment of those disease, Prevention of deficiencies through Balanced diet, Immunization and hygienic Habits etc. The investigator felt the need for nursing research in area of cretinism to improve knowledge of students, nurses and other medical professional and public. . A nurse administrator has to take steps for provision of information on Maintenance of normal Nutritional status and Health promotion measures like assessment of anthropometric measurements, encouragement to practice kitchen garden and poultry etc.

RECOMMENDATIONS

Awareness on micronutrients can be undertaken with a large sample size for the wider population, comparative

study can be done selecting two different rural area, similar study may be designed to explore the attitude and practice of the mothers regarding prevention of micronutrient deficiencies. Knowledge can be enhanced means of conducting seminars, workshop, surveys and camps. From research point of view, publishing various articles in health magazines, newspaper, and journals regarding micronutrients deficiencies.

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