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EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM ON KNOWLEDGE REGARDING RAINBOW NUTRITION EDUCATION INTERVENTION AMONG MOTHERS OF UNDERFIVE CHILDREN IN SELECTED RURAL AREAS: A QUASI-EXPERIMENTAL STUDY.

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ABSTRACT

Introduction: Mothers are the guardian of the children's future and children's are future of society," Foremost, health, safety and nutrition for the young child is written on behalf of young children everywhere. By using a rainbow as a guide, you can ensure that children benefit from a wide range of vitamins and minerals. No single fruit or vegetable provides all the nutrients that kids need. By breaking produce down into colour groups of red, orange, yellow, green and purples you can make eating fruits and vegetables fun and easy for kids! Even at a very young age, kids can easily grasp the concept of eating a rainbow.

Methodology: A quasi-experimental one group pretest post-test design was used. A total of 70 mothers of under five children were selected through non probability purposive sampling technique from the selected rural areas. Data were collected using semi-structured questionnaire and self-administered questionnaire to assess knowledge regarding rainbow nutrition education intervention. The structured teaching program on rainbow nutrition education intervention was conducted followed by post-test after seven days.

Results: Mean knowledge score in pre-test was 8.98± 2.54 and mean percentage of knowledge score in pre-test was 29.95%. After the structure teaching program, mean knowledge score in post-test was 19.50±3.74 and mean percentage of knowledge score in post-test was 65% and the mean difference was 10.51±3.59. The tabulated value was 1.98. The calculated 't' value i.e. 24.47 which is much higher than the tabulated value.

Conclusion: The study concluded that the posttest knowledge score was improved after implementation of structured teaching program. Structured teaching program plays important role in improving the knowledge of mothers of under-five children's.

Keywords: Rainbow nutrition education, structured teaching program, knowledge, mothers of under five children.

INTRODUCTION

Children are the most important assets to any country; their physical, mental, and emotional developments are crucial for future as they become citizens. Good nutrition of the under-five children is the foundation of their future health, strength, and intelligence. Nutrition is the study of nutrients in food, how the body uses them, and the relationship between diet, health, and disease.[1]

Mothers are the guardian of the children's future and children's are future of society. Adequate nutrition in the early phase of a child's life has a significant importance, as during the first five years of life growth and development happens to be at its peak. The nutritional status of children is one of the known indicators for the economic development of a country[2].

Having the nutritional knowledge and making smart choices about the food ithelps to make us healthy. Insufficient nutrition can result inmalnutrition, delayed growth, diminished capacity forlabour and poor mental and social development. Rainbow consists of seven colours; food items provide the whole range of colours. Eating the rainbow chart, then, guarantees that the body receives adequate nutrition for allsystems and general well-being.[3]

BACKGROUND OF THE STUDY

Nutritional problems broadly fall into two categories, i.e. those resulting from insufficient intake relative tonutritional needs and those resulting from excessive and unbalanced intake of food or a particular dietary component.[4]

The Rainbow Project is a community-based nutrition program in that focuses on the treatment and prevention ofchild malnutrition. The program includes supplementary feeding programs that provide balanced and diverse diets to under-five malnourished children.[5]

Cited study showed only 21.43% of mothers had high nutritional knowledge, 58.93% average, and 19.64% poor. Children of poorly informed mothers had higher rates of wasting, stunting, and underweight. Most mothers relied on family for nutrition information. The study concludes maternal knowledge strongly impacts child nutrition, stressing community involvement to combat malnutrition.[6]

NEED OF THE STUDY

The improvement of the health of under-five children's and the settings in which they learn also appears to enrich and improve educational outcomes. According to the December 2022 report, the monthly progress report on malnutrition in the three most- malnourished districts of Maharashtra said a total of 9850 children were extremely malnourished and 62151 were mildly malnourished in May 2022.The prevalence of malnutrition (low weight for height) among children in Maharashtra is 25.6%highest among all states in the country. Anemia rate in women is 54%," said the document.[7]

Study assessed that, mothers' knowledge of child nutrition (under five) in urban and rural PHCs. Data were collected through questionnaires and interviews. Results showed 54.3% of mothers had moderate knowledge, while 43.9% had good knowledge. No significant association was found between demographics and knowledge scores, except for age group, house type, and parents' education.[8]

Structured teaching program is an effective tool to upgrade the knowledge of mothers. Hence, investigator plan to administer structured teaching program to enhance knowledge of the mothers of under five children regarding Rainbow nutrition education intervention.

AIM OF THE STUDY

The aim of the study is to assess the impact of a structured teaching program on improving knowledge among mothers of under-five children about the components and importance of the Rainbow Nutrition Education Intervention, which promotes balanced and diverse dietary practices, in selected rural areas.

METHODOLOGY:

Objectives Of the Study:

Primary Objectives –

To assess the effectiveness of structured teaching program on knowledge regarding Rainbow Nutrition education intervention among mothers of under five children in selected rural areas.

Secondary Objectives-

1. To assess the Pre-test knowledge regarding rainbow nutrition education intervention among mothers of under-five children in selected rural areas.
2. To assess the Post-test knowledge regarding rainbow nutrition education intervention among mothers of under-five children in selected rural areas.
3. To evaluate the effectiveness of structure teaching on knowledge regarding rainbow nutrition education intervention among mothers of under-five children
4. To associate post-test knowledge score with selected demographic variables.

Hypothesis

Will be tested at 0.05 level of significance

H0 - There will be no significant difference between pre- test and post-test knowledge score regarding rainbow nutrition education intervention program among the mothers of under five children.

H1- There will be significant difference between pre-test and post-test knowledge score regarding rainbow nutrition education intervention program among the mothers of under five children.

Research approach

This study adopts a quantitative research approach to assess the effectiveness of a structured teaching program on mothers' knowledge regarding the Rainbow Nutrition Education Intervention**.**

Research design

The research design selected for the present study was Quasi-experimental One group pre-test post-test design.

Setting of the study

The present study was conducted in rural area after obtaining permission from concerned authority.

Variables

- **Independent variables:** The independent variable in this study is structured teaching program.
- **Dependent variables:** The dependent variable in this study is Knowledge regarding Rainbow Nutrition Education Intervention.

Population

- **Target population:** In this study the target population include Mothers of under five children in selected rural area.
- **Accessible population:** The accessible population selected for Mothers of under five children at selected rural area and who are available at the time of data collection.

Sampling technique

In the present study non probability purposive sampling technique is used.

Sample size

In this study, the sample size was 70 mothers of under five children.

Validity and reliability

The tool was validated by 19 experts, includes14 Community health nursing experts,2 Community medicine doctors,2 statisticians. The correlation coefficient 'r' of the tool was 0.9616, which is more than 0.8 and hence the tool was found to be reliable.

Pilot study

A sample of 10% mothers of under five children was selected from selected rural areas. The pilot study was feasible in terms of man, money and resources.

Description of tool

Section A-Questionnaire on demographic Variable.

It includes total 08 demographic variables like Age, Education, Occupation, Religion, Monthly Income, order of child birth in family, information about Rainbow nutrition education and Source of information.

Section B- Self- administered Questionnaires

The questionnaire consisted of 30 questions on knowledge about Rainbow nutrition education intervention. Total score was 30. Each question carries 1 mark and a zero for the wrong answer.

Ethical aspect

The title was approved by institutional ethical committee. Permission was obtained by the concerned authorities before conducting the study. Consent letter was obtained by individual samples after explaining them the research process in their own language. Confidentiality was maintained by using code numbers by the investigator.

RESULTS

Frequency and Percentage wise distribution of Mothers of under five children according to their demographic characteristics.

- **Age:** The distribution of mothers according to age revealed that 31.4% were between 19–24 years, 38.6% between 25–30 years, 24.3% between 31–36 years, and 5.7% were above 37 years of age.
- **Educational Qualification:** Regarding educational status, 10% of the mothers had completed primary education, 22.9% had secondary education, 47.1% had attained higher secondary education, and 20% were graduates.
- **Occupation:** In terms of occupation, the majority (70%) of mothers were homemakers, 18.6% were self-employed, 7.1% were employed in the private sector, and 4.3% were government employees.
- **Religion:** The religious background showed that 67.1% of the mothers were Hindus, 30% were Buddhists, and 2.9% were Christians.
- **Monthly Family Income:** The monthly family income of the participants indicated that 12.9% had an income below ₹10,000, 51.4% earned between ₹10,001–₹15,000, 15.7% between ₹15,001–₹20,000, and 20% had an income above ₹20,000.
- **Birth Order of Child:** With regard to the birth order of the child, 57.1% of mothers had their first child, 32.9% had their second child, and 10% had third or higher-order births.
- **Knowledge on Rainbow Nutrition Education:** It was observed that only 15.7% of mothers had prior knowledge about the Rainbow Nutrition Education Intervention, while 84.3% lacked awareness.
- **Source of Knowledge:** Among those who had knowledge, 54.5% reported mass media as their source, while 45.5% cited health workers.

Table 1: Table showing Existing level of knowledge score regarding rainbow nutrition education intervention among mothers of under five children.

n=70

Level of knowledge score	**Score Range**	**Pre -test**		**Mean score**	**S D**	**Mean Percentage (%)**
		Frequency	Percentage			
Poor	0-6	9	12.86			
Average	7-12	55	78.57			
Good	13-18	5	7.14	8.98	2.54	29.95
Very Good	19-24	1	1.43			
Excellent	25-30	0	0			

The table 1 shows the 12.86% of the mothers of under five children had poor level of knowledge score, 78.57% had average, 7.14% had good and 1.43% of mothers had very good level of knowledge score and Mean knowledge score in pretest was 8.98 with a mean percentage score of 29.95%.

Table 2: Table showing post-test knowledge score regarding rainbow nutrition education intervention among mothers of under five children

n=70

Level of post-test knowledge	**Score Range**	**Post Test**		**Mean Sore**	**S D**	**Mean percentage (%)**
		Frequency	Percentage			
Poor	0-6	0	0			
Average	7-12	5	7.14			
Good	13-18	20	28.57	19.50	3.74	65
Very Good	19-24	39	55.71			
Excellent	25-30	6	8.57			

The table 2 shows that 7.14% of the mothers of under five children had average level of knowledge score, 28.57% had good, 55.71% had very good and 8.57% of them had excellent level of knowledge score and the mean score for the post test was 19.50 with a percentage score of 65%.

Table 3: Table showing Significance of difference between knowledge score in Pre-test and post- test of mothers of under five children regarding rainbow nutrition education intervention

n=70

Level of knowledge	Mean	SD	Mean Difference	t-value	Table value	df	p-value	Level of significance
Pre-Test	8.98	2.54	10.51±3.59	24.47	1.98	69	0.0001	S,p<0.05
Post Test	19.50	3.74						

The table 3 shows the comparison of pretest and post-test knowledge score among mothers of under five children regarding rainbow nutrition education intervention. The mean difference was 10.51±3.59. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=70-1 i.e. 69 degrees of freedom was 1.98. The calculated 't' value i.e. 24.47 which is much higher than the tabulated value at 5% level of significance for overall knowledge score of mothers of under five children which is statistically acceptable level of significance. Thus, the H_1 is accepted.

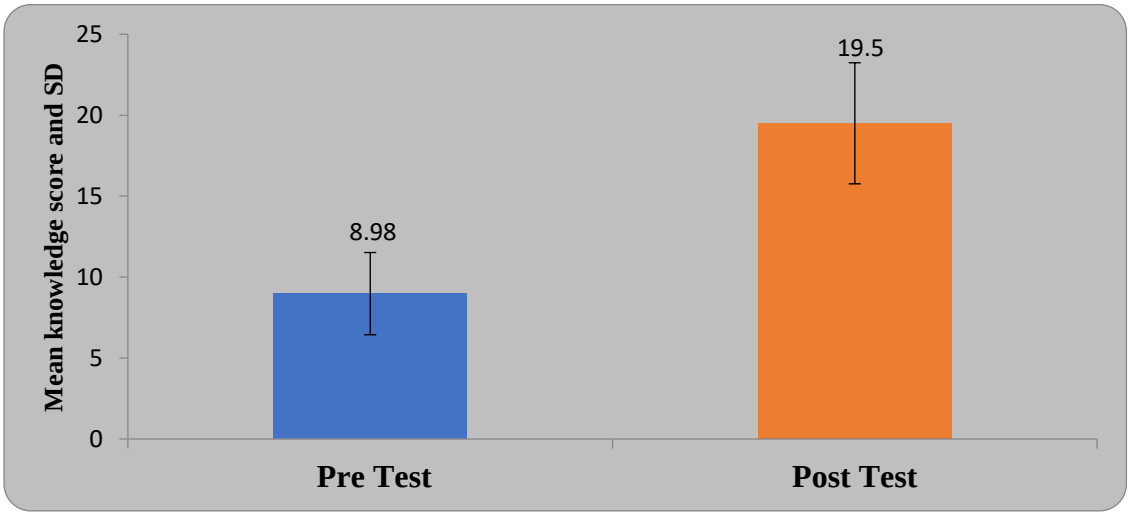

Fig. 1: Bar diagram showing Significance of difference between knowledge score in pre-test and post-test regarding Rainbow Nutrition Education Intervention among mothers of under five children in selected rural area.

Knowledge level of pretest and post-test

Table 4: Association of Post Test Knowledge Score among mothers of under five children in relation to Demographic Variables

n=70

Demographic Variable	F-value	df	Tabulated Value	p-value	t-value	df	Tabulated Value	p-value
Age in years	**16.99**	**3,66**	**2.68**	**0.0001,S**				
Educational Status	**5.47**	**3,66**	**2.68**	**0.002,S**				
Occupation	1.08	3,66	2.68	0.36**,NS**				
Religion	0.47	2,67	3.07	0.62**,NS**				
Family Income(Rs)	**9.18**	**3,66**	**2.68**	**0.0001,S**				
Order of child	1.06	2,67	3.07	0.35**,NS**				
Knowledge about rainbow nutrition education intervention					1.73	68	1.98	0.088**,NS**
Source of knowledge about rainbow nutrition education intervention					0.38	9	2.26	0.70**,NS**

S- Significance **NS- Not Significance**

This table 4 shows the association between mothers of under five children post-test knowledge scores on Rainbow nutrition education intervention with various demographic factors. Statistically significant associations were found with age (F=19.99, p=0.0001), educational status (F=5.47, p=0.002), and family income (F=9.18, p=0.0001), as their calculated F-values exceeded the tabulated F-values and p-values were below 0.05. However, occupation (F=1.08, p=0.36), religion (F=0.47, p=0.62), order of child (F=1.06, p=0.35), knowledge about rainbow nutrition education intervention (t=1.73,p=0.088) and source of knowledge(t=0.38,p=0.70) showed no significant association, as both their F-values and t values were lower and p-values were above the 0.05 threshold.

DISCUSSION

Jose NAD (2013) conducted a quasi-experimental study to assess the effectiveness of a structured teaching program on mothers' knowledge regarding the promotion of healthy behaviours in preschool children. The study included 60 mothers, divided equally into experimental and control groups (30 each), selected using non-probability convenience sampling. Data were collected through a semi-structured interview schedule covering demographic details and nutritional knowledge. A one-group pre-test and post-test design was used to evaluate the impact of the intervention.

Pre-test results revealed no significant difference between the groups (t = 0.60), indicating a comparable baseline. However, post-test findings showed a statistically significant improvement in the experimental group's knowledge scores (t = 16.29, p < 0.001). The

experimental group demonstrated a 37.9% increase in knowledge compared to just 2.7% in the control group. These results confirmed the research hypothesis (H_1), with significance established at the 0.005 level, affirming the effectiveness of the structured teaching program. The study underscores the value of educational interventions in enhancing parental knowledge, particularly among mothers, about child nutrition and health. Such programs can play a pivotal role in promoting healthy behaviours in early childhood, ultimately contributing to improved long-term health outcomes for children.[9]
The present study assessed the effectiveness of a structured teaching program on Rainbow Nutrition Education among mothers of under-five children in selected rural areas using a quasi-experimental design. A total of 70 participants were selected through non-probability purposive sampling. Post-test results showed significant improvement in knowledge levels, with the mean score increasing from 8.98 (SD=2.54) to 19.50 (SD=3.74). The calculated 't' value of 24.47 exceeded the tabulated value of 1.98 at 5% significance, confirming the effectiveness of the intervention. The findings indicate that the teaching program was effective, appropriate, and feasible in enhancing mothers' knowledge about Rainbow nutrition.

CONCLUSION

The study concludes that, different aspects of the study in terms of analysis and interpretation are discussed. The assessment of level of pre-test knowledge regarding rainbow nutrition education intervention among mothers of under five children 12.86% of the mothers of under five children had poor level of knowledge score, 78.57% had average, 7.14% had good and 1.43% of them had very good level of knowledge score and the assessment of level of post-test knowledge 7.14%% of the mothers of under five children had average level of knowledge score, 28.57% had good, 55.71% had very good and 8.57% of them had excellent level of knowledge score. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=70-1 i.e. 69 degrees of freedom was 1.98. The calculated 't' value i.e. 24.47 are much higher than the tabulated value at 5% level of significance for overall knowledge score of mothers of under five children which is statistically acceptable level of significance. Hence it is statistically interpreted that the Structured Teaching Program on knowledge regarding Rainbow Nutrition Education Intervention among mothers of under five children from selected area was effective. Thus, the H_1 is accepted. Additionally, it is interpreted that demographic variable is statistically associated with age, educational status and family income.

IMPLICATION OF THE STUDY

The findings of this study have implications for Nursing Practice, Nursing Education, Nursing Administration and Nursing Research.

RECOMMENDATION

- A similar study can be replicated on a larger population for the generalization of the findings
- A Study may be conducted to evaluate the effectiveness of, planned teaching programme on knowledge regarding rainbow nutrition education intervention among mothers of under five children in selected rural area.
- A comparative study can be done to assess the knowledge regarding rainbow nutrition education intervention among mothers of under five children in selected rural area and urban area.

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CONFLICT OF INTEREST

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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