

"A Pre-Experimental Study To Assess The Effectiveness Of Information Booklet On Knowledge Regarding Rainbow Nutrition Among Adolescent Girls In Selected Urban Areas Of Pune City"

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ABSTRACT

Introduction

Adolescence is an important stage of life when body and mind grow rapidly. In this stage, proper nutrition is very important for good health, if not it may lead to many non-communicable diseases.

Aim of the study

"A Pre experimental study to assess the effectiveness of information booklet on knowledge regarding rainbow nutrition among adolescent girls in selected urban areas of Pune city".

Purposes

1. To assess the existing knowledge regarding rainbow nutrition among adolescent girls in selected urban areas of Pune city. 2. To develop and administer an information booklet on rainbow nutrition for adolescent girls. 3. To evaluate the effectiveness of the information booklet by comparing pre-test and post-test knowledge scores. 4. To improve awareness regarding the importance of rainbow nutrition in promoting health and preventing nutritional deficiencies among adolescent girls.

Material and method

Quantitative research approach, pre-experimental pre-test, post-test one group design were used. 60 samples were selected by using Non-probability purposive sampling technique. A pilot study was conducted which was found feasible. A self-structured questionnaire were prepared to assess the knowledge before and after intervention of information booklet among adolescent girls. On the first day pre-test was taken and information booklet is given on 7th day post-test was taken.

Result

Study finding showed that in pre-test majority of participants had average knowledge 51.66%, 31.66% had good knowledge and 13.33% had poor knowledge. In post-test the majority of participants 70% had excellent knowledge and 30% had good knowledge. t-value 10.78 and p-value<0.05 that indicates that information booklet was found significantly effective in improving knowledge of adolescent girls.

Conclusion

The study conclude that information booklet was effective to improve the knowledge regarding rainbow nutrition among adolescent girls.

Keywords: Adolescent girls, rainbow nutrition, effectiveness, information booklet, knowledge.

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INTRODUCTION

Adolescence is the vital period in the stages of human life for growth and development. It plays an important role in physical, psychological, social and hormonal changes. During this period nutrition is the important factor which we have to focus on for the improvement of good health and life style. The poor nutrition will lead to various types of deficiencies and long-term consequences. Puberty is accompanied by growth spurt that increases the requirements for both macronutrients and micronutrients^[1]. Balanced diet followed by an individual is helpful in maintaining the healthy weight and improving the quality of life. Today's

generation peoples are focused about the other factors in their life than nutrition . But nutrition plays an important role in maintaining the good health . The term rainbow nutrition is considered as the variety of fruits and vegetables which are associated with colourful pigment in their own nature should be included in the daily diet. The rainbow nutrition represents different phytonutrients which includes vitamins, minerals, antioxidants, bioactive compounds which is beneficial for health. Phytonutrients are natural compounds that plants use for protection against germs, fungi and other threats.^[2] As the essential nutrients are involved in rainbow nutrition so it is important for the people to know about it. If the individual is not eating colour

associated fruits and vegetables it may lead to health problems like diabetes mellitus, cancer and various cardio vascular diseases.

Adolescence is a critical developmental period marked by rapid physical, psychological, and hormonal changes. Adequate nutrition during this phase is essential for optimal growth, immunity, and prevention of chronic diseases. Rainbow nutrition, which emphasizes the consumption of fruits and vegetables of different natural colors, provides diverse phytonutrients that promote overall health. However, inadequate awareness regarding rainbow nutrition among adolescents remains a public health concern.

NEED OF STUDY

Nutrition is considered as crucial factor for growth and development of an individual. The rainbow nutrition is the nutrition which involves vitamins, minerals, antioxidant and bio active compounds i.e. phytonutrients. The concept rainbow nutrition means consuming variety of vegetables and fruits of different natural colors to ensure intake of diverse phytonutrients which is essential for healthy growth and development of individuals. The adolescence is the period where the nutrition is considered to be essential factor for healthy life style.

Reasons for studying rainbow nutrition

- Promotes healthy eating habits: - Rainbow nutrition uplift the consumption of variety of colorful fruits and vegetables rich in adequate amount of minerals, vitamins and nutrients.
- Fulfilling nutritional deficiencies: - It helps to fulfil all the nutrient needs of adolescents.
- Supports growth and development: - A balanced diet with natural colors in cognitive development, immune function and overall growth.
- Prevents chronic disease: - consumption of natural fruits and vegetables reduces the risk of chronic diseases like heart diseases, obesity and diabetes.

Adequate nutrition during adolescence is essential for healthy growth, development, and disease prevention. Rainbow nutrition ensures balanced intake of phytonutrients necessary for immune function, cognitive development, and prevention of chronic illnesses. Studies conducted in India have shown inadequate knowledge and poor dietary practices related to balanced nutrition among adolescents and mothers.

Research conducted at Datta Meghe Institute of Medical Sciences revealed that a majority of mothers had inadequate to moderate knowledge and unfavorable attitudes regarding rainbow nutrition. Similarly, studies from Pondicherry and Bengaluru demonstrated significant improvement in knowledge and practices after nutrition education interventions.^[3]

A scholar review says as per the study conducted in

IGMC & RI (August 2025) among 40 school going children in selected school of Pondicherry. According to the study pretest findings reveal mean score of knowledge was 13.70 ± 3.736 and post-test was 10.00 ± 4.397 and 't' test value 10.839 was found statistically significant at $p=0.000$ level. In pre-test practice mean score was 10.00 ± 3.736 and in post-test 16.68 ± 3.323 . The calculated 't' test value 9.375 was found statistically significant at $p=0.000$. The result clearly infer that the structured teaching programme given was found to be effective in improving knowledge and practice on rainbow nutrition among school children.^[4]

AIM OF STUDY

To assess the effectiveness of an information booklet on knowledge regarding rainbow nutrition among adolescent girls in selected urban areas of Pune city.

OBJECTIVES

- To assess the knowledge regarding rainbow nutrition among adolescent girls before and after intervention.
- To determine the effectiveness of information booklet on knowledge regarding rainbow nutrition among adolescent girls.
- To find the association between pre interventional knowledge with selected demographic variables.

RESEARCH METHODOLOGY

The present study adopted a pre-experimental one group pre-test and post-test research design to assess the effectiveness of an information booklet on knowledge regarding rainbow nutrition among adolescent girls. The study was conducted in selected urban areas of Pune city. The target population comprised adolescent girls who fulfilled the inclusion criteria, and the sample was selected using a non-probability convenient sampling technique and sample size was 60. Data were collected using a structured knowledge questionnaire developed to assess the level of knowledge regarding rainbow nutrition. The tool was validated by experts, and reliability was ensured before data collection. The r value was 0.96. Prior to data collection, formal permission was obtained from the concerned authorities and informed consent was taken from the participants. A pre-test was conducted to assess the baseline knowledge, followed by administration of the information booklet on rainbow nutrition. After seven days, a post-test was conducted using the same questionnaire to evaluate the effectiveness of the information booklet. The collected data were coded, tabulated, and analyzed using appropriate descriptive and inferential statistical methods. Ethical principles such as confidentiality, anonymity, and voluntary participation were strictly maintained throughout the study.

RESULT

Section-I : Frequency And Percentage Of

Demographic Data.

Table no.1 : Shows finding related to frequency and percentage related to demographic data.

N=60

Demographic Variables	Frequency	Percentage%
1. Age:		
a) 15 yrs	9	15%
b) 16 yrs	24	40%
c) 17 yrs	27	45%
2. Educational Qualification:		
a) 9 th	6	10%
b) 10 th	10	16.66%
c) 11 th	12	20%
d) 12 th	32	53.33%
3. Monthly family income:		
a) ≤ 9,899 Rs	15	25%
b) 9,900-19,799 Rs	20	33.33%
c) 19,800-39,499 Rs	20	33.33%
d) 39,500-58,999 Rs	5	8.33%
4. Type of family		
a) Nuclear	38	63.33%
b) Joint	11	18.33%
c) Extended	11	18.33%

The table no. 1 interpretes that, majority of 45% participants were of 17 years and 40% participants were of 16 years and 15% participants were of 15 years of age group.

Majority of 53.33% participants were studying in 12th standard and 20% participants were studying in 11th standard, 16.66% participants were studying in 10th standard and 10% participants were studying in 9th standard.

Majority of 33.33% Participants having family income between 19,800-39,499, 33.33% participants were having family income between 9,900-19,799, 25% participants having family income <9,899 and 8.33% of participants having family income between 39,500-58,999.

Majority of 63.33% Participants living in nuclear

family, 18.33% participants living in joint family and 18.33% participants living in extended family.

Section II: Finding Related To Knowledge Regarding Rainbow Nutrition.

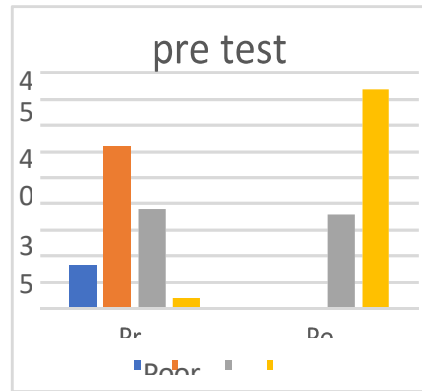


Figure no. 1:Pre-test & Post-test knowledge regarding rainbow nutrition

Figure no. 1 interpretate that, in pre-test knowledge majority of 51.66 % having average knowledge regarding rainbow nutrition and 31.66% having good knowledge, 13.33% having poor knowledge & 3.33% having excellent knowledge regarding rainbow nutrition. In post-test knowledge majority of 70 % having excellent knowledge regarding rainbow nutrition and 18% having good knowledge regarding rainbow nutrition.

Table no. 2 : Shows finding related to effectiveness of information booklet regarding rainbow nutrition.

N=60

Knowledge	Mean	SD	D.F	T test	P value	Remark
Pre test	12.66	3.879	59	10.78	0.000	Significant
Post test	19.36	2.976				

Table no. 2 interpretes that, the pretest mean score 12.66 and posttest mean score is 19.36 and SD of pretest was 3.879 and SD of posttest was 2.97. That show significant increase in knowledge after providing Information booklet. Calculated value of paired t test was 10.78 with p value 0.00 so p value is less than 0.05 level of significant which means null hypothesis rejected and there is effectiveness of information booklet regarding the rainbow nutrition.

Section VI: It Describes Association Between Pre-Intervention Level Of Rainbow Nutrition With Selected Demographic Variables.

Knowledge level according to age - Chi Square table

value is 12.59 and P value is 0.883 there is no significant correlation with age and knowledge regarding rainbow nutrition.

Knowledge level according to educational qualification - Chi Square table value is 16.919 and P value is 0.369 there is knowledge score and educational qualification is not significantly correlated. That shows educational qualification is not affecting adolescent girl's knowledge.

Knowledge level according to monthly family income - Chi Square table value is 16.919 and P value is 0.7129 there is no significant correlation with monthly family income and knowledge regarding rainbow nutrition.

Knowledge level according to type of family- Chi Square table value is 12.59 and P value is 0.806 there is no significant correlation with type of family and knowledge regarding rainbow nutrition.

DISCUSSION

The present study was conducted to assess the effectiveness of an information booklet on knowledge regarding rainbow nutrition among adolescent girls. The findings of the study revealed that the majority of participants had inadequate to average knowledge in the pre-test, indicating a lack of awareness about the importance of consuming a variety of colorful fruits and vegetables. This may be due to limited nutrition education, unhealthy food preferences, and increased consumption of processed and fast foods among adolescents.

After the implementation of the information booklet, a marked improvement was observed in the post-test knowledge scores. Most of the participants demonstrated good knowledge regarding the concept of rainbow nutrition, benefits of different food colors, and their role in preventing micronutrient deficiencies. This improvement indicates that the educational intervention was effective in enhancing the knowledge level of adolescent girls.

The association between selected demographic variables and pre-test knowledge revealed that certain factors such as age, educational level, and previous exposure to nutrition information influenced the baseline knowledge of participants. However, some demographic variables showed no significant association, suggesting that lack of knowledge regarding rainbow nutrition is a common issue across different backgrounds.

Similar study was conducted by Pragati Yadav, Dr. Renu Mogra in 2024 among adolescent girls. Nutrition education plays an important role in improving dietary habits, eating behavior, and nutritional status among individuals. The present study was conducted among 420 rural adolescent girls of Deoria district, Uttar Pradesh, to assess the impact of nutrition education on knowledge and food consumption patterns. The findings revealed that nutrition education significantly improved nutritional knowledge and healthy eating practices

among adolescent girls. Changes in food consumption patterns also enhanced nutrient intake and overall health awareness. The study concluded that school- and community-based nutrition education is an effective long-term strategy for preventing malnutrition and promoting healthy lifestyles.

CONCLUSION

The study concluded that adolescent girls initially had inadequate to average knowledge regarding rainbow nutrition. The information booklet proved to be an effective educational tool, resulting in a statistically significant improvement in knowledge levels. This intervention can be successfully utilized by nurses and health educators to promote healthy dietary practices among adolescents.

Rainbow nutrition plays a vital role in improving the nutritional knowledge and dietary awareness among the study population. The findings revealed that participants had inadequate to moderate knowledge regarding rainbow nutrition in the pre-intervention phase. After the implementation of the educational intervention, there was a significant improvement in knowledge scores, indicating the effectiveness of the teaching strategy/information booklet on rainbow nutrition. Consuming a variety of colourful fruits and vegetables was understood to be essential for meeting micronutrient requirements and preventing nutritional deficiencies. The study highlights the importance of nutrition education in promoting healthy eating habits, particularly among adolescents, to support optimal growth and development. Hence, incorporating rainbow nutrition education into school and community health programs can be an effective approach to enhance overall nutritional status and long-term health outcomes.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to this study.

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