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Effectiveness of Structured Teaching Program on Knowledge Regarding Prevention of Iron Deficiency Anemia Among Adolescent Girls

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Abstract: ***Anemia is defined as an abnormal reduction in the number of circulating red blood cells, the quantity of hemoglobin and the volume of packed red cells in a given unit of blood. The etiology of anemia is the result of a wide variety of causes that can be isolated, but more often coexist. Iron deficiency has been the prominent cause for onset of anemia, whereas other causes identified include heavy blood loss as a result of menstruation, or parasite infections such as hookworms, schistosomiasis. [1] The most prevalent nutritional condition worldwide is anemia. The life period between 10-19 years is specified according to the WHO teenage age group. The prevalence of anemia among teenage girls in India was 56 percent, which at any point of time amounts to an average of 64 million girls. [2] WHO graded the hemoglobin level 10 g/dl is considered as mild iron deficiency anemia, hemoglobin between 7 g/dl to 10 g/dl is considered as moderate iron deficiency anemia and hemoglobin less than 7 g/dl is considered as severe iron deficiency anemia. [3] When the number of red blood cells is reduced or the amount of hemoglobin in them is low, the blood cannot carry an adequate supply of oxygen. An inadequate supply of oxygen in the tissues produces the symptoms of anemia. [4] A study title "Effectiveness of structured teaching program on knowledge regarding prevention of iron deficiency anemia among adolescent girls." Has been carried out as a partial fulfillment required for being awarded the degree of the Master of science in Nursing under the Maharashtra University of health science, Nashik Maharashtra.***

Keywords: Structured teaching program, knowledge, prevention, iron deficiency anemia, adolescent girls.

1. Background of the Study

The Iron Deficiency Anemia among adolescent girls is consistently high. Now days most of the adolescent girl hare having an intension to maintain a slim structure. So, they were eating very less quantity of food. An influence of junk foods and fast foods will reduce the intake of dietary Iron rich foods. Changes in the educational system and improvement in the standards of education will increase the stress among adolescents. It will lead to meal skipping and gives a way to develop anemia. Due to deficiency of Iron in body, the adolescent may get impaired physical health, poor intelligent quotient, decreased motor and cognitive function. [8]

The world's adolescent population is facing a series of serious nutritional challenges which are not only affecting their growth and development but also their livelihood as adults. Yet, adolescents remain a largely neglected, difficult to measure and hard to reach population, in which the needs of adolescent girls in particular, were often ignored. [6] The prevalence of anemia among adolescent girls in India is the highest in the world. Anemia among adolescent girls may lead to delayed attainment of all aspects of development. [9]

2. Introduction

Adolescence has been defined by the World Health Organization as the period of life spanning the ages between 13 to 19 years. This is the formative period of life when the maximum amount of physical, psychological and behavioral changes take place. This is a vulnerable period in human life cycle for the development of nutritional anemia, which has been constantly neglected by public health programme. Girls are more likely to be victims due to various reasons in a family with limited resources. WHO graded the hemoglobin level 10 g/dl is considered as mild iron deficiency anemia, hemoglobin between 7 g/dl to 10 g/dl is considered as moderate iron deficiency anemia and hemoglobin less than 7 g/dl is considered as severe iron deficiency anemia. [3]

The average monthly menstrual blood loss is about 45 ml and causes the loss of about 22mg of iron Total nutrient requirements are increased during adolescence period to support a dramatic growth and development. Eating right food at right time will prevent nutritional deficiencies especially iron deficiency disorders. [7]

Objectives

1) To assess the pre-test level of knowledge regarding iron deficiency anemia among adolescent girls from selected area.
2) To assess the post-test level of knowledge regarding iron deficiency anemia among adolescent girls from selected area.
3) To evaluate the effectiveness of Structured Teaching Program on knowledge regarding iron deficiency anemia among adolescent girls from selected area.
4) To associate the pre-test knowledge regarding iron deficiency anemia among adolescent girls with their selected demographic variables such as age in year and type of family.

3. Material and Method

The study was undertaken to assess the effectiveness of structured teaching program on knowledge regarding prevention of iron deficiency anemia among adolescent girls. This study was based on the quantitative research approach. The study subject was adolescent girts which consist of 86 subjects selected by non-probability convenient sampling technique.

The tool used for data collection was structured questionnaire. A pre-experimental research design was administered by using structured teaching program. The he conceptual framework was modified J. W. Kenny's open system model. The data was obtained to describe the sample characteristics including Age in year, yours Education, Type of Family, Source of previous knowledge, Family Income Occupation of parent, Education of Mother.

Validity refers to degree of which an instrument measures what it is supposed to measure. Content validity refers to the degree to which the items in an instrument adequately represents the universe of content. To ensure content validity device were submitted to 10 experts and 1 statistician. Out of these 9 validated contents of the tools were received from expert and 1 from statistician with their valuable suggestion and comments. Reliability of the tool is a major criterion for assessing the quality and accuracy. It is the degree of consistency with which it measures the attributes.

In this study, the reliability of questionnaires was done by Guttmann's split half coefficient method. The correlation coefficient 'r' of the questionnaire was 0.7740, which has reliable to the instrument. On the basis of objective and hypothesis data were analyzed by using frequency, percentage and presented in the form of table and graph, and Analysis effectiveness of structured teaching with the help of student paired 't' test. The chi square test used for analyzed association between pre-test knowledge and demographic variables. The level of Significance set for testing the hypothesis was at $p<0.05$. Pre experimental one group pre-test post-test research design has been used to evaluate the effectiveness of structured teaching program on knowledge regarding prevention of iron deficiency anemia among adolescent girls. A structured knowledge questionnaire was used that was 30 to conduct the pre-test on day 1 to evaluate the existing knowledge regarding prevention of iron deficiency anemia. Adolescent girls and was depicted as 0, and structured teaching also was conducted on day 1 and depicted as X. A post test was conducted on day 7 using the same structured knowledge questionnaire depicted as 02. Thus, the research design can be

Table 1: Pre-Experimental one group pretest posttest design

	Pre- Test		Intervention Structured Teaching Day					Post- Test
	1		2	3	4	5	6	7
Pre –experimental Group	Q1	x	-	-	-	-	-	Q2

Key words 01 Assessment of knowledge regarding prevention of iron deficiency anemia among adolescent girls.
X – Structured teaching on prevention of iron deficiency anemia.

02-Assessment of knowledge regarding prevention of iron deficiency anemia among adolescent girls. "A pilot study is a miniature run of the main study. " Or a trial run' prior permission from the concerned authorities was sought. The pilot study was conducted on 10 sample were selected for pilot study by non- probability convenient sampling technique. On the first day of the study, each sample was explained about the study and consent was obtained from them, to confirm their willingness to participant in the study. Pretest was conducted. Questionnaire was administered. The time taken for each sample to complete their answer was approximately 30 minutes. After the pretest, structured teaching was given on iron deficiency anemia. The Post test was conducted with same questionnaire on the 7 days. The findings of the pilot study were analyzed. The pilot study helped the investigator to improve the too, and it provided better insight and clarity regarding the different aspects of the study. The study was found to be feasible, practical and convenient. The sample that was included in the pilot study were excluded in the main study.

After the pilot study, main study was conducted in similar setting but different school. Pre experimental research design was used to evaluate the effectiveness of structured teaching program on knowledge regarding prevention of iron deficiency anemia among adolescent girls 86 subjects were selected for the study by using non-probability convenient sampling technique.

The investigator introduced herself and obtained consent form from the subject in selected school.
Chi Square test and paired 't' test and correlation coefficient was used for data analysis and presented in the form of graphs, tables and diagrams.

4. Data Analysis and Interpretation Organization of the Findings

The analysis and interpretation of the observation are given in the following

- Section A: Distribution of adolescent girls with regards to demographic variables.
- Section B: Assessment of level of pretest and posttest knowledge regarding iron deficiency anemia among adolescent girls from selected area.
- Section C: Assessment of effectiveness of Structured Teaching Program on knowledge regarding iron deficiency anemia among adolescent girls from selected area.
- Section D: Association of pretest knowledge score regarding iron deficiency anemia among adolescent girls from selected area with their selected

demographic variables.

5. Statistical Analysis

Section A

This section deals with percentage wise distribution of subjects with regards to their demographic characteristics. A convenient sample of 86 subjects was drawn from the study population, who were from selected area. The data obtained to describe the sample characteristics including age, education, type of family, knowledge regarding iron deficiency anemia, monthly family income, occupation of parents and education of mother respectively.

Table 1: Percentage wise distribution of subjects according to their demographic characteristics

Demographic Variables	No. of Subjects	Percentage (%)
Age (yrs)		
13 yrs	33	38.4
14 yrs	34	39.5
15 yrs	19	22.1
16 yrs	0	0
Educational Status		
7th standard	15	17.4
8th standard	10	11.6
9th standard	27	31.4
10th standard	34	39.5
Type of family		
Joint	27	31.4
Nuclear	59	68.6
Knowledge regarding iron deficiency anemia		
Yes	8	9.3
No	78	90.7
Monthly family income (Rs)		
10000-15000 Rs	31	36
15000-20000 Rs	18	20.9
20000-25000 Rs	34	39.5
25000-30000 Rs	3	3.5
Occupation of parents		
Private Job	29	33.7
Govt Job	10	11.6
Farmer	18	20.9
Labour	29	33.7
Education of mother		
Secondary	46	53.5
Higher Secondary	31	36
Under graduation	4	4.7
Post graduation	5	5.8

Table No.1 shows the percentage-wise distribution of subjects with regard to their demographic characteristics. A convenient sample of 86 subjects was drawn from the study population, who were from the selected college. The data was obtained to describe the sample characteristics including age in year, Education, Type of Family, Source of previous knowledge, Family Income Occupation of parent, Education of Mother.

Section B

Assessment of Level of Knowledge Regarding Prevention of Iron Deficiency Anemia among Subjects from Selected Area

This section deals with the assessment of level of knowledge regarding prevention of iron deficiency anemia among subjects from selected area. The level of knowledge score is divided under following heading of poor, good, very good and excellent respectively.

Table 2: Assessment with level of pretest knowledge

Level of pretest knowledge	Score Range	Level of Pretest Knowledge Score	
		No of Subjects	Percentage
Poor	0-50%	77	89.5
Good	51-60%	7	8.1
Very Good	61-75%	2	2.3
Excellent	>75%	0	0
Minimum score		5	
Maximum score		20	
Mean knowledge score			
Mean % Knowledge Score		38.48 ± 10.42	

The above table shows that 89.5% of subjects from selected area had poor level of knowledge score, 8.1% had good and 2.3% of them had very good, 0% had excellent level of knowledge score.

Minimum knowledge score in pretest was 5 and maximum knowledge score in pretest was 20.

Mean knowledge score in pretest was 11.54 ± 3.12 and mean percentage of knowledge score in pretest was 38.48 ± 10.42.

Table 3: Assessment with level of posttest knowledge

Level of posttest knowledge	Score Range	Level of Posttest Knowledge Score	
		No of subjects	Percentage
Poor	0-50%	12	14
Good	51-60%	22	25.6
Very Good	61-75%	25	29.1
Excellent	>75%	27	31.4
Minimum score		10	
Maximum score		29	
Mean knowledge score		20.08 ± 4.85	
Mean % Knowledge Score		66.93 16.19	

The above table shows that 14% of subjects from selected area had poor level of knowledge score, 25.60% of them had good, 29.1% had very good and 31.4% of them had excellent level of knowledge score. Minimum knowledge score in posttest was 10 and maximum knowledge score in posttest was 29. Mean knowledge score in posttest was 20.08 ± 4.85 and mean percentage of knowledge score in posttest was 66.93± 16.19.

Section C

Evaluation of Effectiveness of Structured Teaching Programme on Knowledge Regarding Prevention of Iron Deficiency Anemia among Subjects from Selected Area

This section deals with the effectiveness of Structured Teaching Program on knowledge regarding prevention of iron deficiency anemia among subjects from selected area. The hypothesis is tested statistically with distribution of pre-test and post-test mean, standard deviation and mean percentage knowledge score. The levels of knowledge during the pre-test and post -test are compared to prove the effectiveness of Structured Teaching Program. Significance of difference at 5% level of significance is tested with

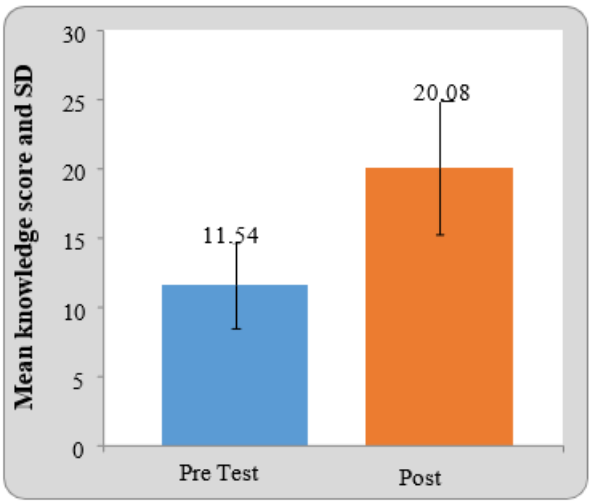
student's paired 't' test and tabulated 't' value is compared with calculated 't' value. Also, the calculated 'p' values are compared with acceptable 'p' value i.e. 0.05.

Table 4: Significance of difference between knowledge score in pre and post test of subjects, n= 86

Test	Mean	SD	Mean Difference	t-value	p-value
Pre -Test	11.54	3.12	8.53±4.96	15.94	0.0001 S, p<0.05
Post- Test	20.08	4.85			

This table shows the comparison of pretest and posttest knowledge scores of subjects regarding iron deficiency anemia from selected area. 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=86- 1 i. e.85 degrees of freedom was 1.98. The calculated 't' value i. e.15.94 are much higher than the tabulated value at 5% level of significance for overall knowledge score of subjects which is statistically acceptable level of significance. Hence it is statistically interpreted that the Structured Teaching Program on knowledge regarding iron deficiency anemia among subjects from selected area was effective. Thus, the H1 is accepted.

Significance of difference between knowledge score in pre and post test of subjects



Section D

Association of Level of Pre Test Knowledge Score Regarding Iron Deficiency Anemia Among the Subjects of Selected Area in Relation to Demographic Variables

This section has deals with association of coping strategies among adolescent girls in selected college in relation to demographic variables as age in year, Education, Type of Family, Source of previous knowledge, Family Income Occupation of parent, Education of Mother.

Hence it is interpreted that Education, Type of Family, Source of previous knowledge, Occupation of parent, Education of Mother are statistically not associated with their knowledge. Age in years, family income are statistically associated with their knowledge score.

6. Discussion

The findings of the study were discussed with reference to the objective stated as below. The present study was undertaken as Pre experimental study to assess the effectiveness of structured teaching on knowledge regarding prevention of iron deficiency anemia subjects in selected school.

The major finding of the study result showed that among all subjects, in pretest score was, 89.5% of subjects from selected area had poor level of knowledge score, 8.1% had good and 2.3% of them had very good level of knowledge score. Minimum knowledge score in pretest was 5 and maximum knowledge score in pretest was 20. Mean knowledge score in pretest was 11.54 ± 3.12 and mean percentage of knowledge score in pre test was 38.48 ± 10.42.

Minimum knowledge score in posttest was 10 and maximum knowledge score in posttest was 29.

Mean knowledge score in posttest was 20.08 ± 4.85 and mean percentage of knowledge score in post test was 66.93± 16.19.

The study reported that the result regarding level of knowledge regarding prevention of iron deficiency anemia the subjects in pre-test were poor and after the implementation of the structured teaching post test score increased.

A study titled **"Effectiveness of Structured Teaching Program on Knowledge Regarding Prevention of Iron Deficiency Anemia among Adolescent Girls."** has been carried out as a partial fulfilment required for being awarded the degree of the Master of Science in Nursing under Maharashtra University of Health Sciences, Nashik Maharashtra.

A Quantitative research approach with pre experimental research design was used in this study. Study setting was selected college of Maharashtra. The population for the present study included adolescent girls from selected school. The investigator developed the conceptual framework based on modified J. W. Kenny's open system model. The samples were adolescent girls from selected school of Maharashtra.86 samples were selected using Non-probability convenient sampling technique. The tool was structured knowledge questionnaire.

The findings of the pilot study were analyzed. The pilot study helped the investigator to improve the tool and it provide better insight and clarity regarding the different aspects of the study. To ensure content validity, all validated tools were submitted to 10 experts from the field of Obstetrical and Gynecological Nursing. The structured knowledge questionnaire was used to assess the effectiveness of structured teaching program on knowledge regarding prevention of iron deficiency anemia among 13 adolescent girls in selected school.

After the pilot study main study was conducted in the similar setting but different school. The investigator obtained

permission from the principal of college to conduct the main study. The main study was started by choosing 86 subjects by using non probability convenient sampling technique in the selected school.

The comparison of pretest and posttest knowledge scores of subjects regarding iron deficiency anemia from selected area. 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=86-1 i. e.85 degrees of freedom was 1.98. The calculated 't' value i. e.15.94 are much higher than the tabulated value at 5% level of significance for overall knowledge score of subjects which is statistically acceptable level of significance. Hence it is statistically interpreted that the Structured Teaching Program on knowledge regarding iron deficiency anemia among subjects from selected area was effective. Thus, the H1 is accepted.

Association of knowledge score with the demographic variables it is interpreted that Education, Type of Family, Source of previous knowledge, Occupation of parent, Education of Mother are statistically not associated with their knowledge. Age in years, family income is statistically associated with their knowledge score.

7. Conclusion

After the detail analysis, this study led to fallowing conclusion structured teaching on knowledge regarding prevention of iron deficiency anemia among subjects. it's shows association in relation to their demographic variables, hence based on the above finding, it was conducted undoubtedly that the written preparation material by the investigator in the form of structured teaching help the subject to improved their knowledge regarding prevention of iron deficiency anemia.

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