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Effectiveness of structured teaching programme on knowledge regarding anemia and its management among anemic adolescent girls in senior secondary school of East Sikkim

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Abstract

Introduction: Anemia has become a global public health problem affecting both developed and developing countries. According to NFHS-5, the prevalence of anemia among adolescent girls in India is 59%. This study aimed to assess the effectiveness of structured teaching programme on knowledge regarding anemia and its management among anemic adolescent girls in a senior secondary school of East Sikkim.

Methodology: A pre-experimental one group pre-test-post-test research design was adopted for this study. Among the 152 adolescent girls, 114 samples were selected using simple random sampling method. Assessment of anemia was done using tall Quist paper and was determined following WHO classification as severe, moderate and mild anemia. Pre-test was conducted using semi-structured knowledge questionnaire and structured teaching programme was provided on management of anemia after which post-test was conducted after 7 days using the same questionnaire. Statistical analysis was performed using SPSS software version 24.0.

Results: The study finding reveals that 95.6% of the adolescent girls had mild anemia, where most (38.6%) of them were among 15 years of age and most (35.1%) of them had their first menarche at 13 years of age. In pre-test (77.2%) had average knowledge whereas in post-test (79.9%) had good knowledge which showed statistically significant difference among the anemic adolescent girls after the teaching programme on management of anemia. Findings also showed statistically significant association of age of anemic adolescent girls, religion, dietary pattern and type of family with the pre-test knowledge on anemia and its management at $p<0.05$ level.

Discussion and Conclusion: The result of the study showed that anemia was observed as a general medical issue in the study setting. Findings also indicated that structured teaching programme was effective in improving the knowledge of adolescent girls on anemia and its management. Regular screening with proper education on anemia and its management among the adolescent girls must be carried out as a part of school health education programme.

Keywords: Knowledge, anemia, adolescent girls

Introduction

A condition in which the amount of red blood cells is reduced or the amount of haemoglobin is low is termed as anemia. It transports oxygen from the lungs to various parts of the body through red blood cells that contain haemoglobin protein [1]. When the number of red blood cells is lessened or the amount of haemoglobin in them is deficient, the blood cannot carry an adequate supply of oxygen to the body. So, when the supply of oxygen in the tissues are not sufficient, it produces the symptoms of anemia [2].

When the blood lacks enough red blood cells or the concentration is lower than normal, it can be termed as anemia. It is a global public health problem which affects half a billion women of reproductive age. Anemia can be caused by a variety of reasons of which iron deficiency is the most common cause of anemia. Other causes of anemia are genetic factors, excessive bleeding, menstrual bleeding, cancer causing anemia. Impaired metabolism of spleen and anemia, etc. [3].

Adolescence' has been defined as a period between 10 to 19 years by World Health Organization (WHO).

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Adolescence is considered a special period of transition from teenage girls to females, accounting for one-fifth of the world's female population [4].

In India, adolescent girls, who make up a significant portion of the population, are a vulnerable group and are at a greater risk of morbidity and mortality. Physical, mental and Behavioural changes occur to the greatest extent during the developmental stages of life. This event is a vulnerable period in the human life cycle for the development of nutritional anemia if no proper care or poor diet is practiced. Adolescent girls are at increased risk for anemia because of increased demand of iron for haemoglobin and to make up the loss of iron due to menstruation and poor dietary habits [5].

According to the National Family Health Survey-5 (NFHS-5, 2019-20) data, released by the Ministry of Health and Family Welfare, India has the highest total prevalence of anemia at 39.86% in the world. NFHS-5 data also suggested that more than half of the children and women are anaemic in 13 of the 22 States/UTs in the country [6].

The total prevalence of anemia among non-pregnant women in Sikkim, aged 15-49 years (< 12.0g/dl) (%) were 42.1% (NFHS-5) and, in East Sikkim district, its prevalence of anemia was 43.3% (NFHS- 5). The prevalence of anemia has increased as compared to NFHS-4 where the prevalence of anemia among non-pregnant women aged 15-49 years in Sikkim and East Sikkim district were 35.2% and 34.6% respectively [7].

Nowadays, the prevalence of anemia among adolescent girls is on the rise in India. Because puberty marks the start of girls' menstrual period, they are at a higher risk for nutritional anemia. In rural areas of India, girls marry and become pregnant during the late adolescence, increasing the risk of anemia and low birth weight babies in adolescent girls [8].

Methodology

It was a 7-days pre-experimental one group pre-test-post-test conducted in Biraspati Parsai Government Senior secondary school, Marchak, Ranipool of East Sikkim among the adolescent girls aged 13-16 years studying in classes 8, 9 and 10 from 07th February 2022 to 05th March 2022. In the study, the base measure was semi-structured questionnaire to assess the knowledge of adolescent girls regarding anemia and its management. The study was approved by the Institutional Research Protocol Evaluation Committee and Institutional Ethics Committee.

The administrative approval was obtained from concerned authorities and formal permission were sought from Education Department, Government of Sikkim, Gangtok. Self-introduction and establishment of rapport with the students was done to gain their co-operation. Informed consent was taken from the parents of the students under the study. Confidentiality was maintained during data collection process.

Assessment of adolescent girls for anemia was done by using Tall-quist paper and was determined following WHO classification as severe, moderate and mild anemia, where 114 samples were selected for my study as their hemoglobin level < 11.9 gm/dl. Pre-test was done by administering the questionnaire to the samples. The structured teaching program was conducted after pre-test on the same day. On seventh day, post-test was conducted using the same questionnaire to evaluate the effectiveness of structured teaching program. The method of instruction was lecture cum discussion. The time taken for STP was 30 minutes and AV-AIDS used were power point presentation, charts and flash cards.

Results and Discussion

Findings related to haematological assessment of the anemic adolescent girls

Table 1: Haematological assessment of the anemic adolescent girls, N=114

Classification	Hb (range in g/dl)	f	%
Mild	10-11.9 g/dl	109	95.6
Moderate	7-9.9 g/dl	05	4.4
Severe	< 7 g/dl	0	0

Table 1 shows that among the 152 adolescent girls, 114 were found to be anemic. Out of which majority 109(95.6%) of the anemic adolescent girls had mild anemia and 05(4.4%) had moderate anemia.

Findings related to demographic data of anemic adolescent girls

The result shows that most, 38.6% of adolescent girls were in the age group of 15 years, 35.1% of adolescent girls had age of menarche at 13 years, majority 72.8% of adolescent girls were Hindu majority, 84.2% were non vegetarian, 61.4% of adolescent girls live in joint family and 36% of adolescent girls' family income were below 10,000

Findings related to pre-test and post-test level of knowledge on anemia and its management among anemic adolescent girls

Figure 1 depicts that 114 anemic adolescent girls were selected for the study where pre-test 88(77.2%) of adolescent girls had average knowledge, 21(18.4%) had poor knowledge and 5(4.4%) of adolescent girls had good knowledge on anemia and its management where as in post-test 91(79.8%) of adolescent's girls had good knowledge and 23(20.2%) had average knowledge on anemia and its management.
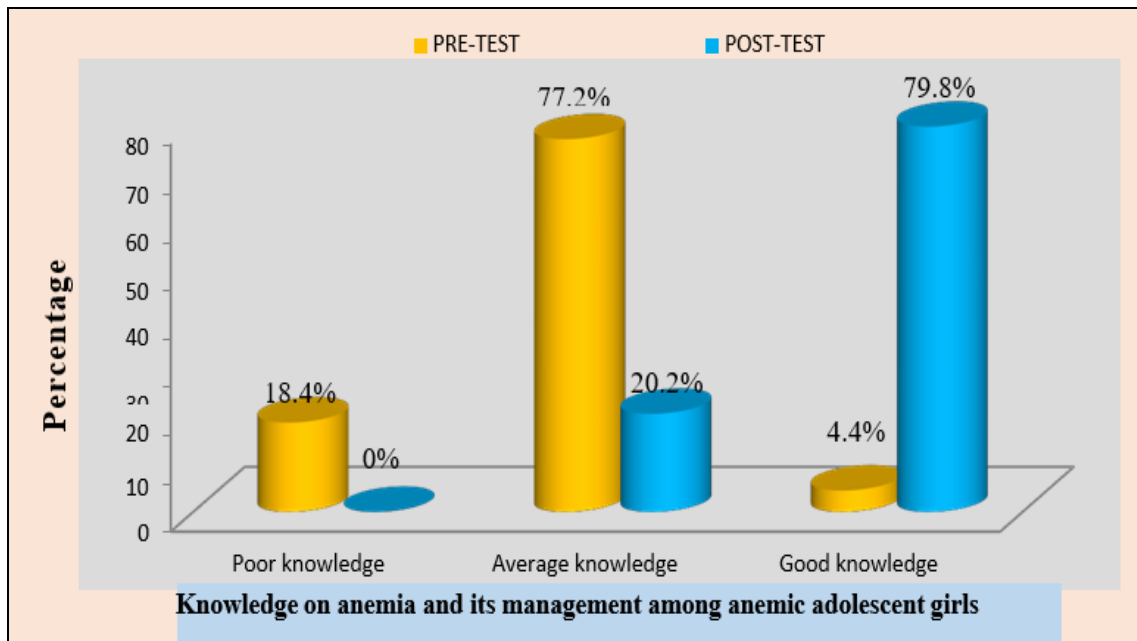
Fig 1: Description of the knowledge of the anemic adolescent girls

Findings related to effectiveness of structured teaching programme on knowledge regarding anemia and its management

Table 2: Descriptive statistics showing score range, mean, median, mode and standard deviation of pre-test and post-test knowledge on anemia and its management among anemic adolescent girls, N=114

Descriptive statistics	Knowledge	
	Pre-test	Post-test
Minimum	7	11
Maximum	25	29
Range	18	18
Mean	14.12	21.85
Median	14.00	22.00
Mode	13	21
Std. Deviation	3.815	3.555

Table 3: Effectiveness of structured teaching programme on knowledge regarding anemia and its management among anemic adolescent girls, N=114

Knowledge	Mean	SD	Mean D	T Value	DF	P Value
Pre-test	14.12	3.815	7.73	18.09	113	0.001*
Post-test	21.85	3.555				

*$p<0.05$ level of significance

In the present study, the mean post-test knowledge score 21.85±3.555 was higher than pre-test mean knowledge score 14.12±3.815 with mean difference of 7.73 with obtained calculated t value (t=value 18.09, df-113, p=0.001) was found statistically highly significant at $p<0.05$. Findings indicates that structured teaching programme was effective in improving the knowledge of adolescent's girls on anemia and its management.

Description of the association of pre-test knowledge with their selected demographic variables

Table 4: Association between pre-test knowledge on anemia and its management among anemic adolescent girls with their demographic variables, N=114

Demographic Variables	Pre-test knowledge		x^2 value	DF	P-Value
	≤ 14 Median	> 14 Median			
Age in years					
a. 13 years	13	6	11.57	3	0.009*
b. 14 years	19	14			
c. 15 years	14	30			
d. 16 years	5	13			
Age of first menstruation					
a. Before 12 years	20	19	1.513	3	0.679[NS]
b. 13 years	18	22			
c. 14 years	12	30			
d. 15 years	1	2			
e. 16 years	--	--			
Religion					
a. Christian	6	7	17.53	3	0.001*
b. Hindu	29	54			
c. Islam	2	0			
d. Buddhist	14	2			
Dietary pattern					
a. Vegetarian	3	15	6.812	1	0.009*

b. Non vegetarian	48	48			
Type of family					
a. Nuclear family	14	30	4.837	1	0.028*
b. Joint family	37	33			
Family income					
a. Below 10,000	20	21			
b. 10,001-20,000	17	18			
c. 20,001-30,000	7	11	1.529	4	0.821^{NS}
d. 30,001-40,000	4	8			
e. 40,001 and above	3	5			

*p value < 0.05 level of significance, NS-Non-Significant

Table 4 depicts the association between pre-test knowledge on anemia and its management among anemic adolescent girls with their demographic variables which was tested by using median knowledge score chi-square test. Result showed that chi values of age of anemic adolescent girls (x^2 =11.57, DF=3), religion (x^2 =17.53, DF=3), dietary pattern (x^2 =6.812, DF=1), type of family (x^2 =4.837, DF=1) was found statistically significant association at p<0.05 level with pre-test knowledge on anemia and its management. Other demographic variables of anemic adolescent girls such as age at first menstruation (x^2 =1.513, DF=3), and family income (x^2 =1.529, DF=4) were non-significant at p<0.05 level with pre-test knowledge on anemia and its management.

Discussion
In the present study, among the 152 adolescent girls, 114 were found to be anemic. Out of which majority 109(95.6%) of the anemic adolescent girls had mild anemia and 05(4.4%) had moderate anemia. This study is similar with the findings of the study conducted by Chandrakumari, Abilash Sasidharannair *et al.*, 2019 which showed that among 255 adolescent girls in the study population, overall prevalence of anemia was found to be 48.63% (N = 124). Anemia was absent in 51.37% (N =131) of the girls. Most of these girls (55.64%, n = 69) had mild degree of anemia. Overall, the mean Hb level was 10.33 ± 1.344.

In the present study, 114 anemic adolescent girls were selected for the study where pre-test 88(77.2%) of adolescent girls had average knowledge, 21(18.4%) had poor knowledge and 5(4.4%) of adolescent girls had good knowledge on anemia and its management where as in post-test 91(79.8%) of adolescent's girls had good knowledge and 23(20.2%) had average knowledge on anemia and its management. This study is similar with the findings of the study conducted by Priyanka Pareek and Asif Hafiz, 2015 which showed that only one forth (25%) subjects were having good knowledge about anemia and 36% were having fair knowledge and rest of them were having poor knowledge about anemia8.

In the present study, the mean post-test knowledge score 21.85±3.555 was higher than pre-test mean knowledge score 14.12±3.815 with mean difference of 7.73 with obtained calculated t value (T = Value 18.09, DF-113, P=0.001) was found statistically highly significant at p<0.05. Findings indicates that structured teaching programme was effective in improving the knowledge of adolescent's girls on anemia and its management. This study is supported by a study conducted by R Gopal and T Chand, 2017 which showed that the mean post-test knowledge score [24.78] is higher than the pre-test knowledge score [10.07]. The mean difference between pre-test and post-test score [14.71] of knowledge is significant at p<0.05 level as 'T-Value =

59.839.
Findings of the present study shows that there was an association of pre-test knowledge with their demographic variables such as age of anemic adolescent girls (x^2 =11.57, DF=3), religion (x^2 =17.53, DF=3), dietary pattern (x^2 =6.812, DF=1), type of family (x^2 =4.837, DF=1) was found statistically significant association at p<0.05 level. The findings of the study are inconsistent with the findings of the study of R Gopal and T Chand (2017) [10] which depicted that there was no significant association between pre-test knowledge with demographic variables.

Conclusion
The present study indicated that structured teaching programme was effective in improving the knowledge of adolescent girls on anemia and its management. Anemia was observed as a general medical issue in the study setting Regular screening with proper education on anemia and its management among the adolescent girls must be carried out as a part of school health education programme.

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