ORIGINAL ARTICLE

Effectiveness of Structured Teaching Program on Knowledge of Anaemic Adolescent Girls, Uttarakhand

Pooja Bhakuni[1], Pratiti Haldar[2], Minu Pargaien[3], Nagendra Prakash[4]

[1] Department of Child Health Nursing, Teerthankar Mahaveer University,Moradabad, UttarPradesh, India.
[2] Child Health Nursing Department, Graphic Era College of Nursing Graphic Era Hill University, Bhimtal, Uttarakhand, India
[3] Medical Surgical Nursing Department, Govt. College of Nursing, Pauri Garhwal, Uttarakhand, India
[4] Quality Management Department, Pal college of Nursing and Medical Sciences, Anandi Tower, Nainital Road, Haldwani, Uttarakhand, India

ABSTRACT

Introduction: Anaemia in India is still a point of concern when it comes to adolescent girls. Adolescent girls are more prone to develop anaemia if they lack knowledge on how to manage the menace of anaemia in adolescence. The study was conducted to identify the prevalence of anaemia in adolescent girls and assess the effectiveness of teaching program on knowledge regarding prevention of anaemia in adolescent girls. **Methods:** The study was conducted in two phases. First phase adopted exploratory survey design and second phase involved one group pre-test post-test design. The sample consisted of 400 adolescent girls (13 – 15) years studying in rural schools of Haldwani block, Uttarakhand. **Results:** The study results revealed that about 90 (22.5%) adolescent girls were anaemic. Maximum 64 (71%) adolescent girls had average knowledge regarding anaemia and its prevention. There was 11% enhancement in the level of knowledge of anaemic adolescent girls post administration of teaching program and was significant at 0.05 level. **Conclusion:** The present study found that there was significant enhancement in the level of knowledge of adolescent girls in the post-test. Thus, it emphasizes the need to educate the adolescent girls regarding dietary choices they make so that it may help in reducing prevalence of anaemia in later ages of life in young girls of India. *Malaysian Journal of Medicine and Health Sciences* (2023) 19(6):136-140. doi:10.47836/mjmhs.19.6.18

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Corresponding Author:
Pratiti Haldar, PhD
Email: pratitihaldar@gehu.ac.in
Tel: +7819003307

INTRODUCTION

Nutrition has direct influence on growth and development of children from infancy and it continues throughout adolescent period. Evidences show that the need for iron during the period of adolescence is highest (1). Adolescent age acts as a bridge between childhood and adulthood. According to WHO, adolescence is the life between 10-19 years of age (2). During this phase there is rapid physical, mental, psychological and cognitive development. This phase not only improves scholastic performance of child but also improves problem solving ability and productivity in them. Changes in growth and development therefore demands need for optimum nutrition (3). In case of girls this demand increases further due to onset of menstruation. Also, due to low intake or poor absorption of iron in girls predisposes them to greater risk of developing anaemia (4).

India has the highest adolescent population in the world, estimated to be 253 million. Out of which every fifth person is between 10 to 19 years (5). It accounts for 20.9% of the country's population. In India, about 72% of the adolescent population resides in rural areas (6) out of which 58% adolescent boys and 47% girls are found to be underweight compared to men and women in the age of (20-24) years (7). About 1/3rd boys and half of the girls are reported to be anaemic (8).

Anaemia can adversely affect girls in adolescent age which can directly affect their reproductive health in future. It will also impair their learning skills, immunity and well-being. If neglected, it will lead to increased prenatal morbidity and mortality rate, low birth weight babies, intra uterine growth retarded babies further hampering their growth and development in later childhood life (9,10,11). As per NFHS 4 in Uttarakhand about 41.4% of women in the age group (15 - 49) years are anaemic (12).

Hence, adolescent age is a crucial time to correct the nutritional deficiencies. Thus, this present study was

done with an objective to identify the prevalence of anaemia in adolescent girls and assess the effectiveness of teaching program on knowledge regarding anaemia and its prevention.

MATERIALS AND METHODS

Study Design and area
The present study was conducted in two phases. Exploratory survey design was used for phase I, to identify the prevalence of anaemia and for phase II one group pre-test post-test design was adopted to assess the knowledge of adolescent girls regarding anaemia and its prevention.

Study units, Sampling and selection
In the present study, samples consisted of adolescent girls in the age group of (13-15) years. In this study the sample size was calculated for phase I and all the children who were identified as anaemic were recruited for phase II. The sample size calculated for phase I was 376 with absolute precision (5%) at a 95% confidence interval and was levelled up to 400. For phase II, all 90 anaemic girls were recruited (identified from phase I). The setting was selected conveniently based on proximity & feasibility. Two government schools in rural villages of Haldwani, Uttarakhand were selected. Enumerate sampling was done for phase I and purposive sampling was done for phase II.

Data collection tool and procedure
Data was collected through structured questionnaire prepared by researcher through in-depth review of literature. There were four sections in the tool; First was socio-demographic proforma, second was haemoglobin recording chart, third was structured knowledge questionnaire and fourth section included self-reported practice checklist.

The tools were developed in English and was validated by experts. Pre testing of tools was done and total time taken to fill the questionnaire was 15 – 25 minutes. The objectives of the study were explained to the adolescents before data collection. Anonymity of subjects was maintained. Informed consent was obtained from the subjects followed by which haemoglobin estimation was done by Haemoglobin colour scale method and recorded in tool II. After identifying the anaemic girls, the others sections of the tools were distributed to collect data in next visit.

Socio-demographic data
There were 13 items in the socio demographic Proforma i.e.- class, age in years, education of father, education of mother, occupation of father, occupation of mother, family income per month (in rupees), type of family and area of residence. In personal profile of student - pocket money per month, diet, age of menarche, body mass index (BMI).

Assessment of anaemia
To assess the prevalence of anaemia Haemoglobin colour scale method was used. It was further interpreted based on W.H.O. criteria for anaemia based on level of haemoglobin i.e., mild (Hb10-11.9g/dl), moderate (Hb7-9.9g/dl) and severe than (Hb<7.0g/dl) anaemia. The scale used was calibrated with 0.1% error.

Structured knowledge questionnaire on prevention of anaemia
The developed questionnaire consisted of 30 items. The questions were developed from five domains i.e., meaning of anaemia, causes of anaemia, sign & symptoms & diagnosis related to anaemia, diet & prevention of anaemia. The questionnaire prepared was multiple choice types with one correct answer and three incorrect responses. Maximum score was 30 and was arbitrarily classified into high (21-30), moderate (11 -20) and low (1-10) knowledge. Reliability of tool was r = 0.845.

Practice Checklist related to prevention of anaemia
The tool consisted of 28 items on practices related prevention of anaemia. The questions were asked in the following areas i.e., diet, menstrual, health related and environment. The practice checklist had dichotomous options i.e., yes and no with both positive & negative scoring. The tool was arbitrarily classified into appropriate practice (14 - 28) and (1 – 14) inappropriate practice. Reliability of tool was r = 0.73.

Development of lesson plan
Based on identification, the researcher developed on awareness program on prevention of anaemia. This program aimed to aware and sensitize adolescents on prevention of anaemia. Duration of the teaching was 45 minutes. Charts, flash card, pamphlet were used as A.V (audio-visual) aids. The components of the lesson plan were introduction of anaemia, introduction of blood, function of blood, definition of anaemia, severity of anaemia, types of anaemia, risk factor of anaemia, causes of anaemia, general sign symptoms, diagnostic test, prevention and complications of anaemia.

Ethical considerations
Ethical clearance was obtained from the Institutional Ethics Committee of Pal College of Nursing and Medical Sciences, Haldwani, Uttarakhand, India (PCNMS/EC/29/2019). Formal administrative permission was also obtained from the Principals' of selected schools of Haldwani block to conduct the study. Written permission was obtained from the class teachers.

Statistical analysis
The data was analyzed using SPSS version 20.0. The demographic variables were assessed using frequency and percentage. Paired t-test was used to compare the pre and post–test knowledge and practice scores in order to determine effectiveness of structured teaching

program on prevention of anaemia.

RESULTS

The sample characteristics are described in terms of frequency and percentage and are described in Table I. Majority of the adolescent girls 55 (61.1%) were from class 11th. Maximum 70 (77.8%) adolescent girls had family income below Rs.10, 000. Most of the adolescent girls 69 (77%) had pocket money less than Rs.500. Majority of the adolescent girls 52 (57.8%) were non-vegetarian. Maximum 61 (67.8%) adolescent girls attained menarche between 13-15 years. Majority 63 (70.0%) adolescent girls had normal BMI.

Table I: Frequency and percentage distribution of the sample characteristics (n=90)

Sample characteristics	Frequency (f)	Percentage (%)
Class		
7th	16	17.8
3th	1	1.1
9th	18	20.0
11th	55	61.1
Family income/month		
Below 10000	70	77.8
10000-20000	15	16.6
Above 20000	5	5.6
Pocket money/month		
>500	69	77
≤ 500	21	23
Diet		
Vegetarian	38	42.2
Non-vegetarian	52	57.8
Age of menarche		
11-13 year	29	32.2
13-15 year	61	67.8
B.M.I		
Under weight ((16-18.4))	22	24.4
Normal weight (18.5-24.9)	63	70.0
Over weight (25-40)	5	5.6

Out of 400 adolescent girls only 90 (22.5%) were found to be anaemic (Fig.1) and a total of 73 (81%) of the adolescent girls had mild anaemia and only 6 (7%) girls reported to have severe anaemia (Fig.2).

It was found that majority of the adolescent girls 64 (71%) had average knowledge in pre-test whereas in post-test about 66 (73%) adolescent girls had average knowledge (Fig. 3).

There was 11% enhancement in the level of knowledge and the calculated z value obtained was 5.11% which was found to be significant at 0.05 level (p=0.049). (Table II).

DISCUSSION

The study findings showed that majority 55 (61.1%) of the adolescent girls were from class 11th. Majority 52 (57.8%) of the adolescent girls were non-vegetarian. Maximum 61 (67.8%) adolescent girls attained menarche at year (13-15) years. Majorities 63 (70.0%) of the adolescent girls were having normal BMI. Prevalence of
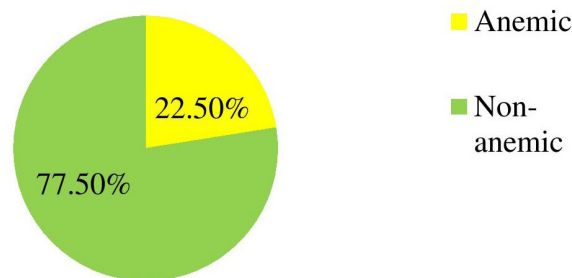

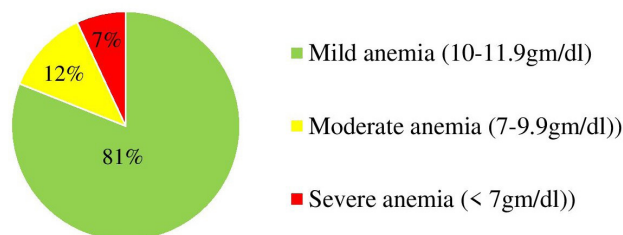**Figure 1: Pie diagram showing prevalence of anaemia in adolescent girls**

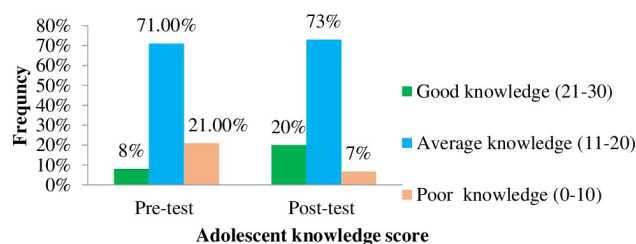**Figure 2: Pie diagram showing classification of anaemia in adolescent girls**

Figure 3: Histogram showing pre-test and post-test knowledge level of adolescent girls

Table II: Effectiveness of Structured Teaching Program on knowledge (n=90)

Knowledge Score	Mean	Mean %	SD	Enhancement %	'Z' value
Pre- test Knowledge score	14	46.33	4.57	11	- 5.11*
Post-test knowledge score	17.2	57.33	3.86		

*p significant at< 0.05 level.

anaemia identified was 90 (22.5%) in adolescent girls.

A study by Sharma. L.M, Verma.V, Balgir.S.R and Singh A. reported the prevalence of anaemia among the adolescent girls in urban training health centre Tripuri-Patiala, Punjab. It was found that 79.6 % adolescents had mild anaemia, 63.6 % moderate and 16 % had severe anaemia. The study concluded that nutritional status of the girls is required to be improved by providing counselling and nutrition supplementation and through regular supply of iron folic acid tablets (13). Similar results were also reported by Chandrakumari AS, Sinha P, Singaravelu S and Jaikumar S that the prevalence of

anaemia identified in adolescent girls was 124 (48.63%) of which majority of the 69 (55.64%) anaemic girls were having mild degree of anaemia (14).

In our study, maximum 64 (71.11%) adolescent girls had average knowledge in pre-test whereas in post-test only 66 (73%) adolescent girls had average knowledge. About 82 (91%) of the adolescents' girls reported good practice. There was significant enhancement of knowledge post intervention (p=0.049, p < 0.05 level). These findings were consisted with study done by Deepti, Chaudhary P, Kaur R and Chitra P. where it was reported that 58% adolescent girls had inadequate knowledge, 40% had moderate and only 2% had poor knowledge in pre-test. After training program there was improvement in the level of knowledge to 85% in intervention group adequate knowledge and was significant (t = 25.554, p<0.05) (15). Also, a study by Weljale reported that in his study about 18 (60%) adolescent girls had average knowledge and 12 (40%) had good pre-test knowledge regarding anaemia whereas in post test showed 21 (70%) girls having good knowledge regarding anaemia (16). In our study it was found that girls did not have adequate knowledge in the pre-test which highlights the significance of imparting awareness regarding diet selection and healthy eating practices among girls residing in rural areas.

The limitation of the present study includes that the study design had no control over the variables and had no randomization. The samples were selected using non probability; enumerate sampling technique, which limits the generalization of the study findings. There was also chance of recall bias as the subjects needed to recall knowledge and practices relating to prevention of anaemia.

CONCLUSION

The findings of the present study concluded that most of the adolescents had mild anaemia and had average knowledge regarding prevention of anaemia. After giving teaching program the knowledge of adolescent girls significantly improved. This raises the need to organize awareness camps in schools specifically in rural areas regarding food selection, food diversity and good eating habits. Also, there is need for regular screening of adolescent girls for Haemoglobin through health camps as this will help to identify and treat them at initial stage of anaemia. Further, the present study findings can be used as the baseline data to conduct another study having a larger sample of adolescent girls so as to identify the root cause of anaemia in the early stages of adolescent period so that need based intervention can be developed by collaborating with existing health care services in the community.

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