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A study to assess the knowledge regarding measures to improve hemoglobin levels among adolescent girls at selected colleges Tirupati

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Abstract
Background: Anemia is the most common nutritional deficiency disorder in the world. Anemia as a condition in which the hemoglobin content of blood is lower than normal. Prevalence of anemia in India among adolescent girls is high because of low dietary intake, poor availability of iron and chronic blood loss due to hook worm infestation and malaria. Poor nutrition status and anemia have consequences that extended over generation.
Objectives: To assess the knowledge regarding measures to improve hemoglobin levels among adolescent girls. To associate the knowledge regarding measures to improve hemoglobin levels with their selected socio demographic variables.
Methodology: Non experimental approach adopted to achieve the objectives of the study, a descriptive study involving 100 adolescent girls at Sree padmavathi junior college for women. Data were collected by using structure questionnaire. Data regarding demographic characteristics and multiple choice question related to measures to improve hemoglobin. Data were analyzed with cronbach's Alpha, correlation co efficient. Hypothesis $H_0$1 states there is a no significant association between measures to improve hemoglobin with selected demographic variables was accepted.
Results: Out of 100 adolescent girls majority (57%) were inadequate knowledge, more than 1/4th (36%) of Adolescent girls were having moderate knowledge and few (7%) participants having adequate knowledge regarding measures to improve hemoglobin levels among adolescent girls.
Conclusion: There should be improve awareness regarding measures to improve hemoglobin levels among adolescent girls by providing information regarding diet, tips to be followed in order to prevent the anemia during adolescent age group.

Keywords: Anemia, hemoglobin, adolescent girls, measures

Introduction
Adolescence is also a sensitive period, particularly for girls. WHO (World Health Organization) includes the period in life aged between 10-19 years as adolescence. The period is further divided into early (10-13 years), middle (14-17years), and late (18-20years). Girls typically start puberty around age 10-12 years and achieve their full growth at the age of 15 [1]. Adolescence is a transition from dependent childhood to independent and responsible adulthood.
Globally the number of adolescents is expected to reach 1.13 billion by 2025 [3]. There are about 1.2 billion adolescents in the world, which is equal to1/5 of the world's population and their numbers are increasing. Out of these, 5 million adolescent girls are living in developing countries [4]. Out of 1 billion total Indian population, 21%are adolescent's. The proportions of adolescents are high in Africa (23%) and in Asia (19.1%) [3]. Inadequate nutrition during late childhood and adolescent can have a significant impact on a woman's adult and the health of her children. Under nutrition during adolescence is associated with higher risk for preterm, risk for under nutrition, prenatal and neonatal mortality. South Asia contains some of the highest national rates of thinness and stunting in young women in the world, as well as high rates of Anemia. Anemia is an indicator of both poor health and the poor nutrition [9].
Iron deficiency anemia will be prevented by adequate dietary intake or iron such as green leafy vegetables such as spinach, coriander leaves, drumstick leaves, vegetables such as beet root, drumsticks, cereals like Ragi, Barley, Bengal gram, dhal, black gram dhal, soya bean, nuts and oilseeds, fruits such as pomegranate, apple, citrus fruits can helpful to treat anemia.

meat proteins and vitamin-"c" will improve the absorption of non heme iron. Tea, coffee, calcium supplementation can decrease absorption of non heme iron. Vitamin rich foods like amla, oranges, and all citrus fruits can improve the absorption of non heme iron [2].

Need for study

There are about 1.2 billion adolescent s in the world, which is equal to 1/5 of the total world's population and their number are increasing yearly. Out of that 5 million adolescent girls are living in developing countries. There are two billion people with anemia in the world and half of the anemia is due to iron deficiency. Anemia is a late indicator of iron deficiency [5]. It is estimated that the prevalence of iron deficiency is 2.5billionsin worldwide. Nearly 50% of women of reproductive age group are suffering with anemia. In developing countries, about 2 billion people suffer from anemia and an even large number of people present iron Anemia begins in childhood, worsens during adolescence in girls and gets aggravated during pregnancy [6].

According to NFHS-III the states of Haryana, Assam and Madhya Pradesh reported 90%of adolescent girls are suffering with anaemia.70.57%young girls of Amritsar were observed as anemic. In Punjab 98% of females were anemic. In Haryana 91.3%of rural and 86%of urban girls are anemic. In Kolkata 45.2% are anemic, in Karnataka 34.82%young girls are anemic [10].

Objectives

1. To assess the knowledge regarding measures to improve hemoglobin levels among adolescent girls.
2. To associate the knowledge regarding measures to improve hemoglobin levels with their selected socio demographic variables.

Hypothesis: There will be no significant association between the knowledge levels of measures to improve hemoglobin levels among adolescent girls with their selected socio demographic variables.

Methodology

Non-experimental Research Approach, Descriptive Research Design were adopted for present study. The study were conducted at SPW Junior college, Tirupati, chittoor (dt), Andhra Pradesh. Sample size was 100 adolescent girls age between 16-19 years. Structured questionnaire was administered to collect the data on measures to improve hemoglobin levels among adolescent girls. Formal permission was taken from the principal, SPW (sree padmavathi junior college for women).the collected data was analyzed by using SPSS 21 version package.

Results

Socio-demographic profile of adolescent girls

Among adolescent girls, majority (44%) were in the age group of 17 years, more than 1\4thare in the age group of 18 years and 22 percent are in the age group of 16 years and only few (4%s) of the respondents were in the age group of 19 years. Regarding religion majority of sample respondents (58%) are adhering to Hinduism, and 21 percent of respondents are belongs to Christianity and 18 per cent respondents belongs to Islamism. Regarding the area of residence of adolescents 68 per cent were living in rural areas, 22 percent were living in slum areas, and only few (10%) were living at rural area. With regard to the type of family, majority of (76%) of adolescent girls belongs to nuclear family and very few (24%) were belongs to joint family. Pertaining to the mothers educational status majority of (42%) were per sued up to secondary education, 39 percent were studied up to primary education and only 13% were illiterates very few, (3%&3%) studied up to intermediate and graduation respectively. Regarding no. of children in family nearly half of the participants (42%) were having three children, more than 1/4 th (38%) of them having two children, and only 20%of them having four and more than that.

With respect to the family income per month more than 1/4th (66%) of the respondent's family income per month was Rs-5001-10000/-, and 17 per cent of the respondents reported their family income is 10001-15000/-, and 16 percent of the respondents earn a monthly income of 3000-5000/- and only (1%) of them are earning more than 15001 per month. With regard to the dietary habits, majority (67%) of adolescents was non vegetarians, and remaining (33%) were vegetarians. Regard the menstrual cycle, majority of the adolescents girls (87%) are having regular cycle and few of (13%) respondents having irregular cycle. Pertaining to the duration of menstrual cycle, majority of them (82%) having 3-5 days of duration, 14 per cent of respondents are having more than 5 days and few (4%) of them having less than 3 days. Regarding to the knowledge about measures to improve hemoglobin (78%) of them having knowledge and only (22%) of them don't have knowledge. Pertaining to the source of information regarding measures to improve hemoglobin (29%) of them from family members and relatives, 1/4th (25%) of them having source from print and electronic media, and 15 per cent of them from health personal and only (9%) of Adolescent having source from text book Considering ever taken treatment for worm infestation, more than 1/2th (58%) of adolescent girls say yes and remaining (42%) of girls says no. Pertaining to how many times taken treatment for worm infestation most of them (35%) said one time and only (23%) were taken two time

Table 1: Distribution of level of knowledge regarding measures to improve hemoglobin levels among adolescent girls.

S. No	Knowledge level	Frequency (f)	Percentage (%)
1	Inadequate	57	57%
2	Moderate	36	36%
3	Adequate	7	7%

Based on levels of knowledge regarding measures to improve hemoglobin, majority (57%) were had inadequate knowledge, more than 1/4th (36%) of Adolescent girls were had moderate knowledge and only few (7%) participants shows adequate knowledge.

Table 2: Mean and Standard Deviation for Level of Knowledge towards Measures to Improve Hemoglobin Levels among Adolescent Girls.

S. No	Category	Mean	Standard Deviation
1.	Knowledge	21.33	7.79

Depicts That The Mean And Standard Deviation Scores Of Knowledge Were21.33and 7.79respectively.

Table 3: Association between the Socio-Demographic Variables with Level of Knowledge

Socio demographic variables			Level of knowledge			Total	Chi-square	DF	P-value	Sig
			Inadequate	Moderate	Adequate					
1. Age in years	16	N	15	6	1	22	4.034	6	0.672	@
		%	68.20%	27.30%	4.50%	100.00%				
	17	N	30	9	5	44				
		%	68.20%	20.50%	11.40%	100.00%				
	18	N	20	9	1	30				
		%	66.70%	30.00%	3.30%	100.00%				
	19	N	2	2	0	4				
		%	50.00%	50.00%	0.00%	100.00%				
2. Religion	Hindu	N	36	16	6	58	8.074	6	0.233	@
		%	62.10%	27.60%	10.30%	100.00%				
	Muslim	N	13	5	0	18				
		%	72.20%	27.80%	0.00%	100.00%				
	Christian	N	16	5	0	21				
		%	76.20%	23.80%	0.00%	100.00%				
	Others	N	2	0	1	3				
		%	66.70%	0.00%	33.30%	100.00%				
3. Area of Residence	Rural	N	49	19	0	68	49.070	4	0.000	**
		%	72.10%	27.90%	0.00%	100.00%				
	Urban	N	2	2	6	10				
		%	20.00%	20.00%	60.00%	100.00%				
	Slum	N	16	5	1	22				
		%	72.70%	22.70%	4.50%	100.00%				
4. Family type	Nuclear family	N	53	16	7	76	5.546	2	0.062	@
		%	69.70%	21.10%	9.20%	100.00%				
	Joint	N	14	10	0	24				
		%	58.30%	41.70%	0.00%	100.00%				
5. Educational status of the mother	Illiterate	N	11	2	0	13	49.116	8	0.000	**
		%	84.60%	15.40%	0.00%	100.00%				
	Primary Education	N	26	13	0	39				
		%	66.70%	33.30%	0.00%	100.00%				
	Secondary Education	N	29	10	3	42				
		%	69.00%	23.80%	7.10%	100.00%				
	Intermediate	N	1	1	1	3				
		%	33.30%	33.30%	33.30%	100.00%				
	Graduate	N	0	0	3	3				
		%	0.00%	0.00%	100.00%	100.00%				
6. No. of children in family	Two	N	23	9	6	38	12.426	4	0.014	**
		%	60.50%	23.70%	15.80%	100.00%				
	Three	N	26	15	1	42				
		%	61.90%	35.70%	2.40%	100.00%				
	Four and above	N	18	2	0	20				
		%	90.00%	10.00%	0.00%	100.00%				
7. Family income per month in rupees	Rs. 3000-5000	N	16	0	0	16	13.329	6	0.038	*
		%	100.00%	0.00%	0.00%	100.00%				
	Rs.5001-10000	N	42	18	6	66				
		%	63.60%	27.30%	9.10%	100.00%				
	Rs.10001-15000	N	9	7	1	17				
		%	52.90%	41.20%	5.90%	100.00%				
	Rs.15001-20000	N	0	1	0	1				
		%	0.00%	100.00%	0.00%	100.00%				
8. Type of Diet	Pure vegetarian	N	24	9	0	33	3.720	2	0.156	@
		%	72.70%	27.30%	0.00%	100.00%				
	Non vegetarian	N	43	17	7	67				
		%	64.20%	25.40%	10.40%	100.00%				
9. Menstrual cycle	Regular	N	63	18	6	87	10.196	2	0.006	**
		%	72.40%	20.70%	6.90%	100.00%				
	Irregular	N	4	8	1	13				
		%	30.80%	61.50%	7.70%	100.00%				
10. Duration of menstruation	Less than 3 days	N	2	2	0	4	6.846	4	0.144	@
		%	50.00%	50.00%	0.00%	100.00%				
	3-5 days	N	59	17	6	82				
		%	72.00%	20.70%	7.30%	100.00%				
	more than 5 days	N	6	7	1	14				
		%	42.90%	50.00%	7.10%	100.00%				
11. i) Do you have	Yes	N	50	21	7	78	2.535	2	0.282	@

any knowledge about measurers to improve hemoglobin		%	64.10%	26.90%	9.00%	100.00%				
	No	N	17	5	0	22				
		%	77.30%	22.70%	0.00%	100.00%				
11.ii) if yes source of information	Family members and relatives	N	18	9	2	29	8.830	6	0.183	@
		%	62.10%	31.00%	6.90%	100.00%				
	Print and electronic media	N	13	7	5	25				
		%	52.00%	28.00%	20.00%	100.00%				
	Health personnel	N	13	2	0	15				
		%	86.70%	13.30%	0.00%	100.00%				
	Text books	N	6	3	0	9				
		%	66.70%	33.30%	0.00%	100.00%				
12. i) Have you ever taken treatment for worm infestation	Yes	N	40	13	5	58	1.281	2	0.527	@
		%	69.00%	22.40%	8.60%	100.00%				
	No	N	27	13	2	42				
		%	64.30%	31.00%	4.80%	100.00%				
12.ii) If yes how many times	1	N	21	12	2	35	4.973	2	0.083	@
		%	60.00%	34.30%	5.70%	100.00%				
	2	N	19	2	2	23				
		%	82.60%	8.70%	8.70%	100.00%				
Total		N	40	14	4	58				
		%	69.00%	24.10%	6.90%	100.00%				

Note;;@=Not Significant
* = Significant at 0.05 level
**= significant at 0.01 level

The above table shows that there is a significant association between measures to improve hemoglobin levels with area of residence, educational status of the mother, no of children in family, menstrual cycle significant at 0.01 level and family income at 0.05 level. Hence $H0_1$ is rejected.

There is no significant association between other socio-demographic variables like age, religion family type, type of diet, duration of menstruation, previous knowledge about measures to improve hemoglobin, and history of taking treatment for worm infestation.

Discussion

The first objective of the study was to assess the knowledge regarding measures to improve hemoglobin levels among adolescent girls**:-**

Level of knowledge regarding measures to improve hemoglobin, majority (57%) were had inadequate knowledge, more than 1/4th (36%) of Adolescent girls were had moderate knowledge and only few (7%) participants shows adequate knowledge.

A similar descriptive study was conducted among100 adolescent junior college students of Hyderabad. A structured questionnaire has been developed to collect the demographic profile of subjects, food habits, food frequency questionnaire was used. The result shows only one forth (25%) subjects were having good knowledge and 36 per cent were having fair knowledge and rest of the subjects was having poor knowledge about prevention of anemia. It concludes that the nutrition education, intervention is required for adolescent girls [7].

The second objective of the study was to find out the association of level of knowledge among adolescents with selected demographic variables:-

Significant association between measures to improve hemoglobin levels with area of residence, educational status of the mother, no of children in family, menstrual cycle significant at 0.01 level and family income at 0.05 level. Hence $H0_1$ is rejected.

A similar descriptive study on knowledge regarding prevention of anemia was conducted among 314 adolescent girls of rural and urban areas Tirupati from October 2013-october 2014. Data was collected in the form of predesigned pre-tested proforma. The SPSS software was used for analysis of data. Chi-square test was used for statistical analysis the result shows area of residence, educational status of mother, menstrual cycle significant at the level of 0.05 level. There is no significant association with worm infestations source of information. nutritional education was given to the adolescent girls [8].

There is no significant association between other socio-demographic variables like age, religion family type, type of diet, duration of menstruation, previous knowledge about measures to improve hemoglobin, and history of taking treatment for worm infestation.

Conclusion

A majority of Adolescent girls were having inadequate knowledge, hence it can be concluded that, there should be need of improving awareness regarding measures to improve hemoglobin levels among adolescent girls.

Ethical approval: Research Committee College of nursing SVIMS approved the study. Informed consent was obtained from participants.

Conflict of Intrest: - Nill

Source of funding: - Nill

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Recommendations

- In community small teachings can be organize regarding measures to improve hemoglobin levels to promote the health status of adolescent girls.
- Administration organize anemia preventive programmes and provide information materials and screening for anemia**.**
- An experimental study can be conducted using control and experimental group.

- As a community health nurse, one can make all the attempts to create awareness regarding prevention of anemia among adolescent girls.
- The future nursing curriculum can give more importance to the prevention of disease than the cure.
- A similar study could be conducted on larger sample.
- A comparative study can be conducted in between urban and rural areas to find out the effectiveness.
- A similar study can be conducted to assess the knowledge, attitude and practices towards measures to improve hemoglobin.
- The study can be replicated in different community settings.
- Information booklets and manuals can also be prepared and distributed to the community about the prevention of anemia.
- An experimental study can be conducted using control and experimental group.

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