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Research Article

Knowledge regarding of Iron Deficiency Anemia among Adolescent Girls of Chitwan

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Abstract

Growth spurts and menarche in adolescent Girls increase iron requirements. Iron deficiency anemia, one of the common nutritional deficiency condition of adolescent girls, is related to poor dietary intake and lack of iron supplementation puts them into the high risk group. The objective of this study is to find out the "Knowledge regarding Iron Deficiency Anemia among Adolescent girls. Descriptive cross-sectional study design was used for the study. Among the 5 government school of this Municipality, three were selected by simple random method and among those schools probability proportional sampling was used for the selection of the adolescent girls of the schools. Data were collected from 156 adolescent school girls through self-administered structured questionnaire developed by researcher and analysis was done using SPSS version 20. Descriptive and inferential statistics was used for the analysis. This study revealed that more then half (53.2%) of the adolescents girls had low knowledge regarding iron deficiency anemia and remaining had just moderate knowledge. There was significant association between age (p=0.03), education (p= 0.001) and father's occupation (p=0.004) with level of knowledge on iron deficiency anemia. The study concludes that adolescent girls have low knowledge regarding iron deficiency anemia, so school administration need to plan and organize anemia preventive campaign and provide information, education and communication (IEC) materials and screening services related to anemia.

Key words: *anemia, adolescent girls, iron deficiency and knowledge*

Introduction

Adolescents are at risk of iron deficiency anemia due to accelerated increase in requirements for iron, poor dietary intake of iron, high rate of infection and worm infestation. Adolescent girls are more vulnerable to anemia due to menstrual blood loss, early marriage and adolescent pregnancy [{World Health Organization (WHO)}, 2012]. During adolescence period increased iron is needed for the body for the expansion of blood volume and for increasing muscle mass**.** Adolescence gain 20% of adult weight and 30% adult height**.** Specifically, the increase in the lean body mass, the expansion of the total blood volume and the onset of menstruation demand increase iron requirement for girls, making them more susceptible to anemia**.** It is one of the major causes of morbidity and mortality of reproductive age women and also a key factor to low birth weight and pregnancy related complication (Mamta & Devi, 2014).

In a study of Indonesia, the prevalence of iron deficiency anemia among the adolescent girls was 22.2% and iron intake was very low (6.59mg/day). This study further reveled that iron deficiency anemia was associated with consumption of less animal based foods. In a study of United Arab Emirates, students' awareness on the causes of IDA was just 28%, among which few participants (13.9%) had knowledge of the active ingredients used in iron formulations, while just 44.7% had knowledge of the effects of iron deficiency anemia and 42.20% participants were aware that it may take up to three months for their hemoglobin levels to normalize after the use of iron supplements (Naeem et al., 2016). Among Palestine adolescent girls, more then four in five (84%), were not aware about the Iron Deficiency Anemia (IDA) and female had poor knowledge than male (Jalambo, Naser, Sharif & Karim, 2017). Today needs to focus on iron deficiency anemia in adolescent girls is to attempt to ensure that women have adequate iron stores prior to conception in future for the proper growth and development of the embryo and fetus.

Prevalence of anemia in south-eastern area of Bangladesh showed that the female students' awareness on anemia was significantly higher (45.3%) then male (26.0%) students (Shill et al., 2014). Another study of southwest India reveled that more then half (55.8%) had inadequate knowledge and almost similar percent (58.3%) had unfavorable practices with regard to iron deficiency anemia and its prevention (Francis et al., 2015). Another study of India showed that majority (84%) of respondents had moderately adequate knowledge however just 5% had adequate knowledge on prevention of iron deficiency anemia (Johnson et al., 2016).

In Nepal, anaemia among women, adolescents and children remains as a public health concern. The prevalence of anaemia among adolescent women (15-19 years) had been increased from 38.5% in 2011 to 43.6% in 2016 (Nepal Demographic and Health Survey [NDHS, 2016]). In eastern Nepal, the adolescent girls having anemia was 33.33% (Limbu et al., 2017).

Various studies shown that adolescent girls have inadequate knowledge regarding iron deficiency anemia. However requirement of iron in body is important for healthy growth and development, especially for the children, adolescent girl and child bearing women. Iron Deficiency Anemia can be easily prevented by providing simple measures like health education, nutritional education and healthy behavioral

practices.Thus researchers were interested to identify knowledge regarding iron deficiency anemia.

Methodology

Descriptive cross sectional study design was used to find out the "Prevalence of Iron Deficiency Anemia among Adolescent Girls of Chitwan". Among the 5 government secondary schools of Kalika Municipility, Chitwan, 3 were selected by lottery method which are Shree Bhymodaya, Secondary School (223), Shree Prithivi Secondary School (197) and Shree Jamuna Secondary School (36) and the total population (adolescent girls of class 9 and 10) of those 3 schools were 456. The probability proportionate sampling technique was used to select the sample from those three secondary schools by using lottery method and the sample size was 156. The structured questionnaire was developed by researcher herself. The validity of the instrument was ensured by extensive literature review and consulting with research advisor and research experts. Pretesting of the instrument was done in 10% (16) of the sample and necessary modification was done accordingly.

At first approval was obtained from research committee of Birgunj Nursing Campus then permission was obtained from the Chief of those three secondary schools of Kalika Municipility by brifing the objective of the study. Followed by written consent was taken with each respondents prior to data collection after explaining the objective and process. They were informed that the study would not harm them and they can withdraw any time if they were not interested to participate. Respondents were separately placed in different classroom to maintain privacy. Collected data was stored in a password protected laptop without disclosing anybody else except researchers and was only used for study purpose.

While analysis, questionnaire was checked for completeness and consistency, then data entry and analysis was done by using SPSS software. Data analysis was done by using descriptive statistics such as frequency, percentage, mean, and standard deviation. Chi square test was used for association of knowledge and selected demographic variables. The finding of the study was presented in different tabular form.

Findings

Table 1: Age and Education of the Respondents and their Parents

Variable	Frequency	Percentage
Age (years)		
13-15	96	61.5
16-18	60	38.5
Level of education		
Nine	89	57.1
Ten	67	42.9
Ethnicity		
Dalit	15	9.6
Adibasi /janajati	104	66.7
Madeshi	2	1.3
Bramin/ chhetri	35	22.4
Education of mother		
Illiterate	70	44.9
Literate	86	55.1
If Literate n=86		
Primary education	46	29.5
Secondary education	28	17.9
Bachelor education	7	4.5
Master and above	5	3.2
Father education status		
Illiterate	34	21.8
Literate	122	78.2
If Literate n=122		
Primary	78	63.9
Secondary	34	27.9
Bachelor	5	4.1
Master and above	5	4.1

Table1, shows that the majority (66.7%) of the respondents were Adibasi and Janajati and the more then three fourth (78.2%) of the respondents' father were literate however just 55.1% of their mother were literate.

Table 2 : Type of family, Parents' Occupation and Economic status of Respondents

n=156

Variable	Frequency	Percentage
Type of family		
Nuclear	85	54.5
Joint	71	45.5
Size of family		
1 to 4	50	32
5 to 8	96	62
More than 8	10	6
Occupation of father		
Service	31	19.9
Agriculture	53	34
Labor	49	31.4
Service	16	10.3
Other	7	4.5
Occupation of mother		

Service	12	7.7
Agriculture	87	55.8
Labor	29	18.6
Business	11	7.1
House maker	17	10.9
Economic status of family		
Adequate to meet the expenses for 1year	77	49.4
Inadequate to meet the expenses for 1 year	32	20.5
Enough to save the for 1year after expenses	47	30.1
Have you ever been diagnosed IDA		
Yes	2	1.3
No	154	98.7

Table2, shows that more then half (54.5%%) of the respondents were in nuclear family. More then half (55.5%) of their mothers were involve in agriculture, however agriculture (34%) and labour (31.4%) was the common occupation of their father. Regarding economic status of family around half (49.4%) were in the group of adequate to meet the expenses for 1year.

Table 3: Respondents Knowledge on Meaning, Causes, Sign and Symptom & Diagnosis of Iron Deficiency Anemia

n=156

Characteristics	Frequency	Percentage
Meaning		
Decrease hemoglobin in red blood cell count*	130	83.3
Normal value of hemoglobin		
12*	35	22.4
Hemoglobin less than indicate anemia value		
11gm/dl*	45	28.8
Anemia affect the body		
The blood doesn't deliver enough oxygen to the body*	76	48.7
Commonly affected age group		
Women of reproductive age (15-49)*	133	85.3
Causes **		
Inadequate dietary intake.	116	74.36
Increase blood loss	72	46.2
Hook worm infection	19	12.2
Frequent blood transfusion	16	10.3
Early marriage and pregnancy	50	32.1
Sign and symptoms **		
Shortness of breaths, headache and dizziness	120	76.9
Excessive vomiting and frequent urination	23	14.7
Noticeable heartbeat, hair loss, and brittle nails	43	27.6
Loss of concentration, extreme fatigue	38	24.4
Pallor(skin, mucous membrane & nail)	89	57.1
Diagnosis		
Hemoglobin*	110	70.5

***Correct response**
****Multiple response**

Table 3, shows that majority (83.3%) had knowledge on meaning of anemia as decrease hemoglobin in red blood cell, however just 28.8% answered correctly that hemoglobin less then 11gm/dl indicate anemia. Less than half (48.7%) said anemia affect the blood's oxygen carrying capacity. Majority 85.3% of the respondents told the reproductive age women are commonly affected by iron deficiency anemia. Regarding causes, majority (74.36%) said that inadequate diet is the cause of anemia and 70.5% answered that hemoglobin is the test for diagnosis of anemia.

Table 4: Respondents Knowledge on Prevention and Management of Iron Deficiency Anemia

n=156

Characteristics	Frequency	Percentage
Management of Iron deficiency Anemia		
Blood transfusion and iron supplementation*	107	68.6
How can we manage Anemia		
Manage self	8	4.5
Consulting b doctors*	148	94.9
Prevention		
Vitamin C helps in Iron absorption	104	66.7
Factors of tea &coffee decrease Iron absorption	74	47.4
Sources of iron **		

Beetroot and dark green leafy vegetables	131	84
Millets and pulses	55	35.3
Tea and egg	29	18.6
Milk and coffee	11	7.1
Prevention **		
Nutritional counseling	88	56.4
Iron supplementation and food fortification	90	57.7
Infection control	23	14.7
Consumption of tea and coffee	17	10.9
Exercise	11	7.1
Knowledge about anemia prevention programmed	14	8.9
Severe anemia is life threatening	148	94.87

***Correct response**
****Multiple response**

Table 4, shows that more then two third (68.8%) said that blood transfusion and iron supplementation was the management of iron deficiency anemia. Two in three (66.7%) of the respondents said that vitamin C helps in Iron absorption. Regarding source of iron, majority (84%) had said that beetroot and dark green leafy vegetables was the source of iron. Almost equal percent of the respondents said that nutritional counseling (56.4%) and Iron supplementation and food fortification (57.7%) are the preventive measures of Iron deficiency anemia.

Table 5: Level of Knowledge Regarding Iron Deficiency Anemia among Respondents

n=156

Level of knowledge	Frequency	Percentage
Poor level knowledge	83	53.2
Good level knowledge	73	46.6

Mean ± SD of knowledge among respondents was 13.60±2.43.

Table 7, shows that more than half (53.2%) had poor level of knowledge and less than half (46.6%) had good level of knowledge.

Table 7: Association between Levels of Knowledge Regarding Iron Deficiency Anemia with Socio-demographic Variables.

n=156

Characteristics	Level Knowledge		Chi-square	P-value
	Poor	Good		
Age				
13-15	57(59.4)	39(40.6)	3.81	0.03*
16-18	26(43.3)	34(56.7)		
Level of education				
Nine	63(70.8)	26(29.2)	25.72	0.001*
Ten	20(29.9)	47(70.1)		
Mother education status				
Illiterate	34(48.6)	36(51.4)	1.09	0.29
Literate	49(57)	37(43)		
Level of mother education				
Primary	24(52.2)	22(47.8)	3.89	0.26
Secondary	15(53.6)	13(46.4)		
Bachelor and above	10(83.3)	2(16.67)		
Types of family				
Nuclear	41(48.2)	44(51.8)	1.85	0.17
Joint	42(59.2)	29(40.8)		
Father occupation				
Service	18(77.4)	7(22.6)	15.62	0.004*
Agriculture	32(60.4)	21(39.6)		
Labor	18(36.7)	31(63.3)		
Service	9(39.13)	14(60.87)		
Economic status				
Adequate to meet 1yr	41(53.2)	36(46.8)	0.85	0.65
Inadequate to meet 1 yr	15(46.9)	17(53.1)		
Enough to save	27(57.4)	20(42.6)		

***Statistically significant at 5% level of significance**

Table 8 shows, that there is statistically significant association between age (p-=0.03), level of education (p-value=0.001) and occupation of father (p-value=0.004) with levels of knowledge.

Discussion

More than half (53.2%) of the respondents had poor level of knowledge and 46.6% had good level knowledge. Divya et al., (2017) supported the finding that more than half (57%) had inadequate knowledge and 36% had moderate knowledge. Contradictory finding was found in a study of central region of Bagmati Provence of Nepal where most (92.%) of the respondents had high knowledge on anemia (Dhivakar et al., 2020). Similarly, Pareek, & Hafiz. (2015) found out that only

25% of adolescent had good knowledge on prevention of anemia.

There is statistically significant association between levels of knowledge with age (p-=0.03), level of education (p=0.001) and occupation of father (p=0.004). Johnson et al.(2016) Identified the contradictory finding that there is no relationship between knowledge with age and education of the mother and another study by Pareek, & Hafiz. (2015) supported the finding that there is significant association between education and knowledge of mother.

Conclusion

The study concludes that, more than half of the adolescent girls have low level knowledge regarding iron deficiency anemia. Age, level of education and father's occupation of the respondents is significantly associated with knowledge on anemia. Frequent awareness campaign regarding iron deficiency anemia and provision of regular hemoglobin test in school and college along with counseling the adolescent girls about the importance of iron in diet can be served as important tools in combating anemia.

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