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KNOWLEDGE REGARDING IRON DEFICIENCY ANEMIA AMONG STUDENTS AT RANGIN FEMALE PREPARATORY SCHOOL IN SULAIMANI CITY

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A - Research concept and design, B - Collection and/or assembly of data, C - Data analysis and interpretation, D - Writing the article, E - Critical revision of the article, F - Final approval of the article

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Abstract (in English):

Aim: Background: A study was undertaken to assess the knowledge of female pupils concerning iron deficiency anemia in Rangin Preparatory School in Sulaimani city and to determine the relationship between socio-demographic traits and general knowledge of iron deficient anemia.

Material and methods: Aims of the study: This descriptive study used a non-probability, convenience sample of 210 females. It took place in Sulaimani city between November 3, 2022, and December 10, 2022, at Rangin Preparatory School. A well-designed questionnaire was created, with the first portion focusing on sociodemographic traits and the second section included the pupil's personal information. The final section asked participants whether they were knowledgeable about iron deficiency anemia.

Results: Results: The research found that 64.3% of participants were knowledgeable about iron insufficiency. Female knowledge is statistically correlated or positively correlated with parents' education

level and age. The association between student knowledge and other sociodemographic factors, however, is not statistically significant or favorable

Conclusions: Conclusion: This study assessed the understanding of iron deficiency anemia among students. The study's conclusions showed that most participants knew something about iron deficiency anemia. In order to live a healthy lifestyle, it is imperative for female in particular to be informed about iron deficiency anemia.

Short title
Most prevalent kind of Anemia is Iron deficiency

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Introduction

Insufficient red blood cells or their ability to deliver enough oxygen to meet physiological demands is known as anemia (WHO, 2020). Anemia affects almost a third of the world's population (Chaparro and Suchdev, 2019). The second leading cause of adolescent years lost in 2016 was Iron deficiency anemia (IDA), which affects one in every six persons worldwide (WHO, 2018).

Anemia negatively affects teenagers' physical capacity, growth, academic performance, and immunity, and it may have long-term consequences in older age groups, particularly for women who are of childbearing age. According to Shaka and Wondimagegne (2018), it may lead to higher incidence of pregnancy problems such low birth weight, preterm births, and neonatal mortality.

Both industrialized and developing nations are grappling with the serious public health problem of iron deficiency anemia. WHO estimates that 29% of all women in the reproductive age group have anemia (Shahzad et al., 2017). According to Fathizadeh et al. (2016), teenage females are one of the groups who are susceptible to IDA.

A typical 70 kg person has a body iron level of about 50 mg/kg, or 3.5–4 g for women and 4-5 g for males. Following is how most of the iron is distributed: Only 0.1-0.2% is attached to transferrin,

65% in hemoglobin (2300 mg), 15% in myoglobin and enzymes, 20% in iron storage, and 10% in iron stores (Barragan et al., 2016). Teenagers must be educated about anemia and the typical adolescent food intake pattern in order to prevent the development of anemia (Rahmi, 2017). Anemia is more common in young female than in young male. Because, according to data from the World Health Organization (WHO, 2013), young female menstruates frequently each month.

Adolescents' knowledge, attitudes, and practices towards the prevention of anemia were improved by nutrition education in schools (Nurhayati et al., 2021). So, in order to prevent its emergence, female students must have knowledge about anemia .This study was done to achieve that.

Methods and Material

Sample and study setting: A non-probability, convenience sample of 210 adolescent females enrolled at Rangin Female Preparatory School between November 3, 2022, and December 10, 2022. A 15-minute interview was conducted with every female. The researcher read the questions and selected responses based on the opinions of all female girls. For the study, private interviews were performed.

Inclusion criteria: Students in grades 10 through 12, who agreed to take part in the study, as well as those between the ages of 15 and 18, were included.

Exclusion criteria: Students above the age of 18 who were unable to participate, absent on the day of data collection or who did not fully respond to all of the study's questions were not included.

Questionnaire: Structured questionnaires and sample interviews were used to gather the information. The thoughtfully created questionnaire had three parts. The first component of the report included patient socio demographic data. This information includes data like her age, class, educational level and occupation of her parents, and financial situation. The questions in the second portion asked about the woman's personal information included the length, frequency, and nature of her menstrual periods. The third segment included inquiries about females' knowledge of iron deficiency anemia. Reevaluation scoring scales for scale dichotomous random variables and evaluated by scoring scales (3, 2, and 1) for the knowledge in relation to (yes, I don't know, No), respectively. Additionally, three consecutive intervals [(1.0 - 1.66), (1.67 - 2.33), and (2.34 - 3)] in light of previous score scales are evaluated by (Low, Moderate, and High) for degrees of knowledge, respectively.

Sample consent and ethical approval: Informed consent was obtained once participants were informed of the study's objectives. The Sulaimani Education Directorate was informed of the study's approval by the Nursing College Council and given official permission to carry out the research by the nursing college's dean.

Data analysis: The data were analyzed using SPSS version 22 after data collection. The chi-square test was used to determine whether any variables had a significant connection. P-values of 0.05 or less were regarded as significant.

Results

In relation to the sociodemographic characteristics, this table reveals that more than half (54.3%) of the samples were between the ages of 15 and 16 and that the majority of them (51.4%), were in stage 10. Both the student's father and mother graduated from elementary school. In the same table, it is

shown that the majority of the sample's fathers (55.7%) work as government employees, while the majority of the sample's mothers (50%) are stay-at-home moms, with the highest percentage (61.4%) having sufficient economic status.

According to Table 2, the majority (94.3%) of the study sample did not have a chronic illness. The majority of the study sample (77.1%) had periods that lasted between five and seven days, whereas (87.1%) of the sample had normal amount of bleeding during periods, and (70.0%) of the students had regular periods.

According to the study's findings, the following symptoms commonly occur during menstruation: back pain (60.0%), abdominal discomfort (75.7%), exhaustion (55.7%), headache (28.6%), weakness (42.9%), breast pain (30.0%), mood swing and irritability (52.9%), and appetite loss (18.6%). In terms of knowledge regarding iron deficiency, the majority of them (64.3%) had heard about it, with more female girls (30.0%) having heard from relatives.

This table demonstrates students' understanding of the signs and symptoms of iron deficiency. The majority of female accountants (80.0%) identified skin pallor as an indication of anemia. Knowledge about the non-nutritional causes of iron deficiency, significant menstrual blood loss (32.8%), and genetic disorders (37.1%) are each factor that affect IDA in their own unique ways. In terms of behavior and nutrition, tea drinking right after meals is prevalent (85.7%), as is iron deficiency. Regarding poor consumption, the study sample's participants who had the highest percentages of spinach, leafy green vegetables, lentils, red meat, eggs, fruits, and nuts as a healthy source of iron were (71.4%), (71.4%), (70.0%), (65.7%), (65.7%), (64.3%), and (61.4) respectively. The majority (95.7%) of them stated that people may taking iron supplements that a doctor has prescribed in order to treat and prevent iron deficiency.

Table 4 shows the relationship between sociodemographic information from the study sample and general knowledge of IDA, showing that there was a statistically significant relationship between age and parents' educations with general knowledge because the p value was less than 0.05, but there was no statistically significant relationship between class, economic status, and parents' occupation with general knowledge of IDA.

Discussion

Adolescence is a window of opportunity for anemia therapies. Therefore, interventions to increase iron intake through food-based approaches, such as dietary diversification and food fortification with iron; iron supplementation; and improved health services and sanitation, are necessary to prevent and treat IDA.

Iron deficiency anemia is the most common type of anemia. Anemia, one of today's most prevalent and unsolvable nutritional problems, has detrimental effects on people's health as well as the development of society and the economy in both developed and developing countries (Bandyopadhyay et al., 2017). More over half (54.3%) of the samples in the current study were between the ages of 15 and 16, and both the student's father and mother had completed elementary school. In contrast, another study found that the majority of students were between the ages of 12 and 14 years (Salai, R. G., & Kelambakkam, K. D., 2020).

The same table reveals that most of the sample's dads (55.7%) are employed by the government, whereas most of the sample's mothers (50%) stay at home with their children, with the largest number

(61.4%) having a sufficient level of economic standing. This research is in line with a study in Iraq conducted by Saffari et al. in 2018, which found that almost half of parents only had adequate money for basic needs and that more than two thirds of parents had only a basic education.

The majority of female accountants (80.0%) in this study show that students understand the symptoms and indicators of iron insufficiency. Our research is consistent with a 1992 study by Agha, Sadaruddin, Khan, and Ghafoor that found that the majority of participants were aware of the signs and symptoms of iron deficiency anemia. In contrast, another study by Balaji, K., Priya, V. V., and Gayathri, R. (2022) found that only 14% of the study population knew all the symptoms of IDA, and that 38% of the participants did not know any of the symptoms. The results of the current study showed that the majority of female adolescents (30%) learn about iron insufficiency from their families. However, a survey conducted in Jordan by Abu-Baker et al. in 2021 of female adolescent students revealed that 54.3% of the sample had never heard of IDA.

According to the current study, there is a strong correlation between age, father and mother education levels and general understanding of iron deficiency anemia. Additionally, the findings of our study support those of Abd El Ghafar, S. S.'s study from 2022, which indicated a highly statistically significant link between age, father education, mother education, and IDA with a p value =.000l. While Jahed et al. (2012) found that age had no bearing on their expertise; other research that is congruent with ours has found the opposite. Additionally, research conducted at ILAM, Iran, which involved 291 high school girls, discovered no relationship between students' IDA knowledge and demographic traits (p>0.05) (Shahalvande et al., 2015)

Conclusion:

This study evaluated female's knowledge of iron deficient anemia. The study's findings indicated that the majority of participants were knowledgeable about IDA. The study also demonstrates the significant associations between parents' educational levels and their children's understanding of IDA. In conclusion, it is crucial for female in particular to have information of IDA in order to live a healthy lifestyle.

Recommendation:

Initiatives to inform adolescents about the different types of anemia. Students receive detailed nutritional training that addresses anemia caused by an iron deficiency. Educating mothers on how to recognize the early signs of anemia.

CONFLICT OF INTEREST:

Nil.

Table (1): Distribution of the students according to socio-demographic characteristics.

Socio-demographic characteristics	Frequency	Percentage
Age groups		
15-16 years	114	54.3
17-18 years	96	45.7
Class		
10 stage	108	51.4
12 stage	102	48.6
Economic status		
Sufficient	129	61.4
Barely sufficient	81	38.6
Father education		
Illiterate	39	18.6
Basic	72	34.3
Preparatory	24	11.4
Institute and college graduate	42	20
post graduate	33	15.7
Mother education		
Illiterate	33	15.7
Basic	81	38.6
Preparatory	27	12.9
Institute and college graduate	39	18.6
post graduate	30	14.3
Father occupation		
Governmental	117	55.7
Self-employee	90	42.9
No work	3	1.4
Mother occupation		
Governmental	96	45.7
Self-employee	9	4.3
Housewife	105	50

Table (2): Distribution of personal information of the study sample.

Personal information	Frequency	Percentage
Do you have any chronic disease?		
Yes	12	5.7
No	198	94.3
Length of menstruation by day?		
Less than 5 days	21	10.0
5-7 days	162	77.1
More than 7 days	27	12.9
Amount of blood during menstruation		
Normal	183	87.1
Heavy	21	10.0
Little	6	2.9
Regularity		
Regular	147	70.0
Irregular	63	30.0

Personal information	Frequency	Percentage
Do you have any signs during menstruation?		
Bach pain		
Yes	126	60
No	84	40
Abdominal pain		
Yes	159	75.7
No	51	24.3
Fatigue		
Yes	117	55.7
No	93	44.3
Headache		
Yes	60	28.6
No	150	71.4
Weakness		
Yes	90	42.9
No	120	57.1
Breast pain		
Yes	63	30
No	147	70
Mood swing and irritability		
Yes	111	52
No	99	47
Loss of appetite		
Yes	39	18.6
No	171	81.4
Other		
Yes	27	12.9
No	183	87.1
Did you hear about iron deficiency?		
Yes	135	64.3
No	75	35.7
If yes, source of information		
Internet	33	15.7
Family	63	30
Doctor	39	18.8
Total	**210**	**100**

Table 3: Distribution of Knowledge regarding iron deficiency anemia among students.

Variable	yes		I don't know		No		Mean	Level of
	F	%	F	%	F	%	score	know
Which of the following is sign and symptom of ID?								
Skin Pale	168	80	36	17.1	6	2.9	2.77	**H**
Decease appetite	84	40	96	45.7	30	14.3	2.25	**M**
Face flushing	12	5.7	117	55.7	81	38.6	1.67	**M**
Fatigue	159	75.7	45	21.4	6	2.9	2.72	**H**
Shortness of breath	39	18.6	108	51.4	63	30	1.88	**M**
Obesity	3	1.4	111	52.9	96	45.7	1.55	**L**
Hand cold	138	65.7	60	28.6	12	5.7	2.6	**H**
Feet cold	132	62.9	69	32.9	9	4.3	2.58	**H**
Abdominal pain	27	12.9	126	60	57	27.1	1.85	**M**
Headache	135	64.3	60	31.4	9	4.3	2.6	**H**
Pallor of palms	90	42.9	111	52.9	9	4.3	2.38	**H**
Pallor of nail bed	78	37.1	123	58.6	9	4.3	2.32	**M**
Pallor of eyelids	93	44.3	108	51.4	9	4.3	2.4	**H**
Tachycardia	51	24.3	138	65.7	21	10	2.14	**M**
2. Cause of iron deficiency:								
A. Non nutritional Factors:								
Heavy blood loss during menstruation	78	37.1	78	37.1	54	25.8	**2.11**	**M**
Infections	27	12.8	123	58.6	60	28.6	**1.84**	**M**
presence of intestinal worm	6	2.9	147	70.0	57	27.1	**1.75**	**M**
Genetic disorder	69	32.8	102	48.6	39	18.6	**2.14**	**M**
Uterine fibroid	15	7.1	144	68.6	51	24.3	**1.82**	**M**
Cancer	33	15.7	114	54.3	63	30.0	**1.85**	**M**
Digestive system problems :	36	17.1	120	57.1	54	25.7	**1.91**	**M**
a. Ulcers	33	15.7	132	62.9	45	21.4	**1.94**	**M**
b. colon polyps	18	8.6	153	72.9	39	18.6	**1.90**	**M**
c. colon cancer	15	7.1	159	75.7	36	17.1	**1.90**	**M**
b. Behavior and nutritional of iron deficiency								
Drinking directly tea after meals	180	85.7	21	10	9	4.3	**2.81**	**H**
fizzy beverage with meals	129	61.4	63	30	18	8.6	**2.52**	**H**
Taking calcium (dairy product) with meat &liver	60	28.6	117	55.7	33	15.7	**2.12**	**M**
pica (which a person craves eating nonfoods items such as the soil -ice - clay)	69	32.9	105	50.0	36	17.1	**2.15**	**M**
Extra eating fast food	72	34.3	96	45.7	42	20.0	**2.14**	**M**
Drinking coffee directly after meals	138	65.7	48	22.9	24	11.4	**2.54**	**H**
C. Poor consumption of:								
a-beans	105	50.0	72	34.3	33	15.7	**2.34**	**H**
b-fruits	135	64.3	48	22.9	27	12.9	**2.51**	**H**
c-sweets	42	20.0	87	41.4	81	38.6	**1.81**	**M**
d-red meat	138	65.7	54	25.7	18	8.6	**2.57**	**H**
e-nuts	129	61.4	63	30.0	18	8.6	**2.52**	**H**

Variable	yes		I don't know		No		Mean score	Level of know
	F	%	F	%	F	%		
f-eggs	138	65.7	42	20.0	30	14.3	**2.51**	H
g-spinach	150	71.4	36	17.1	24	11.4	**2.60**	H
h-leafy green vegetable	150	71.4	36	17.1	24	11.4	**2.60**	H
i-dark chocolate	39	18.6	93	44.3	78	37.1	**1.81**	M
j-liver	99	47.1	81	38.6	30	14.3	**2.32**	M
k.food sea	105	50.0	69	32.9	36	17.1	**2.32**	M
l.lentils	147	70.0	36	18.6	24	11.4	**2.58**	H
3. we can treat and prevent iron deficiency by following:								
Taking iron pills prescribed by physicians	201	95.7	6	2.9	3	1.4	**2.94**	H
Personal Hygiene	69	32.9	84	40.0	57	27.1	**2.05**	M
Exercise	78	37.1	114	54.3	18	8.6	**2.28**	M
Avoiding uncooked fish and shellfish	48	22.9	75	35.7	87	41.4	**1.81**	M
Total	210(100)							

Table 4: Association between socio-demographic characteristics and over all knowledge regarding iron deficiency anemia among students.

Variables	N=210				Total	
	Moderate knowledge		High knowledge			
	F	%	F	%	F	%
Age						
15- 16 years	72	63.2	42	36.8	114	54.3
17-18 years	69	71.9	18	28.1	96	45.7
P. value 0.034 Significant x^2 = 1.03 9						
Class						
10 stage	72	66.7	36	33.3	108	51.4
12 stage	69	67.6	33	34.4	102	48.6
P. value 0.567 Not Significant x^2= 0.0 08						
Economic status						
Sufficient	93	72.1	36	27.9	129	61.4
Barely sufficient	48	59.3	33	40.7	81	38.6
P. value 0.304 Not Significant x^2= 1.2 38						
Father education						
Illiterate	27	69.2	12	30.8	39	18.6
Basic	54	75.0	18	25.0	72	34.3
Preparatory	15	62.5	9	37.5	24	11.4
Institute college graduate	30	71.4	12	28.6	42	20.0
post graduate	15	45.5	18	54.5	33	15.7
P. value 0.035 Significant x^2 =3.237						
Mother education						
Illiterate	24	72.7	9	27.3	33	15.7
Basic	66	81.5	15	18.5	81	38.6
Preparatory	15	55.6	12	44.4	27	12.9
Institute college graduate	24	61.5	15	38.5	39	18.6
post graduate	12	40.0	18	60.0	30	14.3
P. value 0.033 Si gnificant x^2 =6.7 44						

Variables	N=210				Total	
	Moderate knowledge		High knowledge			
	F	%	F	%	F	%
Father occupation						
Governmental	81	69.2	36	30.8	117	55.7
Self-employee	57	63.3	33	36.7	90	42.9
No work	3	100	0	0	3	1.4
P. value 0.864 Not significant x²=0.76 4						
Mother occupation						
Governmental	60	62.5	36	37.5	96	45.7
Self-employee	9	100	0	0	9	4.3
House wife	72	68.6	33	31.4	105	50.0
P. value 0.441 Not significant x²=1.813						

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