

Assess Knowledge And Attitude Of Students About Iron Deficiency Anemia In Buridah City, Ksa

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Abstract

Background: People around the world are affected by anemia, a morbid syndrome. Anemia caused by iron deficiency affects teenage pupils' focus, physical strength, academic performance, and productivity; it also raises a risk of disease. **Aim:** to find out how much the kids know and care regarding iron deficiency anaemia. **Methods:** A descriptive research design was conducted on 210 students by convenience sample who enrolled at 32 secondary female school, Buridah, Qassim city, Kingdom Saudi Arabia. Researcher collected data by using google form include arabic questionnaire consisted of demographic characteristics, knowledge, and attitude. **Results:** stated that 70.9%, 74.3% and 79% of studied students had correct knowledge related concept of anemia, content of balanced diet and importance of iron for adolescent girl, respectively. While 84.8%, 65.2% and 73.3% of them had incorrect knowledge related complication of iron deficiency anemia, pathophysiology of iron deficiency anemia and signs and symptoms of iron deficiency anemia, respectively. Also, showed A combined 63.8 %, 73.3%, and 66.7 % of students polled said they would go to the doctor if they suspected anaemia, increase their intake of green leafy vegetables if recommended for anaemia, and eat breakfast every day if they did. **Conclusion:** Nearly two-thirds of those quizzed knew little or nothing about the condition known as iron deficiency anaemia. However, more than a third of those polled possessed adequate information. Iron deficiency anaemia was seen positively by two-thirds of the students surveyed. While more than a third of them had a pessimistic outlook. they were. Furthermore, there used to be a highly significant positive correlation among students' knowledge and their overall attitude about anaemia, with a p value of 0.001**.

Recommendation: Awareness programs for students about different types of anemia. Comprehensive nutritional education for students regarding iron deficiency anemia

Key words: Attitude, Iron Deficiency Anemia; Knowledge, Students

Introduction

Erythropoiesis relies heavily on the presence of iron, which is a fundamental component of human metabolism. It's also engaged in a slew of other cellular functions throughout the body. Hair, skin and nails are all dependent on iron for their proper functioning (Triphaus et al., 2021). In the human body, iron metabolism has become controlled via hormones that control the absorption of iron by cells that lining the gastrointestinal system, storage, and excretion of iron (Owaidah et al., 2020).

The most prevalent kind of anaemia globally is iron deficiency anaemia (IDA) (Orsango et al., 2021). According to the World Health Organization (WHO), around to 2 billion people, or 25percent of total of the worldwide people, are anemic, with roughly half suffering from IDA. Additionally, for each patients with IDA, at least one other patient has iron insufficiency without anaemia. As a result, there are over two billion individuals worldwide who suffer from iron deficiency, either alone or in combination with anaemia, the majority of whom live in wealth nations (Mantadakis et al., 2020). In underdeveloped countries, anaemia affects 43% of the population; in industrialized countries, it affects 9% of the population (Al-Alimi et al., 2018).

It is possible to have iron deficiency anaemia (IDA) for a variety of reasons including a shortage of iron in the diet; a genetic predisposition; inflammation; and environmental variables such as poverty and tooth decay (Sundararajan & Rabe, 2021). This type of anaemia causes memory and learning difficulties, a decrease in skills of motor, and an increased level of anxiety in children. Iron deficiency anaemia affects 47.4 percent of preschoolers across the world. Hematocrit and Haemoglobin levels can indicate iron deficiency anaemia (Gurunathan et al., 2019). The occurrence of iron deficiency anaemia has been found to range between 17% to 70% among pre-schoolers in the Mideast, from 12.6% to 50% among schoolchildren, and from 14.5% to 42.5% among adolescents (Alkhaldy et al., 2020).

Some of the most serious symptoms of anaemia include a loss of conjunctival tissue (conjunctivitis), deterioration of the palms and nail beds, as well as enlargement of the tongue and ulcers in the corners of the lips. The condition can also cause hearing and vision loss, as well as learning difficulties and scholastic failure, and aggravate behavioural abnormalities owing to the disease's iron-effectiveness in myelinated neurons (Alipoor et al., 2017).

At the study done by Alzaheb & Al-Amer, 2017 at Tabuk, Saudi Arabia who found that The IDA prevalence was 12.5%. Epidemiological surveys have not been able to determine the general frequency of IDA in Saudi Arabia, although there have been several studies of single institution and particular age and sex groups reporting a prevalence varies from 10 to 60 percent (Al Hawsawi et al., 2015).

A person suffering from iron deficiency anaemia is at serious danger of cognitive decline and stunted growth, as well as diminished mental and physical abilities, reduced productivity at work, and a diminished life quality in general. Student attention is disrupted, their physical strength, academic performance and productivity are lowered, and the danger of infection is increased when adolescents have IDA (Ahmad et al., 2015).

Therefore, Intervention through the application of behaviour modification patterns is critical for promoting anaemia control behaviours. It is also critical that kids be taught about anaemia prevention strategies and lifestyle changes.

Aim: The research goal was to find out how well the students understood and felt about iron deficiency anaemia.

Research questions:

- What is the degree of knowledge among students concerning iron deficient anaemia?
- Is there relation between students' characteristics and their knowledge and attitude?

Methods

Research design

The study was conducted using a descriptive approach.

Setting: This study was conducted at 32 secondary female school that provide education services to 360 students, Buridah, Qassim city, Kingdom Saudi Arabia.

Subject: A convenience sample included 210 students enrolled at previous mentioned school, who willing to participate in the study, from June 1st, 2021, to October 30th, 2021.

Tools of Data Collection:

Following a thorough examination of the existing literature, the researchers devised an Arabic survey (Shahalvand et al., 2015; Bandyopadhyay et al., 2017; Malay et al., 2018). To assess students' understanding and attitudes of iron deficiency anaemia. It consisted of three items:

-Demographic characteristics of students included age, study year, education level of mother, Employment of mother, Family member, Family income, Suffered from anemia.

- Students were tested on their knowledge of iron deficiency anaemia through a series of 13 multiple-choice questions (MCQs), which covered topics such as anemia's definition, various kinds of nutritional anaemia, the significance of a healthy diet, the role of copper in iron absorption, iron deficiency anemia's complications, the significance of iron for adolescent girls, the causes of iron deficiency anaemia, the pathophysiological mechanisms of iron deficiency anaemia. Each question has been given a point value of one if the answer was accurate, and zero if the answer was incorrect. There was a distinction made between contentment and dissatisfaction based on the total scoring.

- When asked about their feelings toward anaemia, students were asked to check six different boxes, including: believing that anaemia is a health issue, seeking medical attention if they have any suspicions, increasing their intake of green leafy vegetables when told to do so, eating breakfast regularly, and being willing to take iron supplements when told they need them. Each item was scored on Likert score point Agree 2, Sometimes 1, Disagree 0 for positive item and vice versa for negative points. The total score was classified as positive attitude if score 7 to 12, while negative attitude if score 0 to 6.

Pilot study

A pilot study was conducted on a group of 21 students (10 %). It was conducted prior to data collection to assess the feasibility, duration, and cost of a full-scale research project. No modification was carried out, therefore the participants in the pilot were included in the study.

Study framework

The data was collected using Google Forms <https://forms.gle/XY2gbFZDvVrUd5zDA> and distributed to the participants via email and WhatsApp. For the study, researchers sent out an email with a link to a spreadsheet where they could collect data from participants. In the initial segment of the survey, the participants are greeted and instructed to answer all of the questions.

Ethical Consideration

The research approval was obtained from the director of (32) secondary school. Consent was obtained from each parent of student before participation. In addition, participants who agreed to participate in the study were assured that all information obtained would be kept confidential and that they had the right to withdraw from the study at any time.

Statistical Analysis

The acquired data collected was analysed and placed into a social science statistical software. (SPSS) (SPSS Inc; version 24; IBM Corp., Armonk, NY, USA). After completing entry, the data was explored to detect any errors. Then, it was analyzed by the same program for presenting frequency tables with percentages. Qualitative data was presented as a number and percent. Furthermore, Pearson Correlation Coefficients can also be used to gauge the intensity of a linear correlation between 2 variables. An explanatory variable is used to analyze the results of a dependent variables in a multiple regression model. The results were considered statistically significant at $P \leq 0.05$ and highly significant at $P < 0.01^{**}$. The developed tools were evaluated for their reliability by using Cronbach's alpha coefficient test in the SPSS program version 24 by a statistician. Internal consistency reliability (Cronbach's α) appeared to be good for the knowledge scale (Cronbach's $\alpha = 0.819$) and attitude scale was 0.807.

Results

Table (1) revealed that mean age of the sample was 16.92 ± 3.72 , 107 (50.9%) enrolled at second year and 100 (47.7%) of mothers' students were graduated from secondary school. In total, 161 (76.7%) reported had six or more members at their family. The vast majority (92.9%) of sample had sufficient family income. Furthermore 43.8% of students suffered from anemia present or at past.

Table (2) stated that 70.9%, 74.3% and 79% of studied students had correct knowledge related concept of anemia, content of balanced diet and importance of iron for adolescent girl, respectively. While 84.8%, 65.2% and 73.3% of them had incorrect knowledge related complication of iron deficiency anemia, pathophysiology of iron deficiency anemia and signs and symptoms of iron deficiency anemia, respectively.

Table 3 shows that 63.8%, 73.3%, and 66.7 percent of the students surveyed agree with the recommendations to seek medical treatment if you suspect anaemia, increase your consumption of green leafy vegetables if recommended for anaemia, and eat breakfast on a regular basis. Anemia isn't considered a health concern by 57.1 percent of respondents and 22.9 percent of those who disagree that multivitamins should be taken on a daily basis.

Figure (1) indicated that 58% of the studied students had unsatisfactory knowledge about iron deficiency anemia. While 42% of them had satisfactory knowledge.

Figure (2) indicated that 64% of the studied students had positive attitude about iron deficiency anemia. While 36% of them had negative attitude.

Table (4) detected that there was a high significant positive correlation between students' knowledge and their total attitude toward anemia at p value 0.001^{**} .

Table (5) detected that the model is high significant ($F=13.098$ and P value= 0.000), this model explains 56% of the variation in total attitude detected through R^2 value 0.56. also presented that, suffering from anemia and high knowledge had high positive effect on total attitude at p - value $<0.01^{**}$, while high education level of mother, mother who employee, sufficient family income had slight positive effect on total attitude with p value $<0.05^*$.

Table (6) revealed that the model is high significant ($F=11.246$ and P value= 0.000), this model explains 49% of the variation in total attitude detected through R^2 value 0.49. also presented that, age and total attitude had high positive effect on total knowledge at p -value $<0.01^{**}$, while high education level of mother and suffering from anemia had slight positive effect on total knowledge with p value $<0.05^*$.

Results

Table (1) Distribution of studied subjects according to their characteristics (n=210)

Items	n	%
Age		
15	31	14.8
16	70	33.3
18	109	51.9
Mean (SD)	16.92±3.72	
Study year:		
First	56	26.7
Second	107	50.9
Third	47	22.4
Education level of mother		
Primary	33	15.7
Preparatory	20	9.5
Secondary	100	47.7
University	57	27.1
Employment of mother		
Employee	54	25.7
Housewife	156	74.3
Family member		
<3	7	3.3
3 – 5	42	20
≥ 6	161	76.7
Family income		
Sufficient	195	92.9
Insufficient	15	7.1
Suffered from anemia		
Yes	92	43.8
No	118	56.2

Table (2) Distribution of studied subjects related their knowledge about iron deficiency anemia (n=210)

Items	Correct		Incorrect	
	n	%	n	%
Concept of anemia	149	70.9	61	29.1
Types of nutritional anemia	88	41.9	122	58.1
Content of balanced diet	156	74.3	54	25.7
Copper is important for iron absorption	84	40	126	60
Complication of anemia	32	15.2	178	84.8

Importance of iron for adolescent girl	166	79	44	21
Causes of iron deficiency anemia	76	36.2	134	63.8
Pathophysiology of iron deficiency anemia	73	34.8	137	65.2
Signs and symptoms of iron deficiency anemia	56	26.7	154	73.3
Effect of anemia on adolescent	80	38.1	130	61.9
Ways of prevention of iron deficiency anemia	79	37.6	131	62.4
Diagnostic measure for iron deficiency anemia	77	36.7	133	63.3
Medical management for iron deficiency anemia	105	50	105	50

Table (3) Distribution of studied subjects related their attitude about iron deficiency anemia (n=210)

Items	Agree		Sometimes		Disagree	
	n	%	n	%	n	%
I think anemia is a health problem	122	58.1	40	19	48	22.9
I seek medical attention if you suspect anemia	134	63.8	36	17.1	40	19.1
I increase my consumption of green leafy vegetables if prescribed for anemia	154	73.3	20	9.5	36	17.2
I eat breakfast regularly	140	66.7	41	19.5	29	13.8
I willing to take iron tablets if prescribed for anemia	125	59.5	55	26.2	30	14.3
I take a multivitamin regularly	48	22.9	42	20	120	57.1

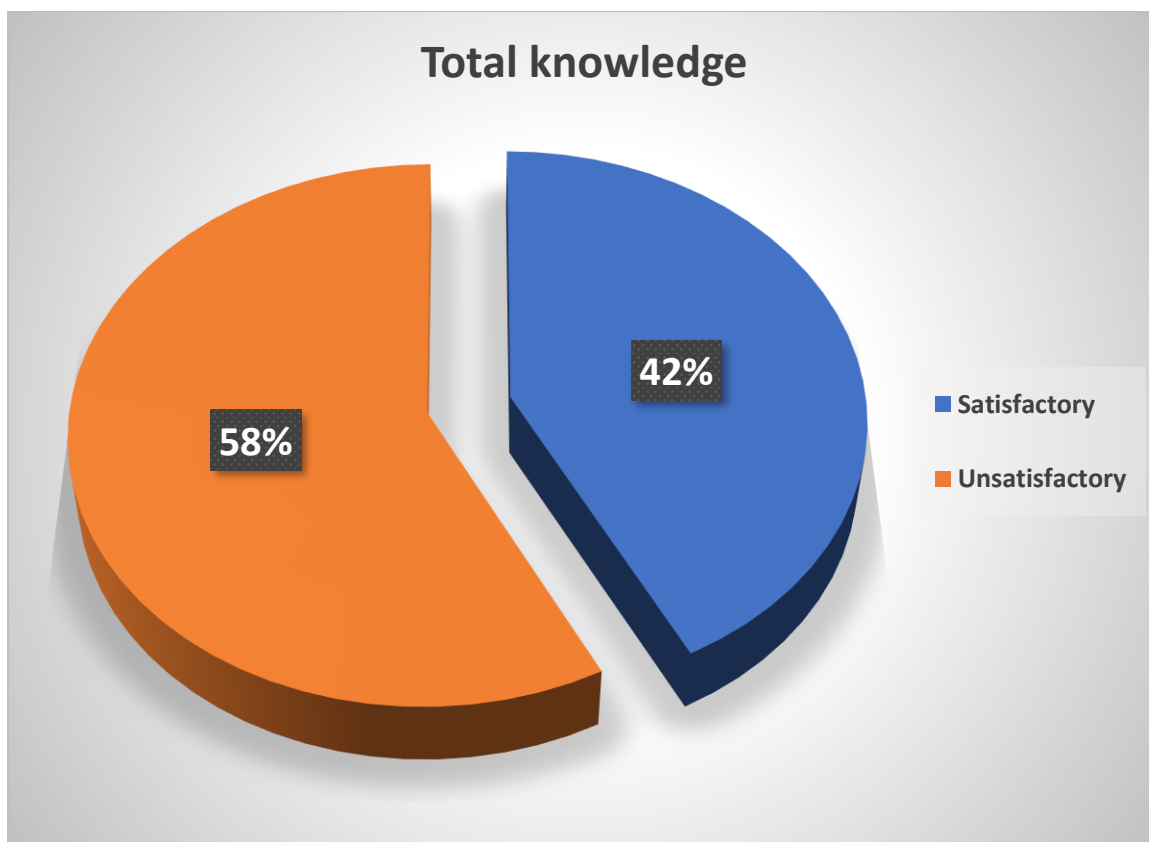


Figure (1) Distribution of studied subjects related to total knowledge (n=210)

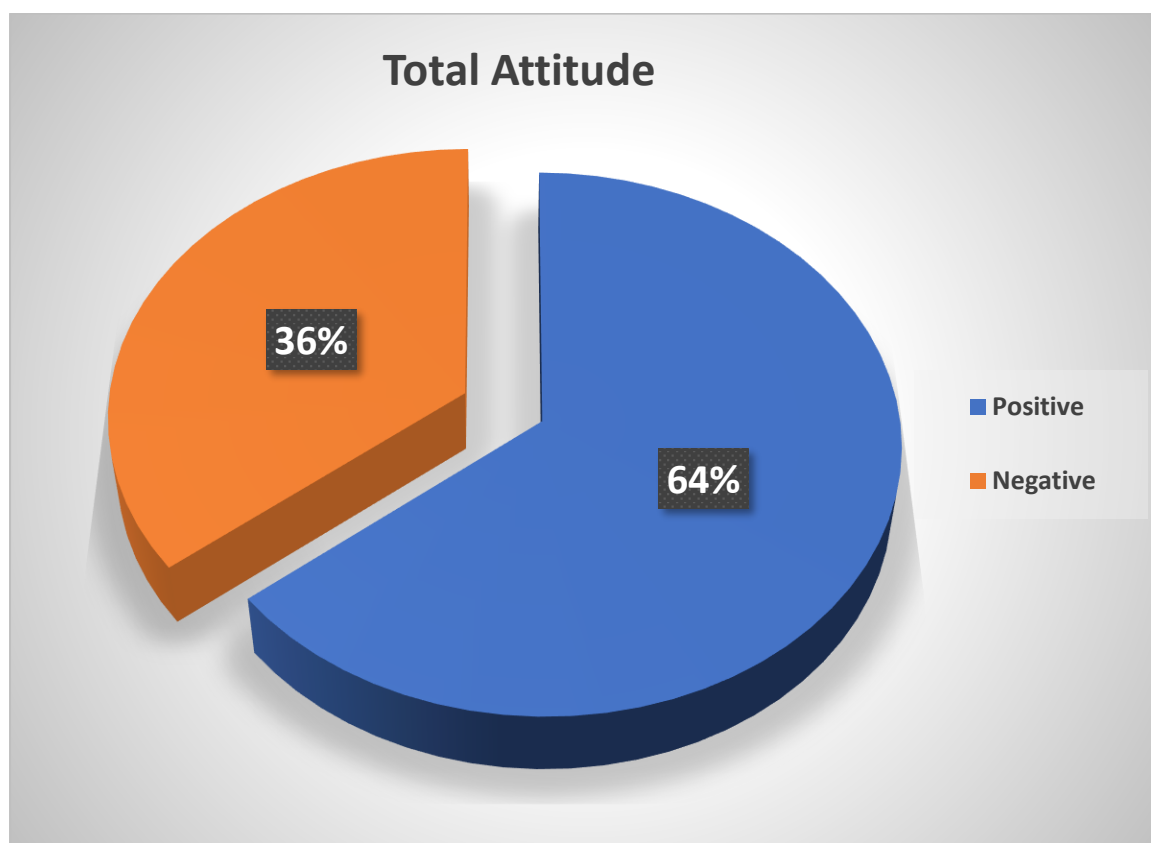


Figure (2) Distribution of studied subjects related to total attitude (n=210)

Table (4) Correlation between studied variables

		Total knowledge
Total attitude	r.	0.753
	p. value	0.001**

**high significant <0.01

Table (5): Best fitting linear regression model for total attitude

	Unstandardized Coefficients	standardized Coefficients	T	P. value
	B	β		
Education level of the mother (High)	.242	.359	5.613	.017*
Employment status of the mother (Employee)	.167	.259	4.081	.023*
Family income (Sufficient)	.211	.297	5.100	.019*
Suffering from anemia (Yes)	.339	.475	7.996	.008**
Total knowledge	.399	.501	8.013	.007**
ANOVA				
Model	R²	F	P. value	
Regression	0.56	13.098	.000**	

a. Dependent Variable: Total attitude

b. Predictors: (constant): Education level of the mother (High), Employment status of mother (Employee), Family income (Sufficient) and Suffering from anemia (Yes), total knowledge

Table (6): Best fitting linear regression model for total knowledge

	Unstandardized Coefficients	standardized Coefficients	T	P. value
	B	β		
Education level of the mother (High)	.276	.351	4.098	.015*
Age	.346	.417	6.987	.009**
Suffering from anemia (Yes)	.218	.297	5.147	.012*
Total Attitude	.361	.478	7.351	.008**
ANOVA				
Model	R²	F	P. value	
Regression	0.49	11.246	.000**	

a. Dependent Variable: Total knowledge

b. Predictors: (constant): Education level of the mother (high), age, suffering from anemia (yes), and total attitude.

Discussion

The most frequent kind of anemia is iron deficiency anemia. One of the most frequent and intractable nutritional issues today, anemia has serious ramifications for the health of individuals as well as the advancement of society and the economy in industrialized and developing nations (**Bandyopadhyay et al., 2017**).

In the present study, more than half of the participants in the study were enrolled at second year, and mean age was 16.92 ± 3.72 . Vast majority of sample had sufficient family income and more than one third suffered from anemia. Additionally, regrading students' knowledge about iron deficiency anemia, they had correct knowledge related concept of anemia, content of balanced diet and importance of iron for adolescent girl, respectively. While there is limited knowledge related complication of iron deficiency anemia, pathophysiology of iron deficiency anemia and signs and symptoms of iron deficiency anemia. Finally, more than half of the studied students had unsatisfactory knowledge about iron deficiency anemia. While only more than one third of them had satisfactory knowledge. These results may be due to inadequate training program for the students about iron deficiency anemia and only one quarter of their mothers had university education.

Abu-Baker et al., 2021 conducted study on female adolescent students in Jorda and revealed that less than half of the sample had mild anemia, and 10% had moderate anemia. In addition, 52.4% exhibited adequate knowledge and 42.7% had a positive attitude toward IDA. Likewise, **Sharma et al., 2019** performed A Non-experimental descriptive comparative research design on 60 adolescent girls, who reported that less than half had poor knowledge and one third had moderate knowledge. Besides, **Sultana et al., 2021** reported that among the respondents the knowledge about IDA & nutritional status of were 23% good, 40% moderate and 37% very poor. Furthermore, **Malay et al., 2018** conducted a cross-sectional study on 100 students at Saveetha University in Chennai and discovered that their fundamental understanding of anaemia and haemoglobin is adequate but they lack expertise in clinical criteria such as anaemia diagnosis and therapy. Also, descriptive study performed at western region, Saudi Arabia on 321 parents aged 18 years and above, this study was revealed that approximately one quarter of the participated parents were reported to be unaware, whereas about three quarters of them were aware of the iron-deficiency anemia in children (**Algarni et al., 2020**). According to **Kesete et al., 2020**, who conducted a survey involving schoolkids in Ghindae Area, Eritrea, the present incidence of anaemia was 12.4 percent, of whom 7.6 percent had mild anaemia, 4.4 percent had moderate anaemia, and 0.4 percent were seriously anaemic. **Riesmiyatiningdyah et al., 2021** said that health education has an influence on adolescents' knowledge about anaemia. (p-value = .011).

The current study explained that about two thirds of the studied students had positive attitude about iron deficiency anemia. While only more than one third of them had negative attitude. These results attributed to less than half of studied students suffered from anemia at past or present history which may enhance their views about disease. Furthermore, there was a high significant positive correlation between students' knowledge and their total attitude toward anemia at p value 0.001**. These results supported by **Shahzad et al., 2017** who done A cross sectional study

design applied on 150 girls 20–21-year-old, detected that more than three quarters (79%) had positive attitude towards self-awareness of anemia as a disease (Shahzad et al., 2017). Moreover, Singh et al., 2019 reported that teenage females were aware of anaemia, but their attitudes and practises were lacking. The dissemination of full nutritional knowledge about iron-rich diets and supplements should already be made mandatory.

In contrast, research at ILAM, IRAN, which included 291 high school girls, found no correlation between students' IDA knowledge, attitude, and practise and any other demographic characteristics ($p > 0.05$) (Shahalvand et al., 2015). Dhivakar et al., 2020 who conducted the study on adolescent girls in Kanchipuram district, Tamil Nadu and found that 31 (77.5%) of the study participants expressed moderate level of attitude and none of them had a high level of attitude towards anaemia.

The initial evaluation by Chaluvvaraj & Satyanarayana, 2018 found that knowledge was weak, attitude was negative, and practise was bad. The vast majority of those being investigated in Tabuk Region have little or no understanding of how to prevent iron deficiency anaemia, as well as a neutral or even hostile attitude toward the topic (Aboud et al., 2019).

Regarding linear regression model, our study reported that suffering from anemia and high knowledge had high positive effect on total attitude while high education level of mother, mother who employee, sufficient family income had slight positive effect on total attitude. Age and total attitude had high positive effect on total knowledge while high education level of mother and suffering from anemia had slight positive effect on total knowledge. These results disagreement with the study conducted by Renuga et al., 2020 detected that the correlation between knowledge & attitude were rejected. The study concluded that, Adolescents girls were not having sufficient awareness regarding iron deficiency anemia. Also, Jahed et al., 2012 detected that gender had high effect on subjects' knowledge, while age had no effect on their knowledge.

Conclusion: More than half of the studied students had unsatisfactory knowledge about iron deficiency anemia. While more than one third of them had satisfactory knowledge. Meanwhile, around two thirds of the studied students had positive attitude about iron deficiency anemia. While more than one third of them had negative attitude. Additionally, there was a high significant positive correlation between students' knowledge and their total attitude toward anemia at p value 0.001**.

Recommendation:

1. Awareness programs for students about different types of anemia .
2. Comprehensive nutritional education for students regarding iron deficiency anemia .
3. Training mothers about early observation signs of anemia .

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Conflict of interest: No conflict of interest in the current study was found.

Author contributions

This study's planning, implementation, and analysis were all overseen by all of the authors. The manuscript's content is the responsibility of all authors, who have critically examined and approved the final draft.

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