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Assessment of Primary School Students knowledge, practice and health beliefs regarding Prevention of Iron Deficiency Anemia

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ABSTRACT

Background: Iron deficiency anemia (IDA) is one of the most widespread nutritional deficiency and accounts for almost one half of anemia cases**. Aim:** this study aims to assess primary school student's knowledge, practice and health beliefs regarding Iron Deficiency Anemia. **Study design:** Descriptive study was applied to achieve the aim of the current study. **Setting:** This study was conducted at three mixed primary schools that were selected randomly in Beni suef governorate**. Sample:** A multistage random sample technique of 300 students was used for selection of the sample. **Tools:** Two tools were used for data collection **tool I** socio demographic data of students and their parents, students' knowledge and reported practice related to iron deficiency anemia**. Tool II** Health beliefs of primary school students regarding Iron deficiency anemia**. Results:** 40 % of primary school students had poor total knowledge scores about Iron deficiency anemia. Moreover, 77 % of them had unsatisfactory total reported practice scores related to iron deficiency anemia. As well as 67.7 % of them had negative total health beliefs toward iron deficiency anemia. There was a statistically significant relation between students; their parent's characteristics and students' total knowledge scores, reported practice scores and health beliefs scores. **Conclusion:** The current study concludes that more than one third of studied students had poor total knowledge scores about iron deficiency anemia. More than half of them had unsatisfactory total reported practice related to iron deficiency anemia. More than half of primary school students had negative total health beliefs scores toward iron deficiency anemia. As well as the current study found a significance statistical relationship between socio demographic characteristics of primary school student's and total health beliefs scores. **Recommendations:** Health educational programs regarding iron deficiency anemia should be targeted to primary school children as a component in their curricula.

Key words: Iron deficiency anemia, Primary school students, and Health beliefs.

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Introduction

Anemia can be defined as a condition in which the total hemoglobin (Hb) level or number of red blood cells (RBCs) is poorly lowered. The World Health Organization (WHO) defines Iron-deficiency anemia (IDA) a decrease in the total hemoglobin (Hb) levels caused by iron deficiency. It is the most common cause of anemia worldwide [1].

Health beliefs are what students consider about their health, what they think constitutes their health, what they consider the reason of their illness and ways to overcome an illness. These beliefs are, culturally determined. Different cultures have dissimilar definitions of what constitutes health and what causes illness. Culture itself can be defined in many ways, but it is mainly the characteristics that contain a group of people's way of life, such as attitude, practice and belief [2].

According to a UNICEF report, more than two billion persons have anemia worldwide and most of them have IDA, especially in underdeveloped and developing countries, where 40-50% of students are prone to iron deficiency anemia compared with 6-20% in developed countries [3].

Iron deficiency anemia is caused by insufficient intake of iron, chronic blood loss, or a combination of both. Students are placed at a high risk level for the development of IDA because of quick physical growth, especially in boys, and menstrual iron losses in girls. Poor diet quality and low dietary iron bioavailability are the principal factors that contribute to the increased incidence of IDA [4].

Students with iron deficiency anemia complain from symptoms such as pallor of the skin, conjunctivae, nail beds, fatigue, vertigo, syncope, exceptional dyspna progressing to breathlessness at rest, tachycardia headache, and a cardiac systolic flow murmur. Students may also show dyspna at rest angina pectoris and hemodynamic instability in severe cases [5].

Iron deficiency anemia can be confirmed through numerous laboratory tests. Because each test assesses a dissimilar characteristic of iron metabolism, results of one test may not always agree with results of other tests. Hematological tests based on characteristics of red blood cells (i.e., Hb concentration, hematocrit, mean cell volume and red blood cell distribution width) are generally more available and less expensive than are biochemical tests such as erythrocyte protoporphyrin concentration, serum ferritin concentrations [6].

Iron deficiency anemia can cause psychological symptoms including anxiety; irritability, depression and decrease in cognitive ability. Iron deficiency have adverse effects on selective cognitive processes rather than on a global mental ability like intelligence. It affects only the non-verbal or performance scores while leaving the

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verbal intelligence scores unaffected. Intelligence has been defined as the overall capacity or ability of an individual to learn or appreciate and deal with the world around them [7].

The treatment of IDA depended on balanced diet rich with iron, oral iron therapy, introduced in the shape that is called "Blaud's pill": a tablet containing ferric carbonate as its main element effective in correcting iron deficiency anemia. It remained the mainstay of treatment until other iron preparations were introduced and it became obvious that ferrous iron was better absorbed than ferric iron [8].

The school health nurse plays a vital role in preventing iron deficiency anemia. Primary prevention activities look for raising the awareness of the general public and service providers connected with iron deficiency anemia. Iron deficiency anemia can be prevented by eating a diet containing sufficient amounts of iron or by iron supplementation. Foods elevated in iron include meat, nuts, spinach and foods made with iron fortified flour [9].

Significance of the study

In Egypt, previous studies have indicated that anemia is a major public health problem among children, especially school students. It affects 30-40% of them. Iron deficiency anemia is found to be the most common cause of anemia among Egyptian students with low socioeconomic standard affecting 43% of them. In Qena governorate, the prevalence of IDA was 12% among students in the age group of 6-12 years **[Elalfy, 2020]**. So the study aimed to assess primary school student's knowledge, reported practice and health beliefs regarding iron deficiency anemia.

Aim of the study:

This study aims to assess primary school student's knowledge, practice and health beliefs regarding prevention of iron deficiency anemia through:

1-Assessing primary schools student's knowledge regarding iron deficiency anemia.

1-Determing primary schools student's reported practice regarding iron deficiency anemia.

2-Appraising primary schools student's health beliefs regarding iron deficiency anemia.

Research Questions:

Q 1 –What are knowledge of primary school students about iron deficiency anemia?

Q 2 –What are reported practice of primary school students about iron deficiency anemia?

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Q 3 –What are health beliefs of primary school students about iron deficiency anemia?

Q 4 –Is there a relation between demographic characteristics of primary school students, their parents and total knowledge scores, reported practice scores and health beliefs scores?

Subjects and methods

Research design:
A descriptive correlation design was applied to achieve the aim of the current study.
Research setting:
This study was conducted at three mixed primary schools that were selected randomly in Beni suef governorate. (Hassan Ismael, Elshrouk and Elhaddetha schools). The three schools are located at Beni suef governorate , each school had 4 classes of six grade students and the total number of students in each class was 48-50 students.

Subjects:

The subjects included 300 students randomly selected through, a multi stage random sample technique.

Sampling technique:

A multi stage random sample technique was used for selection of the study sample of primary school students. First stage, total number of governmental primary schools at Beni suef is six schools, three schools were chosen randomly for the purpose of this study. Second stage, two classes from each of the selected three schools were selected randomly. Third stage, all students in the selected classrooms were be included in the study (300 student).

Tools of data collection

Data for this study were collect by using two tools:

Tool I: A structured interview questionnaire that was developed by the researchers after reviewing of national and international related literature. It was included three parts:

First Part: concerned with students and their parents demographic data related to variables such as age, students gender, father age, mother age, father education,

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mothers education, fathers occupation, mother occupation, place of residence and family income.

Second Part: Concerned with primary school students knowledge about iron deficiency anemia as meaning, causes, vulnerable group, signs and symptoms, diagnosis, complications, treatment and prevention of iron deficiency anemia.

Scoring system:
Scoring System: knowledge of students regarding prevention of iron deficiency anemia was given 1 point and incorrect answer was given a zero.

Total knowledge was classified as follows:

- Good > 75% (>6 points).

-Average 50 - < 75 % (4- < 6 points).

-Poor < 50 % (< 4 points).

Third Part: concerned with primary school students reported practices relevant to iron deficiency anemia such as eating foods rich in iron, eating dairy products immediately after eating food containing iron, Eating leafy vegetables such as spinach, watercress and mallow, eating tomatoes, green peppers and cherries, eating legumes such as lentils, peas and beans, eat nuts like almonds, eating fresh fruits every day, such as oranges, lemons and strawberries, eating dried fruits such as apricots, raisins and figs, eating red meat and poultry regularly, eating seafood regularly, eating black honey regularly, eating apples and grapes regularly and eating liver regularly .

S**coring System:**
Correct reported practice was given 1 point and incorrect answers was given zero.
Total reported practice was classified as follows.

-Satisfactory reported practice scored > 50 % (from 6-13 points).

-Unsatisfactory reported practice scored< 50% (< 6 points).

Tool II: concerned with primary school students health beliefs related to iron deficiency anemia this tool was adapted from Champion (1999) [11].

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Scoring System:

All the items of subscales were scored on a three-point Likert scale. Response choices were: agree scores 3 points, neutral scores 2 points, and disagree scores 1 point. .The total score ranged from 39 to 117 points for 39 questions which were classified as follows: 21 for perceived susceptibility, 30 for perceived severity, 30 for perceived barrier, 15 for perceived benefits and 21 for cues to action.

Total scoring system for health belief was classified as follows:

-Positive belief >50% (from 59 – 117 points)

-Negative belief < 50% (from 39 - < 59 points)

Fieldwork

The actual process of data collection for this study was carried out in the period from January to march, 2020. The researcher attended the schools 2 days per week (Sunday and Tuesday) nearly 3 hours per day. Each interview lasted for 30-45 minutes, depending on the response of the students. Explained the aim and objectives of study.

Ethical considerations:

Ethical consideration was gained from scientific ethical committee of Helwan University; students in the study were assured that their participation in the study is voluntary and were given complete full information's about the study and role before signing the informed consent. The ethical considerations included explaining the purpose and nature of the study, indicating the possibility to withdraw at any time. Confidentiality of the information was guaranteed.

Statistical analysis:

Data collected from the study sample was revised, coded and entered using personal computer (PC). Computerized data entry and statistical analysis were fulfilled using the statistical Package for the Social Science (SPSS), version 24. Data were presented using descriptive and inferential statistics in the form of frequencies, percentage,mean and SD , Chi-squire tests were used for compressions between qualitative variables, Paired t test used to determine the strength and direction of association between two ranked variables .

Significance of the results:

-Highly significant at p-value < 0.01.
-Statistically significant at p-value 0.05.
-Non-significant at p-value > 0.05.

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Results

Table (1) shows that, 86.7 % of primary school students age was 11-12 years with mean age was11.34 ± 0.91. Regarding to the fathers age,53.3% of them were in age group from 35-<45 years with means of 43.76 ± 3.10. As regarding mother age 57% of them were in the age group from 35- <45 years. Concerning fathers education 67.7% of them had basic education. Regarding to mothers education, 66% of them had basic education. Concerning fathers occupation, 55 % of them were employed. Concerning mother occupation, 58.7 %of them were housewives. Regarding family income, 48.7% had sufficient income for essentials needs only.

Figure (1): Shows that, 40**%** of the primary school students had poor total knowledge scores about iron deficiency anemia.

Figure (2): Shows that, 77.3**%** of primary school students had un satisfactory total reported practice scores about iron deficiency anemia.

Figure (3): shows that, 67.7 **%** of primary school students had negative total health beliefs toward iron deficiency anemia.

Table (2): Illustrates that, a high statistically significant relationship was found between father age, mother age, father education ,mother education ,father occupation, places of residence and family income and level of total knowledge scores with p value = .000 .

Table (3): Illustrates that, a high statistically significant relationship was found between student gender, father age, mother age, father education, mother education, mother occupation, places of residence, family income and level of reported practice scores.

Table (4): Illustrates that, a high statistically significant relationship was found between student's gender, father age, mother age, father education, mother education, father occupation, place of residence, family income and their total beliefs scores toward iron deficiency anemia.

Table (5): reveals that, there is no statistically significant relationship between total knowledge scores and total health beliefs scores with p value =.878 however , there was a high statistically significant relationship between total reported practice scores and total health beliefs scores with p value = .000.

Table (1): Number and percentage distribution of the primary school students and their parents regarding to their demographic data (n=300).

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Variables	No.	%
Age of students (Year)		
11-12	260	86.7
≥12	40	13.3
Mean ± S.D	11.34 ± 0.91	
Father's age (Year)		
20- <35	30	10
35- <45	160	53.3
45 - <55	71	23.7
≥55	39	13
43.76 ± 3.10	Mean ± S.D	
Mother's age		
20- <35	55	18.3
35- <45	171	57
45 - <55	60	20
≥55	14	4.7
Mean ± S.D		39.73 ± 2.97
Father's education		
cannot read or write	4	1.3
basic education	203	67.7
secondary education	44	14.7
university education	49	16.3
Mother's education		
Cannot read or write	10	3.3
basic education	198	66
secondary education	16	5.3
university education	76	25.3
Father's occupation		
Employed	165	55
Craftsman	30	10
Free business	96	32
on retirement	9	3
Mother's Occupation		
Employed	124	41.3
Housewife	176	58.7
Family income		
Sufficient for all requirements and daily needs	146	28.7
Sufficient for essential needs only	86	48.7
Not enough	68	22.6

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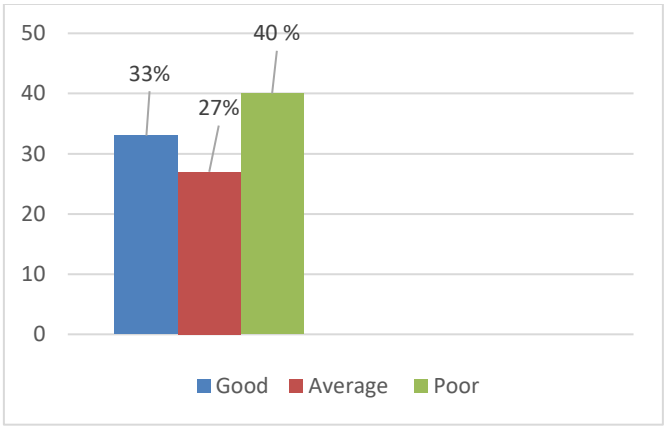

Figure (1): Distribution of the primary school students regarding to their total knowledge scores about Iron Deficiency Anemia (n=300).

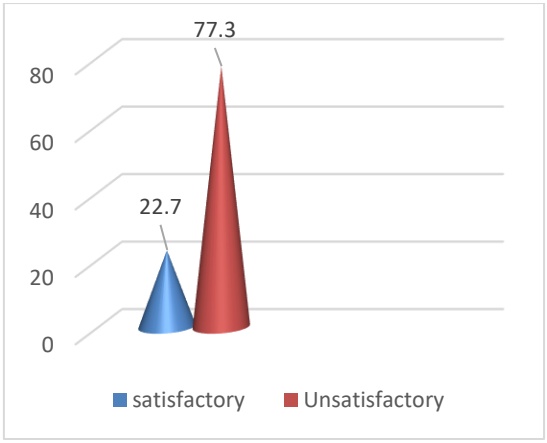

Figure (2): Distribution of the primary school students regarding to their total reported practice about Iron Deficiency Anemia (n=300).

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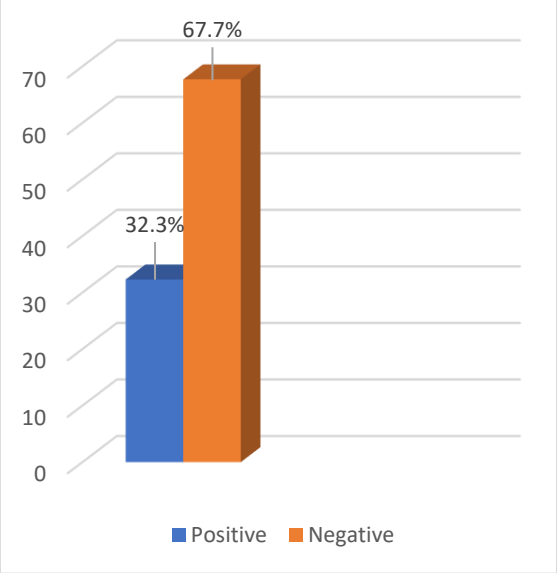

Figure (3): Distribution of the primary school students regarding to their total health beliefs scores about Iron Deficiency Anemia (n=300).

Table (2): Relation between students, their parent's characteristics and their total knowledge scores about iron deficiency anemia (n=300).

Items		Level of total knowledge scores						(P- χ^2 Value)
		Good (n=56)		Average (n=90)		Poor (n=154)		
		No	%	No	%	No	%	
Age (year)	11-12	38	67.9	70	77.8	152	98.7	**6.221 (.012*)**
	> 12	18	32.1	20	22.2	2	1.3	
Gender	Male	10	17.9	30	33.3	100	64.9	**5.314 .015***
	Female	46	82.1	60	66.7	54	35.1	
Father's age (Year)	20- <35	5	8.9	8	8.8	10	6.4	**17.95 (.000**)**
	35- <45	18	32.1	72	80	77	50	
	45 - <55	16	28.6	8	8.9	57	37	
	≥55	17	30.3	22	24.4	0	0.0	
Mother's age	20- <35	19	33.9	20	22.2	16	10.4	**21.57 (.000**)**
	35- <45	20	35.7	27	30	65	42.2	
	45 - <55	11	19.6	35	38.9	40	25,9	
	≥55	6	10.7	8	8.9	33	21.5	
Father's education	do not read or write	13	23.2	6	6.6	4	2.6	**34.60 (.000**)**
	Basic	17	30.4	40	44.4	49	31.8	
	secondary	20	35.7	14	15.6	30	19.5	
	university	6	10.7	30	33.4	71	46.1	
Mother's education	do not read or write	7	12.5	20	22.2	10	6.5	**62.01 (.000**)**
	Basic	12	21.4	17	18,9	76	49.4	
	secondary	18	32.2	40	44,4	16	10.4	

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	university	19	33.9	13	14,5	52	33.8	
Father's occupation	Employed	30	53.5	70	77.7	30	19.5	**55.00 (.000**)**
	Craftsman	20	35.8	5	5.6	25	16.2	
	Free business	4	7.2	6	6.7	90	58.4	
	Retirement	2	3.5	9	10	9	5.9	
Mother's Occupation	Employed	30	53.6	30	33.3	64	41.6	**11.54 (.049*)**
	Housewife	26	46.4	60	66.7	90	58.4	
Place of residence	Urban	47	83.9	80	88.9	110	71.4	**15.15 (.000**)**
	Rural	9	16.1	10	11.1	44	28.6	
Family income	Sufficient for all requirements and daily needs	40	71.4	85	94.4	10	6.5	**40.98 (.000**)**
	Sufficient for essential needs only	5	8.9	5	5.6	76	49.4	
	Not enough	11	19.7	0	0.0	68	44.1	

*significant at p ‹ 0.05. **highly significant at p ‹ 0.01.

Table (3): Relation between students and their parent's characteristics and their total reported practice scores about iron deficiency anemia (n=300).

Items		Level of total reported practices scores at pre education program				χ^2	P-Value
		Satisfactory (n=68)		Unsatisfactory (n=232)			
		No	%	No	%		
Age (year)	11-12	55	80.9	205	88.4	2.54	.085
	> 12	13	19.1	27	11.6		
Gender	Male	20	29.4	120	51.7	10.51	.001**
	Female	48	70.7	112	48.3		
Father's age (Year)	20- <35	0	0,0	30	12.9	41.07	.000**
	35- <45	55	80.9	105	45.3		
	45 - <55	1	1.5	70	30.2		
	≥55	12	17.5	27	11.6		
Mother's age	20- <35	0	0.0	55	23.7	20.23	.001**
	35- <45	47	69.1	124	53.4		
	45 - <55	18	26.5	42	18.1		
	≥55	3	4.4	11	4.8		
Father's education	Do not read or write	0	0.0	4	1.7	31.32	.000**
	Basic education	0	0.0	49	21.2		
	secondary education	21	30.9	23	9.9		
	university education	47	69.1	156	67.2		
Mother's education	Do not read or write	0	0.0	10	4.3	30.53	.000**
	basic education	5	7.4	71	30.6		
	secondary education	10	14.7	6	2.6		

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	university education	53	77.9	145	62.5		
Father's occupation	Employed	40	58.8	125	53.9	7.753	.056
	Craftsman	11	16.2	19	8.2		
	Free business	17	25	79	34		
	Retirement	0	0.0	9	3.9		
Mother's Occupation	Employed	11	16.2	113	48.7	22.94	.000**
	Housewife	57	83.8	119	51.3		
Place of residence	Urban	36	52.9	201	86.6	35.99	.000**
	Rural	32	47.1	31	13.4		
Family income	Sufficient for all requirements and daily needs	54	79.4	92	39.7	33.87	.000**
	Sufficient for essential needs only	10	14.7	76	32.8		
	Not enough	4	5.9	64	27.5		

*significant at p ‹ 0.05. **highly significant at p ‹ 0.01.

Table (4): Relation between students and their parent's characteristics and their total health beliefs scores about iron deficiency anemia.

Items		Level of total beliefs scores				χ^2	P-Value
		Positive (no=97)		Negative (no=203)			
		No	%	No	%		
Age (year)	11-12	83	85.6	177	87.2	1.150	.413
	> 12	14	14.4	26	12.8		
Gender	Male	62	63.9	78	38.4	17.14	.001**
	Female	35	36.1	125	61.6		
Father's age (Year)	20- <35	0	0.0	30	14.8	34.76	.000**
	35- <45	44	45.4	116	57.1		
	45 - <55	40	41.2	31	15.3		
	≥55	13	13.4	26	12.8		
Mother's age	20- <35	0	0.0	55	27.1	32.44	.000**
	35- <45	66	68	105	51.7		
	45 - <55	25	25.8	35	17.2		
	≥55	6	6.2	8	4		
Father's education	Do not read or write	0	0.0	4	2	30.82	.000**
	Basic education	0	0.0	49	24.1		
	secondary education	18	18.6	26	12.8		
	university education	79	81.4	124	61.1		
Mother's education	Do not read or write	0	0.0	10	4.9	46.20	.000**
	basic education	3	3.1	73	36		
	secondary education	8	8.2	8	4		

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	university education	86	88.7	112	55.1		
Father's occupation	Employed	39	10.2	126	62	42.33	.000**
	Craftsman	1	1	29	14.3		
	Free business	54	55.7	42	20.7		
	Retirement	3	3.1	6	3		
Mother's Occupation	Employed	38	39.2	86	42.4	11.27	.017*
	Housewife	59	60.8	117	57.6		
Place of residence	Urban	86	88.7	151	74.4	8.063	.009**
	Rural	11	11.3	52	25.6		
Family income	Sufficient for all requirements and daily needs	53	54.6	93	45.8	38.90	.000**
	Sufficient for essential needs only	42	43.3	44	21.7		
	Not enough	2	2.1	66	32.5		

*significant at p ‹ 0.05. **highly significant at p ‹ 0.01.

Table (5) Correlation between total students' knowledge scores about iron deficiency anemia and their total reported practices scores and total health beliefs (n=300).

Variables		Total health beliefs model scores	
Total knowledge scores	**r**	.009	.035
	p	.878	.551
Total reported practice scores	**r**		.235
	p		.000**

Discussion

Iron deficiency anemia is a condition where a lack of iron in the body leads to a reduction in the number of red blood cells**.** Iron is used to produce red blood cells, which help store and carry oxygen in the blood. If someone has fewer red blood cells than normal, organs and tissues won't get as much oxygen as they usually would. There are several different types of anemia, and each one has a different cause. Iron deficiency anemia is the most common type [12].

Health beliefs have a profound effect on the health of people since beliefs and traditions of people influence their behavior changes targeted through community

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awareness and intervention programs. These beliefs also influence the types of food, recreational activities, restaurants, and health services available in a community [13].

Regarding to primary school students socio-demographic characteristics of students and their parents, the present study indicates that the majority of primary school students their age were 11-12 years. As regarding mother age about half of them were in age group of 35- <45 years. As well as, more than two thirds of parent's education had basic education, more than half of mother's were housewives and near half of parents had enough income for essential needs only.

This study is in the same line with **Saffari, (2019)** [14] Who studied prevalence of iron deficiency anemia among primary students suffering from iron deficiency anemia in Iraq and found that more than half of participants were females and the majority of primary school students their age from 11to 12 years and the mothers age ranged less than 50 years, the majority of fathers were employed as well as more than half of mothers was housewives. From the investigator point of view , families who do not have enough income are more likely to suffer from iron deficiency anemia because their children's do not get the nutrients which their body needs.

Regarding to primary school students total knowledge scores related to iron deficiency anemia, the present study indicates that more than one third of primary school students had good total knowledge scores about iron deficiency anemia in the same line with **Jalamba, (2019)** [15] who studied Improvement in Knowledge, Attitude and Practice of Iron Deficiency Anemia among Iron- Deficient students in primary schools in London and found that less than half of primary students had good total knowledge scores. From the investigator point of view confirmed that primary students need more educational programs to raise their awareness about iron deficiency anemia.

Regarding to primary school students total reported practice scores related to iron deficiency anemia, the present study indicates that more than three quarters of primary school students had un satisfactory total reported practice scores about iron deficiency anemia**,** in the same line with **Shojaeizadeh, (2019)** [16] who studied Knowledge, Attitude And Practices of primary School students about iron deficiency anemia in Qazvin and founded that more than three quarters of primary school students had unsatisfactory total reported practice related to iron deficiency anemia. From the investigator point of view, primary school students need to follow practice that should be good for their health to prevent develops of iron deficiency anemia and it is complications.

Regarding to primary school students total health beliefs related to iron deficiency anemia, the present study indicates that the more than half of primary school students had negative total health beliefs about iron deficiency anemia**.** This results in the same line with **Mashoofi et al ., (2020)** [17] who studied Knowledge,

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Attitude & Practice and health beliefs of primary students regarding Iron Deficiency Anemia in Khalkhal and founded that the majority of primary school students had negative total health beliefs toward iron deficiency anemia . From the investigator point of view, this result confirmed the urgent need for primary school students to raise their awareness about health beliefs regarding iron deficiency anemia.

Regarding relation between students and their parent's characteristics and their total knowledge scores about iron deficiency anemia, the current study illustrated that a high statistically significant relationship was found between father age, mother age, father education, mother education, father occupation, places of residence and family income. As well as a high statistically significant was found between all items related to students characteristics and total level of total knowledge scores with p value =.000. This results in the same line with **Karkar & kotecha, (2018)** [18] who studied knowledge, attitude and beliefs of primary students regarding iron deficiency anemia among primary students of in Vadodara and founded that there were a significant statistical relation between primary school socio demographic and their total knowledge scores regarding iron deficiency anemia. From the investigator point of view, this result may be due to that parents are considered as the very important source of information's regarding food products that may prevent iron deficiency anemia.

Regarding relation between primary school students characteristics and their total reported practices scores about iron deficiency anemia , the current study illustrates that a high statistically significant relationship was found between gender, father age, mother age, father education, mother education, mother occupation, places of residence, family income and total level of reported practice scores with p value =.000. This results in agreement with **Fadila et al., (2018)** [19] who studied prevalence and associated factors of iron deficiency anemia among Kuwait primary school students and founded that there were a strong significant relation between students and their parents characteristics' with the total reported practice scores. From the investigator point of view, parents had critical responsibility in helping their children to persist to follow health practices.

Regarding relation between students and their parents characteristics and their total beliefs towards iron deficiency anemia ,the current study illustrates that a high statistically significant relationship was found between gender, father age, mother age, father education, mother education, father occupation, place of residence, family income and total health beliefs scores toward iron deficiency anemia with p value =.000l.

This results is in the same line with **Abedini et al ., (2019)** [20] who studied knowledge, attitude, beliefs and prevalence of iron deficiency anemia and its related factors in primary school age children in Turkey and found that a high statistically significant relationship between student's characteristics and their total health beliefs.

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From the investigator point of view this is due to when the parents have healthy beliefs, they encourage their children to follow the acceptable beliefs.

As regarding relation between students total knowledge scores, reported practices scores about iron deficiency anemia and total health beliefs scores, there is no statistically significant relationship between total knowledge scores and total health beliefs scores. as well as a high statistically significant relationship between total reported practice scores and total health beliefs scores .this results in the same line with **Pirzadeh, A., (2020)** [21] who studied knowledge and health belief about iron deficiency anemia among primary school student in Isfahan, Iran and found that there was a significant statistical relation between total reported practice scores and total health beliefs scores.

Conclusion

Based on the results of the current study, it can be concluded that, more than one third of studied students had poor total knowledge scores about iron deficiency anemia. More than half of them had unsatisfactory total reported practice related to iron deficiency anemia. As well as the same study founded that more than half of primary school students had negative total health beliefs scores toward iron deficiency anemia. As well as, the current study found that a significance statistical relationship between socio demographic characteristics of primary school student's and total health beliefs scores. Finally there were a significant statistical relation between high statistically significant relationship between total reported practice scores and total health beliefs scores.

Recommendations

In the light of findings of the study the following recommendations were suggested:

-Implement an educational program to parent about the importance of prevention of iron deficiency anemia.

- Provide health education for students about iron deficiency anemia meaning, causes, signs and symptoms, risk factors, diagnosis, complications and prevention.

-Further studies are needed on larger samples and indifferent types of schools .

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