

Life Style of Female Students Nurses with Iron Deficiency Anemia

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Abstract

Background: Iron deficiency Anemia is one of the most important global health problems, and more than two billion people worldwide are estimated to have anemia adolescent are particularly at risk of suffering from deficient nutritional status needs. Accelerated development, hormonal changes malnutrition, and starting of menstrual periods in girls. **Aim:** To assess the lifestyle of female students nurses with iron deficiency anemia. **Design:** A descriptive research design was utilized. **Setting:** Three institutes affiliated to the general authority of hospitals educational institutes in Cairo. **Sample:** A purposive sample of 160 female students nurses. **Tool:** One tool was used for data collection, interviewing questionnaire consisted of 5 parts. **Part 1:** Demographic characteristics of female students nurses, **part 2:** Female students knowledge about iron deficient anemia, **part 3:** Lifestyle of female student about iron deficiency anemia, **part 4:** The health practice of female students regarding nutritional habits and **part 5:** Common health problems assessment. **Results:** It was found that, more than half of studied sample had less than 18 years. Also, more than half of them had moderate level of anemia. Moreover, there statistical insignificant relation between health knowledge and severity of iron deficiency anemia. On other hand, there statistical insignificant correlation between academic educational level and severity of iron deficiency anemia. **Conclusion:** more than half of female students nurses had poor knowledge, the majority of them had inadequate practice low consumption of food items containing higher percentage of iron. Moreover, that there was statistical insignificant correlation between health practice regarding nutritional and drinking habits, iron consumption and knowledge. **Recommendations:** Health education is necessary for female adolescent in these areas as to the importance of iron-rich foods and utilization of any available sources of iron. Physical surveillance for female students nurses must be available and continuous for early detection and treatment of health problems related to iron deficiency anemia.

Keywords: Lifestyle, Female Students Nurses, Iron Deficiency Anemia.

Introduction

Iron deficiency anemia is the major effect on intellectual performance, immunity, leukocyte function, physical work capacity, growth velocity, epithelial change, fertility, malignancy, neurological function and intelligence. It defined as a reduction in hemoglobin concentration, hematocrit, or number of red blood cells per cubic millimeter (*Lanzkowsky, 2016*).

Iron deficiency anemia is considered a systemic condition and most prevalent hematologic disorder with many consequences. Iron deficiency anemia occurs when hemoglobin concentrations are reduced to below optimal levels. To define Iron deficiency anemia, the cutoff points taken were Serum Iron less than 30 mcg/dl and TIBC more than 470 mcg/dl. The severity of anemia graded as Mild (10-12g/dl), Moderate (7-10gm/dl), and Severe (<7gm/dl) (*Camaschella, 2019*).

Iron deficiency anemia in females is the result of the rapid growth which takes place during adolescence and places extra nutritional requirements of iron. Females also need 10% more iron as a result of menstrual blood loss. In addition, the discriminatory practices against the female child in some communities, lead to lack of adequate intake of iron which leads to protein energy malnutrition and anemia. Females will also typically have heavy workloads at home in developing countries which in addition to poverty can play an important role in malnutrition among them. Also, females especially in rural populations, get married early and face numerous health hazards, the major one of which is very early pregnancy soon after marriage to prove their fertility. The signs and symptoms of iron deficiency anemia include extreme fatigue, weakness, pale skin, chest pain, fast heartbeat or shortness of breath, headache, dizziness or lightheadedness, cold hands and feet, inflammation or soreness of the tongue, brittle nails, and poor appetite (*Ayed et al., 2021*).

Health is an important issue and the right lifestyle is a resourceful way to reduce the possibility of developing health problems and enable person to cope effectively with the

challenges of life. This goes a long way towards improving the overall quality of life. Several health problems are preventable and can be kept at bay by maintaining a healthy lifestyle. Good nutrition, exercise and stress management are among the healthy practices that can help to address numerous health issues (*Younis & Zaki, 2019*).

Lifestyle modification recently has seen to have better effects in the prevention and management of anemia. One such lifestyle approach is focusing on achieving energy balance (or energy deficit for weight loss), eating the healthy fats, consuming more fruits and vegetables, choosing whole grain-containing foods, decreasing junky food intake, and increasing daily physical activity, improving mood and reducing the risk for chronic disease (*McGovern et al., 2018*).

Nurses play a very important role in assisting female students nurses in obtaining the knowledge and skills required for lifestyle modification to prevent iron deficiency anemia. nurse plays an important role in the care of a child with iron deficiency anemia by the following interventions as assess dietary history and history of hemorrhage, perform Physical exam. Community health nurses plays an important role in the care of a students with iron deficiency anemia by Explain the importance of iron replacement/supplementation. Educate the students and the family regarding foods rich in iron (organ and other meats, leafy green vegetables, molasses, beans) (*WHO, 2018*).

Significance of the study:

Anemia is a global public health problem affecting both developing and developed countries and has major consequences for human health as well as social and economic development. It affects 24.8% of the world population. Egyptian girls aged 5-19 years are somewhat more likely than boys in the same age group to be anemic, where 21 percent of girls compared to 18 percent of boys diagnosed as anemic case. South Asian and African countries had the highest pooled anemia prevalence. Overall, 12% of low birth weight, 19% of preterm births, and 18% of

perinatal mortality were attributable to maternal anemia (Al-Alimi et al., 2018).

Iron deficiency anemia is in the top 20 risk factors for the global distribution of burden of disease and the most common nutritional disorder and the leading cause of anemia in the world. WHO estimated that 24.8% of the global population is affected with anemia. The prevalence of anemia among the adolescent girls was 39.9%, the prevalence of iron deficiency anemia was 30.2% and that of iron deficiency without anemia was 11.4%. Despite Egypt's Adolescent Anemia Prevention Program, iron and Iron deficiency anemia are still health problems that need to be addressed to improve adolescent girls' health (Mousa et al., 2016). Iron deficiency anemia in Upper Egypt (59.3%) Demographic Health Survey (Salama & Labib, 2016).

WHO defines anemia in a population as a mild, moderate, or severe public health problem if its prevalence is 5-20%, 20-40%, or >40%, respectively. Most of the WHO countries have a moderate-to-severe public health problem with anemia, i.e., over 20% of adolescent and young children are affected. In developing countries, diets with poor iron bioavailability are the primary cause of IDA (Helpguide, 2020).

Aim of the study:

This study aimed to assess the lifestyle of female student's nurses with iron deficiency anemia.

Research questions:

1. What are female students nurses knowledge regarding to iron deficiency anemia?
2. What are female students nurses health practices regarding to iron deficiency anemia?
3. What are most common health problem for female students nurses associated with iron deficiency anemia?
4. Is there a relation between knowledge and health practice of female students nurses with iron deficiency anemia.

Subjects and Methods:

Research design: A descriptive research design was used to conduct this study.

Research Setting: The study had been conducted in three institutes affiliated to the general authority of hospitals educational institutes in Cairo.

Study Subjects:

A purposive sample of female students nurses with iron deficiency anemia.

Inclusion Criteria:

1. Female student nurses.
2. Age 15 to 21 years.
3. Students with iron deficiency anemia.

Sample size:

According to equation the estimated sample size is **160 female students nurses**.

Tool of data collection:

One tool was used for data collection, interviewing questionnaire. It was designed by the researcher after reviewing the related literature and the jury opinion of the supervisors and was being written in a simple Arabic language and consisted of 5 parts.

▪ **Part 1: Demographic characteristics of students nurses** such as age, marital status, birth order, family member, room numbers, crowding index, level of education, occupation, income, residence.

▪ **Part 2: The female student's knowledge about iron deficient anemia.** It was adapted and modified by the researcher after reviewing the literatures based on *Durrani, 2018*. The questionnaire consisted of 54 Closed ended question divided into seven items as: Definition (6 questions), Causes (12 questions), Symptoms (13 questions), Complication (9 questions), Prevention (5 questions), Treatment (6 questions), Source of information (5 questions).

▪ **Scoring system for knowledge**

A scoring system was followed to assess knowledge of female student about iron deficiency anemia. The questionnaire was

contained of 54 point and categorized into 2 level as followings. Each correct answer was given (one) point and the incorrect answers were given (zero). It was considered that:

- $\geq 60\%$ (33:54 grades) was satisfactory level of knowledge.
- $< 60\%$ (0:32 grades) was unsatisfactory level of knowledge.

▪ **Part 3: Lifestyle of female student about iron deficiency anemia.** It was adapted and modified by the researcher after reviewing the literatures based on (Mengistu et al., 2019). The questionnaire consisted of 53 closed ended question divided into six items as: Body mass index (5 questions), Hemoglobin level (3 questions), menstrual characteristics (22 questions), activities (8 questions), sleeping (9 questions), Smoking (6 questions).

❖ Scoring system for lifestyles

A scoring system was followed to assess knowledge of female student about iron deficiency anemia. The questionnaire was contained of 53 point and categorized into 2 level as followings. $\geq 60\%$ (32:53 grades) was considered good lifestyles, $< 60\%$ (0:31 grades) was considered poor level of lifestyles.

▪ **Part 4: The health practice of female students regarding nutritional habits.** It was adapted and modified by the researcher after reviewing the literatures based on (Mengistu et al., 2019). The questionnaire consisted of 62 closed ended question divided into three items as: health practice regarding nutritional habits (21 questions), health practice regarding drinking habits (17 questions) and nutritional status regarding iron consumption (24 questions).

❖ Scoring system for health practice regarding nutritional habits

A scoring system was followed to health practice regarding nutritional habits of female student about iron deficiency anemia. It was calculated the sum of frequency of food consumption (times/day) and its expression in scale from 0 to 62 points.

It was considered that:

- 0-21 points low consumption

- 22-42 points moderate consumption
- 42-62 points high consumption.

▪ **Part 5: Assess the common health problems of the female student with iron deficient anemia.** It was adapted and modified by the researcher after reviewing the literatures based on (Hinkle & Cheever, 2018). The questionnaire consisted of 45 closed ended question in form of 'Yes or No' item as health problem (45 questions).

❖ Scoring system for health problems

A scoring system was followed to assess health problem of female student about iron deficiency anemia the questionnaire was contained of 45 point and categorized into 2 level as followings. $\geq 60\%$ (28:45 grades) good health $< 60\%$ (0:27 grades) poor health.

Tools validity:

Testing validity of the proposed tools by Content validity was conducted to determine the appropriateness & relevance of each item to be included in questionnaire. After the construction of data collection tools (questionnaire sheets), the content validity of the tools were judged three experts from Community Health Nursing Department – Faculty of Nursing, Ain Shams University. Based on their recommendation corrections, addition and / or omission of some items were done.

Tools reliability:

Testing reliability of the proposed tools was done with the Cronbach's Alpha test. The result was:

Scales	Cronbach's Alpha
Female student's knowledge about iron deficient anemia	0.692
Lifestyle of female student about iron deficiency anemia	0.659
The health practice of female students regarding nutritional habits	0.722
The common health problems of the female student with iron deficient anemia	0.865

Operational design

The operational design was included: the preparatory phase, ethical consideration Pilot study, field work.

The preparatory phase:

It includes reviewing the recent and relevant literature covering various aspects of the study problem using books, articles, periodicals, magazines and internet in order to get acquainted with various aspects of the research problem and to develop the study tools for data collection and the theoretical part of the study.

Ethical considerations:

Ethical approval was obtained from the Scientific Research. Ethical Committee of faculty of Nursing, Ain Shams University before starting the study. In addition, oral approval was obtained from each participant who agreed to share in this study. The researcher clarified the aim and objectives of the study to female student nurses included in the study before starting. Studied subjects were assured that data will be kept confidential and reported as a group data. Subject's name not used during data collection and code number was used in each questionnaire instead. Each subject was assured that anonymity, confidentiality and the rights to withdraw from the study at any time were guaranteed. Ethics, values, cultural background and believes were respected.

A pilot study:

Carried out on 16 female students those represent 10% of students with iron deficiency anemia from a previous setting to ensure clarity, feasibility, applicability of the tools. The tools were finalized according to the pilot results where there is not any modification done. It also helped in the estimation of the time needed to fill in the forms and all of them included from the main study sample.

Field of Work:

- Data had been collected at El-Mataria educational institute Nursing and El Galaa educational institutes and Al Sahel educational institute nursing. The researcher first had been explained aim of the study to

participants and reassure them that information obtained had been treated confidentially and had been used only for the purpose of research.

- A hemoglobin analysis of the female students with iron deficiency anemia was done in the hospital lab.
- The actual field work started in February 2021 and was completed by May 2021 (4 months).
- The investigator was available in the study setting two days per week (Tuesday and Wednesday). To collect data, this was done through the working hours (8 am to 1 pm).
- The investigator introduced himself to each student and gave a complete background about the study, its aim and the expected outcomes. Tools were filled by the students in the presence of the investigator to clarify any ambiguities. This was done either individually and the questionnaire was collected from the nurses students by the investigator.
- Time consumed to fill out the questionnaire ranged from 25 to 30 minutes for one questionnaire.

Administrative design:

Before starting on the study, official and formal letters were issued from the Faculty of Nursing, Ain Shams University to the Directors of the study settings, explaining the aim of the work, and the expected benefits. Ensuring confidentiality of the information obtained. Individual oral consent was also obtained from each participant in the study.

Statistical design:

Data will be categorized, scored, tabulated and analyzed using the appropriate statistical methods. Descriptive statistics will be utilized Frequencies, means, standard deviation and test of significances. Quantitative data were expressed as means and standard deviations. Qualitative data were expressed as frequency and percentage.

The following tests were used:

- 1- Chi-square (χ^2) test of significance was used in order to compare proportions between qualitative parameters.
- 2-Pearson and spearman correlation.

3- The significance of p-value (probability) was determined as the following:

- P-value > 0.05 was considered Not significant
- P-value ≤ 0.05 was considered significant
- P-value < 0.01 was considered highly significant.

Results:

Table (1): showed the personal characteristics of female student nurses; regarding age it shows that (51.2%) of them under 18 years, (93.8%) were single and (36.9%) their birth order was first child. Also (80%) of them lived in severe crowded house, (41.9%) had five family members and more. Regarding father and mother education it shows that (58.8%) and (61.2%) of them their fathers and mothers had diploma (32.5%) and (75.6%) of them their fathers and mothers were Craftsmanship and house wife. Additionally, it shows that (87.5 %) of them had enough income and (98.8 %) of them lived in urban areas.

Figure (1): illustrated that (53.7%) of student nurses had unsatisfactory knowledge while (46.3%) of them had satisfactory knowledge.

Table (2): demonstrated female student nurses' lifestyle; it reveals that (38.8%) and (51.8%) of them did not walk daily and did not practice physical activities weekly, respectively while (37.5%) of them walked 15 minutes daily. Regarding sleeping pattern it shows that (48.8%), (36.9%) and (53.1%) of them their sleeping hours during the night 5 to 6 hours, did not take nap and had not sleeping problems, respectively. Regarding smoking it shows that (98.1%), (73.1%) and (51.9%) of student nurses did not smoke, exposed to smoking at public places and did not expose to smoking at home.

Figure (2): illustrated that (94.4%) of student nurses had inadequate practice while (5.6%) of them had adequate practice.

Table (3): reveals that reported health problems of female student nurses, it shows that (65.6%), (56.9%) and (51.9%) of student nurses suffered from low blood pressure, increased heart rate and weak blood circulation respectively, (56.3%) of them suffered from breathing difficulty. Also, it shows that (79.4%), (73.1%) and (66.5%) of them complained from tired, constant fatigue, and persistent headache. In addition (61.9%), (55%) and (65%) of student nurses complained from inability to concentrate, dizziness, fainting and weak immunity and exposed to frequent infections, respectively. Regarding mental status it shows that (65.6%) and (53.8%) of them had constant anxiety and extreme sadness, also (71.9%) of them had blurred him in the eye. Regarding skin, nails and hair it shows that (64.4%) and (51.3%) had darkening under the eyes and paleness of the skin, (64.4%) and (63.8%) of them had weak nails and nails are bombarded, (81.9%), (65.6%) and (55%) of them had hair loss, hair has lost its strength paleness of the color of the lips, respectively. Regarding pregnancy and previous childbirth, it shows that (40%) and (30%) of them had abortion due to lack of blood supply to the fetus, premature birth and bleeding after childbirth.

Table (4): reflect that, there were highly statistically significant relation between marital status and severity of iron deficiency anemia whereas (58.1%) of single had moderate anemia (p value ≤ 0.01). Also, it showed that statistical insignificant relation between other socio-demographic characteristics (P value ≥ 0.05).

Table (5): showed that there was statistical insignificant relation between health knowledge and severity of iron deficiency anemia ((p value ≥ 0.05).

Table (6): showed that, there were that statistical insignificant correlation between health practice regarding nutritional and drinking habits, Iron consumption and knowledge ((p value ≥ 0.05).

Table (1): Number and percentage distribution of Female Student Nurses according to their socio-demographic characteristics (n=160)

Socio-demographic characteristics	No	%
Age years		
< 18	82	51.2
≥ 18	78	48.8
Marital status		
Single	150	93.8
Married	10	6.2
Birth order		
First	59	36.9
Second	45	28.1
Third	34	21.2
Fourth	22	13.8
Crowding index		
Not crowded	1	0.6
Crowded	31	19.4
Severe crowded	128	80
Father Education		
not read or write	10	6.2
Primary	22	13.8
Diploma	94	58.8
High	34	21.2
Father Job		
Government	47	29.4
Private	38	23.8
Craftsmanship	52	32.5
Retired	18	11.3
don't work	5	3
Mother education		
not read or write	13	8.1
Primary	22	13.8
Diploma	98	61.2
High	27	16.9
Mother job		
Government	28	17.5
Private	11	6.9
Housewife	121	75.6
Family income		
Enough	140	87.5
not enough	20	12.5
Residence		
Urban	158	98.8
Rural	2	1.2

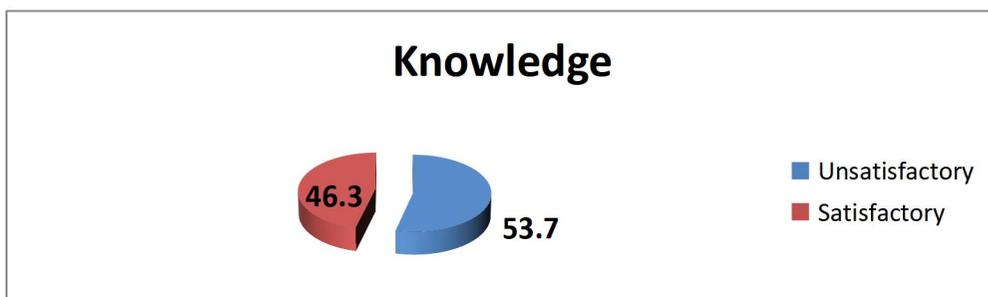
**Figure (1):** Percentage Distribution of Female Student Nurses according to their satisfactory and unsatisfactory knowledge regarding anemia (N= 160).

Table (2): Number and Percentage Distribution of Female Student Nurses according to their lifestyle (N= 160).

Lifestyle about iron deficiency anemia	No	%
<i>Daily walking (minutes)</i>		
15	60	37.4
30	24	15.0
More	14	8.8
No	62	38.8
<i>Practicing physical activities / week</i>		
Daily	31	19.4
Once	24	15.0
Two or more	22	13.8
No	83	51.8
<i>Sleeping pattern</i>		
<i>Sleeping during the night (hours)</i>		
5 to 6	78	48.8
7 to 9	60	37.5
More	22	13.7
<i>Sleeping during nap(hours)</i>		
one	16	10.0
two	52	32.5
More	33	20.6
No	59	36.9
<i>Sleeping problems</i>		
Yes	75	46.9
No	85	53.1
<i>Smoking</i>		
<i>Exposure to smoking at public places</i>		
Yes	117	73.1
No	43	26.9
<i>Do you smoke</i>		
Yes	3	1.9
No	157	98.1
<i>Exposure to smoking at home</i>		
Yes	77	48.1
No	83	51.9

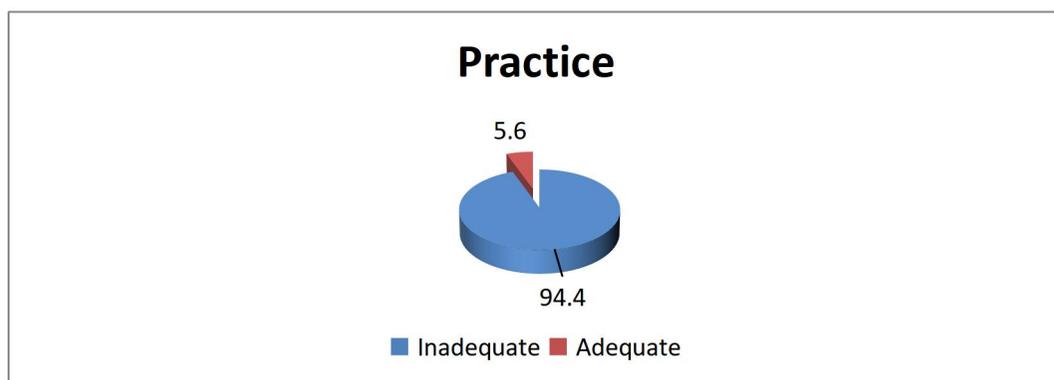
**Figure (2):** Percentage Distribution of Female Students Nurses according to their Health practice regarding nutritional and drinking habits (N= 160).

Table (3): Number and Percentage Distribution of Female Students Nurses according to their reported Health problems (N= 160).

Health problems	No	%
Heart, blood vessels		
1.Lack of oxygen in the body	51	31.9
2.Increased heart rate	91	56.9
3.Weak blood circulation	83	51.9
4. Cold limbs in the hand and feet.	73	45.6
5.The pain of angina pectoris	53	33.1
6.Low blood pressure	105	65.6
Lung, respiratory systems		
1.Breathing difficulty	90	56.3
2.Chest pain	70	43.8
Brain, the central nervous system (CNS)		
1.Inability to concentrate	99	61.9
2.Cognitive development Delayed	42	26.3
3.Persistent headache	106	66.3
4.Dizziness, fainting	88	55.0
5.Feeling tired	127	79.4
6.Constant fatigue	117	73.1
Immunity system.		
1.Weak immunity and expose the body to frequent infections	104	65.0
Mental status		
1. Constant anxiety.	105	65.6
2.extreme sadness	86	53.8
3.Loneliness	72	45.0
4.Depression	73	45.6
Eye		
1.Poor eyesight	75	46.9
2.Blurred him in the eye	115	71.9
3.Dilated pupils	36	22.5
Skin		
1.Paleness of the skin	82	51.3
2.With a sagging skin	68	42.5
3.Yellowing of the skin	71	44.4
4.Darkening under the eyes	103	64.4
Nails		
1.Weak nails	103	64.4
2.Nails are bombarded	102	63.8
3.Easy to crack	82	51.3
4.Its limbs are curved upward	35	21.9
5.Concave in the middle	40	25.0
Hair		
1.Hair has lost its strength	105	65.6
2.Dry hair	81	50.6
3.Dull appearance	68	42.5
4.Thin hair	89	55.6
5.Hair loss	131	81.9
Mouth and tongue		
1.swelling of the tongue	25	15.6
2.Inflammation of the tongue	38	23.8
3. Bleeding gums.	64	40.0
4.Paleness of the color of the lips	88	55.0
Pregnancy, previous childbirth (n=10)		
1. Abortion due to lack of blood supply to the fetus.	4	40
2.Premature birth	3	30
3.Bleeding after childbirth	3	30
4.Having a low-weight baby	2	20
5.Delayed growth of the child	1	10

Table (4): Relation between socio-demographic characteristics and Severity of iron deficiency anemia

Socio-demographic characteristics	Severity of iron deficiency anemia						statistical test	
	Mild		Moderate		Severe		χ^2	P value
	No	%	No	%	No	%		
Age								
< 18 years	15	9.4	55	34.4	12	7.5	3.677	0.159
≥ 18 years	16	10	42	26.2	20	12.5		
Marital status								
Single	31	19	93	58.1	26	16.2	MC	0.006
Married	0	0	4	2.9	6	3.8		
Birth order								
First	9	5.6	37	23.1	13	8.1	1.882	0.930
Second	11	6.9	27	16.9	7	4.4		
Third	7	4.4	20	12.5	7	4.4		
Fourth	4	2.5	13	8.1	5	3.1		
Crowding index								
Not crowded	0	0	1	0.6	0	0	MC	1.000
Crowded	6	3.8	19	11.9	6	3.8		
Severe crowded	25	15.6	77	48.1	26	16.2		
Father Education								
not read or write	3	1.9	4	2.5	3	1.9	MC	0.281
Primary	4	2.5	11	6.9	7	4.4		
Diploma	20	12.5	61	38.1	13	8.1		
High	4	2.5	21	13.1	9	5.6		
Father Job								
Government	8	5	28	17.5	11	6.9	MC	0.228
Private	5	3.1	21	13.1	12	7.5		
Craftsmanship	15	9.4	31	19.4	6	3.8		
Retired	2	1.2	13	8.1	3	1.9		
don't work	1	0.6	4	2.5	0	0.0		
Mother education								
not read or write	1	0.6	8	5	4	2.5	MC	0.567
Primary	4	2.5	15	9.4	3	1.9		
Diploma	22	13.8	59	36.9	17	10.5		
High	4	2.5	15	9.4	8	5		
Mother job								
Government	2	1.2	18	11.2	8	5	MC	0.082
Private	5	3.1	5	3.1	1	0.8		
Housewife	24	15	74	46.2	23	14.4		
Family income								
Enough	29	18.1	82	51.2	29	18.1	MC	0.369
not enough	2	1.2	15	9.4	3	2		
Residence								
Urban	31	19.4	96	60	31	19.4	MC	0.511
Rural	0	0	1	0.6	1	0.6		

Table (5): Relation between Knowledge and severity of iron deficiency anemia.

Severity of iron deficiency anemia	Knowledge				Statistical test	
	Unsatisfactory		Satisfactory		χ^2	P value
	No	%	No	%		
Mild	15	9.4	16	10	0.767	0.682
Moderate	52	32.5	45	28.1		
Severe	19	11.9	13	8.1		

Table (6):Correlation between Health practice regarding nutritional and drinking habits, Iron consumption and knowledge.

Items	Knowledge	
	R	P value
Practice	-.015	.848
Iron consumption	.115	.148

Discussion:

Female require higher nutrients, including iron, for growth, making them more susceptible to anemia. The factor causing female to be prone to iron deficiency anemia is the monthly menstrual cycle. Besides, dietary factors such as lack nutritional intake are more at risk of developing anemia can result in fatigue, decreased concentration, growth problems, and affect work productivity. Furthermore, anemia can reduce the body's resistance, making it vulnerable to infection (*Kusuma, & Kartini, 2021*).

According to (**table 1**), it was noticed that highest percentage of the studied female students' nurses their age less than 18 years old, this finding matched with result of *Mouselhy et al., (2015)* who conducted study on 330 secondary school students, to assess "Anemia among Secondary School Students in El-Kharga Oasis, New Valley, Egypt" and revealed that highest percentage of the studied sample had age less than 18 years old.

For parents' education, the present study showed that highest percentage had diploma education, while lowest percentage of them had not read or write. This finding matched with *Metwally et al., (2020)* who carried out a study on 350 respondents, about "Impact of Nutritional Health Education on Knowledge and Practices of Mothers of Anemic Children" in El Othmanya Village–Egypt. And reported that highest percentage of their parent education had secondary education. On the contrary these findings of *Tayel, & Ezzat,*

(*2015*) who conducted study about "Anemia and its associated factors among adolescents in Alexandria, Egypt", on 405 adolescents and revealed that high percentage of their parent educational level were not educated.

Regarding to their mother job, the current study showed that the majority of the studied samples' mothers were housewives, this finding matched with result of *Tesfaye et al., (2015)* who conducted study about "Anemia and iron deficiency among school adolescents: burden, severity, and determinant factors in southwest Ethiopia". The study was conducted among 408 school adolescents and reported that the majority of the study participants' mothers were house wives.

Regarding their residence, the current study showed that most of the studied sample from urban areas, this finding agreement with results of *Mohamed (2020)* who conducted a study on 180 pregnant women to Apply Health promotion instructions for pregnant women with iron deficiency anemia in Port Said city, Egypt and reported that most of the studied sample from urban areas.

Regarding total knowledge of iron deficiency anemia, (**Figure 1**) illustrated that more than half of the studied nurses had unsatisfactory knowledge. This result similar result of *Aboud et al., (2019)* who conducted a study on 300 pregnant mothers to assess Knowledge, Attitude and Practice Regarding Prevention of Iron Deficiency Anemia among Pregnant Women in Tabuk Region and showed that highest percentage of the studied sample had poor knowledge regarding IDA. Thus,

creating awareness among female through the implementation of health education program regarding diet rich in iron, importance of regular intake of iron supplementations, and complications of anemia.

Concerning on life style, the (table 2) revealed that most of the studied female students did not walk daily and did not practice physical activities weekly. These findings harmony with *Wahaidi et al., (2018)* who conducted study on 378 adolescents about "The adolescent's quality of life in the Gaza Strip: nutritional and psychological risk factors" in Palestine and showed that majority of the studied females had Sedentary lifestyle.

From point of view investigators, indicate that increasing sedentary behavior backs to our modern life style and all the conveniences made us sedentary, that sitting around in front of the TV or the computer, riding in the car for even a short trip and using elevators instead of stairs all contribute to our inactivity. These finding are true because boys practice physical activity out of homes freely, but girls are not allowed by their family. Girls in general, do their physical activity inside their homes and mostly like domestic cleaning and few minutes of physical exercise.

Regarding total health practice regarding nutritional and drinking habits (Figur 2) illustrated that the most of the studied student nurses had inadequate practice while only 5.6% of them had adequate practice. The findings of our study were also similar to study conducted by *Amer et al., (2021)* who carried out a study on 350 mothers about "Effect of Webinar educational program on Mothers' Knowledge and Practices regarding iron deficiency anemia among their Children." In Sohag, Egypt and revealed that the majority of the studied sample had inadequate practice.

From the investigator, point of view this result might due to lack of awareness among the studied sample regarding health habits for nutrition.

Concerning health problems of female student nurses on (Table 3), it was noticed that suffered from low blood pressure, increased heart rate, breathing difficulty, constant anxiety,

blurred him in the eye, darkening under the eyes, paleness of the skin, hair loss, Regarding pregnancy and previous childbirth, it shows that abortion due to lack of blood supply to the fetus. Is most common health problem among studied female. This result harmony with *Fabbrocini et al., (2018)* who conducted a study in Napoli, Italy about "Female pattern hair loss: A clinical, pathophysiologic, and therapeutic review" and showed that Female pattern hair loss is the most common form of alopecia in women. This result might affected females may experience psychological distress.

The (table 4) presented that there none statistically significant relation between iron deficiency anemia (p value ≤ 0.01). Socio-demographic characteristics except marital status.

From researcher point view, this result might due to married female adolescent neglect of them during pregnancy and lactation period. in this period interested by study and do not care about the food health and follow-up.

This result was agreement with study by *Gandhi, (2019)* who conducted study in Tripura West, about "Effectiveness of Video Teaching Programme on Knowledge about Anemia among Countryside Children with Anemia" and concluded that the anemia was not related to socio-demographic factors among the studied females except marital status. While, this result contrary with result of *Anwar et al., (2018)* who carried out a study on 359 adolescent girls, about "Nutritional Anemia in Adolescents in Oman" and presented that there A statistically highly significant association of anemia was found with the mother 's and father's educational status. this finding disagrees with study by *Abdel-Rasoul et al., (2015)* who conducted a study on 497 students, entitled "Epidemiology of iron-deficiency anemia among primary school children (6-11 years), Menoufia governorate, Egypt" and showed that correlation between anemia and birth order.

The (table 5) revealed that statistical insignificant relation between health knowledge and severity of iron deficiency anemia (p value ≥ 0.05). From researcher point

view, this result might be due to the fact that the studied female students with families of low socioeconomic status had reduced intake of iron-rich foods. This result is in harmony with results of the study conducted by *Wiafe et al., (2021)* who conducted a study among 137 adolescents about "Knowledge and practices of dietary iron and anemia among early adolescents in a rural district in Ghana" and indicated that the studied sample with high knowledge about iron deficiency anemia, with statistically insignificant association.

Regarding the correlation between health practice regarding nutritional and knowledge at (table 6) revealed that statistical insignificant correlation between health practice and knowledge, this result is similar to the result of *Amer et al., (2021)* who conducted a study at Sohag City, Egypt, and reported that insignificant correlation between health practice and knowledge of iron anemia. As well as, this finding is similar to *Ibrahim, & El-Lassy, (2013)* who conducted a study among 1000 students, that entitled "Nutritional program based on dietary pattern and iron deficiency anemia-related knowledge among Egyptian preparatory schoolgirls" in El-Behira Governorates, Egypt, and reported that insignificant correlation between Iron consumption and knowledge.

Conclusion:

Based on the findings of this study, it can be concluded that, more than half of female students had less than 18 years, the also majority of the female lived in severe crowded house the majority of the female students had unsatisfactory knowledge, the majority of student nurses had inadequate practice and low consumption of food items containing higher percentage of Iron. that there was high significant relation between marital status and severity of iron deficiency anemia whereas of single had moderate anemia.. Moreover, that there was statistical insignificant correlation between health practice regarding nutritional and drinking habits, Iron consumption and knowledge.

Recommendation:

Based on the results of the present

study, the researcher came up with the following recommendations:

- Physical surveillance for female students nurses must be available and continuous for early detection and treatment of health problems related to iron deficiency anemia.
- Health education is necessary for female adolescents in these areas as to the importance of iron-rich foods and utilization of any available sources of iron.
- Acquire knowledge about optimal nutrition during young adulthood that could prevent or delay adult-onset diet-related illnesses later on.
- Counseling can be done to empower adolescents to make understand the importance of precaution measures to avoid anemia in adulthood.
- Further studies could be conducted to explore the effects of iron deficiency on female students and reproductive health later on.

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