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# Knowledge and Awareness of Iron Deficiency Anemia among Female Students in Dubai

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**Abstract:** According to the World Health Organization (WHO), iron deficiency anemia (IDA) is a global health issue. Its prevalence is high in the United Arab Emirates (UAE), particularly among females of reproductive age. Conducting interventions to increase knowledge and awareness has been proven to be effective. Therefore, it may also help improve the lifestyle and practices of the population, decreasing the prevalence. This study aims to assess the knowledge and awareness of IDA among female university students. This study was cross-sectional and used a convenience sampling approach. A published survey was modified, which contained a total of 49 questions categorized into five main sections with an additional subsection for anemic students. A total of 200 female students aged between 18 – 26 years old participated. Results revealed that overall, students have high knowledge and awareness levels of IDA. Most students knew that anemia is a health problem and needs medical attention. The majority of students also knew the risk factors, symptoms, means of diagnosis, and screening for IDA and had awareness regarding sources of dietary iron, treatment, and prevention methods. Nonetheless, broader studies are recommended to obtain results on a larger scale.

**Keywords:** iron deficiency anemia; IDA; anemia; knowledge; awareness

## 1. Introduction

Iron deficiency anemia (IDA) is a condition where the body does not contain sufficient iron to produce hemoglobin, which is needed to help red blood cells to carry oxygen throughout the body [1]. According to the World Health Organization (WHO), anemia is a huge health issue globally. In 2019, the prevalence in women aged between 15-49 years was 29.9% [2]. Research has shown that anemia is very prevalent in the United Arab Emirates (UAE). A cross-sectional study in the UAE showed a prevalence of 31% and 26.7% in women of reproductive age [3]. Severe IDA, if untreated may result in complications such as heart problems, restless leg syndrome, improper development in children, headaches, and fatigue. It can also lead to pre-term labor, low birth weight, and increased blood loss during delivery [4]. In addition to that, IDA is also associated with psychiatric disorders, such as, attention-deficit hyperactive disorder, poor concentration, brain fog, and slowed mental development in adolescents [5,6]. Treatment methods include iron supplements, which are the most common treatment, intravenous iron for individuals with long-term or serious IDA, medications (erythropoiesis-stimulating agents) to facilitate the production of red blood cells by the bone marrow for individuals with IDA as well as other chronic conditions. In cases of blood loss, blood transfusions may be used, and surgery if needed to stop bleeding [4]. Although females of reproductive age are more susceptible to getting IDA due to the blood loss that occurs during menstrual cycles, and the fact that during pregnancy, the requirement for iron increases drastically. It can also affect other individuals for several other reasons, including low dietary iron intake (for example, caused by a vegetarian diet), or low iron stores due to absorption complications that occur in intestinal disorders [1]. Another factor that has been found to cause IDA is intensive exercise over long periods [8]. Nonetheless, if the cause is nutritional, IDA can be prevented through the consumption of fortified foods or foods that contain high bioavailability of iron such as red meats. Additionally, correcting other nutrient deficiencies that lead to iron deficiency (such as a lack of folic acid and vitamin B12),

consuming vitamin C to improve absorption from non-heme iron sources (green leafy vegetables), and reducing caffeine intake, which reduces iron absorption, are also means of prevention [9].

However, many individuals may not know much about IDA even if they believe that they do. A survey-based research study aimed at investigating college distance runners' knowledge about issues related to basic nutrition, iron toxicity, and their supplementation choices. The study sample was 44 male and 54 female students at a university in the USA. Data regarding their confidence levels in identifying high iron foods, as well as details about their eating habits and previous nutrition classes taken was collected. The results showed that 73.6% of students were confident in their ability to identify high-iron foods; however, only 43% were able to identify them correctly, revealing that their knowledge level is low [10]. This study illustrated that the information acquired might not be adequate and that further education is necessary.

Education is a crucial factor that influences behavior and practice. A qualitative study was done in Indonesia among high school students aged 15-19 years old. Nine female students participated in the study and purposive sampling was used. This study aimed at understanding the gaps in knowledge of an anemia reduction education program that was done previously. Findings showed that students did not understand the importance of anemia prevention and therefore did not take their prescribed iron tablets. This indicated that the program was not a success due to insufficient education [11].

Education is also necessary to promote healthy eating behaviors to reduce the susceptibility to developing the disease. A study carried out in Northern Ghana with 252 pregnant women investigated their knowledge regarding iron deficiency anemia and their eating habits. The findings revealed a positive correlation between knowledge and practices as the knowledge scores were significantly associated with an iron-rich diet [12]. An intervention study in India showed that a six-month education intervention targeting adolescent girls significantly improved not only their knowledge about IDA but also their health practices such as taking their supplements and checking their hemoglobin levels [13]. Additionally, a study in Palestine aimed at evaluating the effectiveness of a nutrition education intervention. 89 female adolescents between the ages of 15-19 years old were randomly divided into a control and intervention group. Both groups were given supplements but the control group was only given minimal education (brochures and booklets), while the intervention group was given additional lectures and interactive discussions as well. Students were asked to complete the Knowledge, Attitude, and Practice (KAP) questionnaire before and after the intervention. The scores of the KAP questionnaire significantly improved in the intervention group. Post-intervention, the knowledge score increased from 22.7% to 90.9%, the positive attitude score increased from 54.5% to 70.5%, and the desired practices score increased from 36.4% to 70.5%. In contrast, the control group showed decreased knowledge levels (22.2% to 20%) and maintained their positive attitude level (60%). Only the desired practices score increased slightly (35.6% to 46.7%) but were still far below the increased score achieved by the intervention group [14].

Similarly, a Pakistani intervention study explored the health literacy of IDA among 53 community women aged 15 - 46 years old, who were given a one-month educational intervention. A pre-and post-intervention questionnaire was administered. This consisted of 30 items and included questions about the causes of IDA, symptoms of IDA, and iron sources. In correspondence with the previous studies, the participants' knowledge level regarding each aspect of the questionnaire increased dramatically post-intervention. Their knowledge about the causes of IDA increased from 32% to 83%, about the symptoms of IDA increased from 41.5% to 90.6%, and about the sources of iron increased from 49.1% to 96.1%, showing that the educational intervention was successful. This study illustrated that promoting education can raise awareness effectively, which subsequently influences health practices and lifestyle [15].

On the other hand, students who are in health-related majors are likely to have a higher level of understanding of IDA. A cross-sectional study on IDA as a factor in male infertility was carried out with 768 male and female students aged 18-25 years old from health colleges at Jazan University in Saudia Arabia. Students were asked to complete a questionnaire with 20 closed-ended items regarding their knowledge of iron, IDA, and IDA as risk factors for male infertility. The results

showed that females were significantly more aware of the nutritional aspects of iron deficiency than males were. Still, overall, the knowledge level was sufficient although only a minority were aware of the impact of IDA on infertility [16].

Another study in India investigated the association between the knowledge of iron deficiency and its prevalence among 100 female students aged 15-19 years old at Rufaida College of Nursing. The study used a quantitative cross-sectional survey containing 30 multiple-choice questions regarding anemia and its prevention. The findings showed that 64% of students had an average knowledge level, 36% had a good knowledge level, and none of the students had a poor knowledge level, which is likely to be because the participants were nursing students with a good understanding of human health and nutrient deficiencies. However, despite the high level of knowledge, the study revealed that 70% of students were anemic and only 8% of the anemic students were taking iron supplements. This study concluded that other factors apart from education should be taken into consideration when assessing what influences iron intake and the high prevalence of IDA [17]. Nonetheless, education should be considered an effective and necessary step in preventing IDA.

To our knowledge, there are no studies that have been done in the UAE to assess the knowledge and awareness of IDA in the community despite the high prevalence. The objective of this study is to assess the knowledge and awareness level of iron deficiency anemia among Zayed University female students from the Dubai campus.

## 2. Materials and Methods

### 2.1. Study design

The study was a descriptive cross-sectional survey designed to assess the knowledge and awareness level of iron deficiency anemia (IDA) among female university students in Dubai, United Arab Emirates. The data collection was carried out between September and October of 2022.

### 2.2. Sampling

A convenience sampling approach was used. Students were selected based on the following criteria: current female students attending Zayed University in Dubai, 18 years old and above, and having access to the internet.

### 2.3. Data collection

A survey from an existing study was obtained and adapted slightly to fit this study [18]. It consisted of five main sections: (1) socio-demographic characteristics, (2) medical history/health status, (2.1) anemic students' medical history, (3) lifestyle or practices, (4) knowledge regarding anemia, and (5) awareness of anemia.

The survey had a total of 49 questions. The first section collected information about their ethnicity, age, weight, height, academic year and major. The second and third collected information about their family history and supplementation while the anemic students were asked about type of anemia and symptoms. The last two sections were used to assess their knowledge and awareness level of IDA.

The survey was created via Google Forms and the link was distributed online through emails via the university website (Blackboard) and text messages to university group chats using WhatsApp. Consent was obtained at the beginning of the survey to proceed with the questions. Following the agreement of the students to take the survey, no other identifying questions were collected. Students were able to withdraw from the study at any time.

### 2.4. Data Analysis

Data were analyzed using a statistical package for social sciences (SPSS version 28). Descriptive statistics including means, standard deviations, and percentages were calculated. Findings were presented through the use of tables and various types of figures that summarized the results.

*2.5. Ethics*

Ethical approval was granted by Zayed University Research Ethics Committee (ZU23_013_F) before carrying out the study.

## 3. Results

*3.1. Socio-demographics*

Table 1 shows the characteristics of the study population. A total of 200 female students responded; with the majority being Emirati (98.5%, n=197), two students were Yemeni and one student was Belgian. Students aged between 18 – 26 years, with an average age of 20.7 ± 1.7 years. The average BMI was 23.7 kg/m² ± 3.4, which indicates that most students fall under the healthy body mass index. Additionally, 18.5% (n=37) of students majored in Public Health and Nutrition.

**Table 1.** Socio-Demographic characteristics of the students.

| Variable | Number of students | % |
|---|---|---|
| **Ethnicity** | | |
| Emirati | 197 | 98.5 |
| Non-Emirati | 3 | 1.5 |
| **Marital status** | | |
| Single | 182 | 91 |
| Married | 14 | 7 |
| Divorced | 4 | 2 |
| **College** | | |
| College of Natural and Health Sciences | | |
| College of Humanities and Social Sciences | 64 | 32 |
| College of Business | 39 | 19.5 |
| College of Technological Innovation | 37 | 18.5 |
| College of Communication and Media Sciences | 29 | 14.5 |
| College of Arts and Creative Enterprises | 13 | 6.5 |
| College of Education | 9 | 4.5 |
| College of Interdisciplinary Studies | 8 | 4 |
| | 1 | 0.5 |
| **Year** | | |
| 1 | 2 | 1 |
| 2 | 41 | 20.5 |
| 3 | 61 | 30.5 |
| 4 | 53 | 26.5 |
| Last semester | 43 | 21.5 |
| **Nutrition course** | | |
| No | 110 | 55 |
| Yes | 90 | 45 |

*3.2. Medical History / Health Status*

Students had a family history of various diseases, and the most common were Diabetes Mellitus (41%, n=82) followed by Hypertension (33%, n=66). Out of the 200 students, 50 students (25%) were anemic. The age of diagnosis of anemia among anemic students varied greatly, five of them were

diagnosed from birth with anemia, while the majority when teenagers, some while they were children, and a few as adults. Table 2 shows the most common prevalent type of anemia is IDA affecting 70% (n=35) of the students. 88% (n=44) have taken drug medication or iron supplements to treat anemia. Stress was common among anemic students affecting 66% (n=33) of them. Tiredness and weakness, dizziness, and skin paleness were also common.

**Table 2.** Medical history of students with anemia (n=50).

| Variable | Number of students | % |
|---|---|---|
| **Do you know what type of anemia you have?** | | |
| Iron deficiency | 35 | 70 |
| No | 9 | 18 |
| Sickle cell | 3 | 6 |
| Thalassemia | 1 | 2 |
| Hemolytic | 1 | 2 |
| Both thalassemia and anemia | 1 | 2 |
| Aplastic | 0 | 0 |
| **Have you ever taken drug medication or iron supplements to treat anemia?** | | |
| Yes | 44 | 88 |
| No | 6 | 12 |
| **Are you under a lot of stress?** | | |
| Yes | 33 | 66 |
| No | 17 | 34 |
| **Does your skin look unusually pale or dull?** | | |
| Always | 8 | 16 |
| Often | 17 | 34 |
| Sometimes | 14 | 28 |
| Rarely | 8 | 16 |
| Never | 3 | 6 |
| **How often do you feel tired and/or weak and don't know why?** | | |
| Always | 18 | 36 |
| Often | 15 | 30 |
| Sometimes | 15 | 30 |
| Rarely | 2 | 4 |
| Never | 0 | 0 |

### 3.3. Lifestyle or Practices

Approximately one-third of students (33%) reported they rarely exercised while only 11% (n=22) exercised regularly. Most of the students (89.5%, n=179) have never smoked. In terms of their eating habits, only 11% (n=22) reported always eating red meat while 10.5% (n=21) never ate red meat, 26.5% (n=53) always consumed vegetables, 23% (n=46) of the students said that they do not drink coffee or cocoa after meals while 17.5% (n=35) said that they always do. 30% (n=60) were not regular tea drinkers, and 65.5% (n=131) of the students who drink tea usually have it after meals. Moreover, 32% (n=47) always ate their breakfast. With regards to their sleeping patterns, the majority of the students

(78.5%, n=157) reported getting the recommended sleeping hours between 5 to 8 hours. However, 11.5% (n=23) were sleep deprived as they were sleeping less than 5 hours. Regarding menstruation patterns, most of the students (65.5%, n=131) had regular menstruation cycles and 52% (n= 104) of them had menstruation cycles that lasted more than 5 days. 78% (n=158) answered that they have moderate blood loss during their menstruation cycles.

### 3.4. Knowledge regarding anemia

Table 3 shows students' responses about identifying factors that lead to anemia. Almost all students (92.5%) correctly knew that genetics, lifestyle habits, stress, physiological factors such as pregnancy, and pathological factors may result in anemia. However, only a small number of students (16.5%) knew that intensive exercise is one of the factors that may result in anemia. As for the knowledge of the symptoms, the majority of students knew that pale skin (78.5%, n=157), fatigue (63.5%, n=127), shortness of breath (57%, n=114), decreased appetite (47.5%, n =95) and irritability (31%, n=62) are signs of anemia as presented. Concerning anemia prevention and treatment, a great number (77.5%, n=155) knew that increasing iron intake from food and vitamin C fruits help (55.5%, n =111) prevent anemia. 54% (n=108) knew that taking multivitamins, and 83.5% (n=167) knew that iron and folic acid supplementation are treatment methods for anemia.

As shown in Table 4, 69% of students knew that complete blood count is the test used. The majority of students also knew correctly that blood is the specimen used (79.5%, n=159). Additionally, only 19.5% (n= 39) knew that a medical technologist conducts laboratory testing and that RBC is the blood component viewed under the microscope (62%, n=124.

**Table 3.** Students correct responses to knowledge about anemia.

| Variable | Number of students | % |
|---|---|---|
| **Anemia Factors** | | |
| Regular exercise does not lead to anemia. | 185 | 92.5 |
| There are risk factors for anemia. | 180 | 90 |
| Genetics lead to anemia. | 128 | 64 |
| Stress does not lead to anemia | 118 | 59 |
| Habits (smoking, sleep deprivation.) Leads to anemia | 92 | 46 |
| Physiological factors that lead to anemia | 80 | 40 |
| Pathological factors leads to anemia | 47 | 23.5 |
| Intensive exercise led to anemia | 33 | 16.5 |
| **Anemia Symptoms** | | |
| Pale skin color is a symptom of anemia | 157 | 78.5 |
| Vomiting is not a symptom of anemia | 157 | 78.5 |
| Increased blood pressure is not a symptom of anemia | 147 | 73.5 |
| Fatigue is a symptom of anemia | 127 | 63.5 |
| Shortness of breath is a symptom of anemia | 114 | 57 |
| Decreased appetite is a symptom of anemia | 95 | 47.5 |
| Irritability is a symptom of anemia | 62 | 31 |
| **Anemia Prevention** | | |
| Skipping meals cannot prevent anemia | 184 | 92 |
| Practicing intensive exercise cannot prevent anemia | 162 | 81 |

| | | |
|---|---|---|
| Increasing dietary iron intake can prevent anemia | 155 | 77.5 |
| Consuming vitamin c-rich fruits can prevent anemia | 111 | 55.5 |
| Avoiding tea and coffee after meals cannot prevent anemia | 71 | 35.5 |
| **Anemia Treatment** | | |
| Anemia need medical interventions | 182 | 91 |
| Deworming cannot treat anemia | 176 | 88 |
| Iron and folic acid (ifa) supplementation treat anemia | 167 | 83.5 |
| Taking multivitamins treat anemia | 108 | 54 |
| **Anemia Diagnosis Personnel** | | |
| Medical technologist conducts laboratory | 39 | 19.5 |
| **Anemia diagnosis test** | | |
| Complete blood count is used to diagnose anemia | 138 | 69 |
| **Anemia Screening Blood component** | | |
| Red blood cells are viewed under the microscope | 124 | 62 |
| **Anemia screening specimen** | | |
| Blood is the specimen used in anemia screening | 159 | 79.5 |

**Table 4.** Awareness level of students regarding anemia.

| Variable | Extremely aware n (%) | Very aware n (%) | Aware n (%) | Slightly aware n (%) | Not aware n (%) |
|---|---|---|---|---|---|
| Red meat, green leafy vegetables, beans, and nuts are great sources of iron | 125 (62.5%) | 38 (19%) | 25 (12.5%) | 8 (4%) | 4 (2%) |
| Anemia is a health problem. | 118 (59%) | 44 (22%) | 26 (13%) | 6 (3%) | 6 (3%) |
| You need to seek medical attention if you suspect symptoms of anemia. | 110 (55%) | 44 (22%) | 39 (19.5%) | 5 (2.5%) | 2 (1%) |
| Severe anemia is life-threatening. | 99 (49.5%) | 46 (23%) | 37 (18.5%) | 10 (5%) | 8 (4%) |
| Some types of anemia can be treated with iron tablets. | 98 (49%) | 47 (23.5%) | 50 (25%) | 2 (1%) | 3 (1.5%) |
| Anemia can be inherited or it may be caused by nutrient deficiency among other factors. | 97 (48.5%) | 52 (26%) | 35 (17.5%) | 8 (4%) | 8 (4%) |
| Anemia can be prevented. | 87 (43.5%) | 40 (20%) | 46 (23%) | 17 (18.5%) | 10 (5%) |
| A sterile syringe is used in collecting blood for the anemia laboratory | 72 (36%) | 34 (17%) | 54 (27%) | 15 (7.5%) | 25 (12.5%) |
| Taking Vitamin C helps in iron absorption. | 72 (36%) | 41 (20.5%) | 60 (30%) | 14 (7%) | 13 (6.5%) |

*3.5. Awareness of anemia*

Table 4 shows that 59% of students (n=118) were extremely aware that anemia is a health problem. 48.5% (n=97) answered that they were extremely aware that anemia can either be inherited

or caused by nutrient deficiency. In addition to that, students acknowledged that medical attention is necessary if anemia is suspected, only 1% (n=2) of students had no awareness of that.

It is also evident that 62.5% (n=125) of students were extremely aware that red meat, green leafy vegetables, nuts, and beans are a great source of iron. When asked if anemia can be prevented 43.5% (n=87) answered that they were extremely aware. Moreover, 49.5%(n=99) were extremely aware that severe anemia could be life-threatening and 49% (n=98) answered that they were extremely aware that some types of anemia can be treated by iron tablets. 36% of students (n=72) were extremely aware of the role of vitamin C in helping with iron absorption). Finally, 36% (n=72) were extremely aware of the usage of sterile syringes when collecting blood samples.

## 4. Discussion

This study aimed to assess the knowledge and awareness level of IDA, questions regarding diagnosis, treatment, and prevention were asked in the questionnaire. A total of 200 female students from various colleges and majors from the Dubai campus participated. According to the WHO, anemia was most prevalent among females of reproductive age (15 to 49 years) in the UAE affecting 24.3% of the population [19]. In this study, 25% of students were anemic.

Regarding the knowledge of the factors leading to anemia, many students correctly knew what may and may not lead to anemia. However, intensive exercise is not known to the majority and only 16.5% of students knew that it could lead to anemia. Compared to other studies, the findings of this study indicate that the knowledge level is higher, as 90% of students had a high knowledge level of the risk factors of anemia while the Pakistani study stated that only 32% of their students knew the cause of iron deficiency before the intervention [15]. Similarly, the findings of another study in Palestine revealed that a good knowledge level regarding IDA was 22.7% before the intervention [14]. Furthermore, this study revealed more than half of the students knew at least two out of the five symptoms of IDA indicating that the knowledge level is high. In contrast with the previous study that was done in Pakistan that revealed that only 41.5% of their students knew the symptoms of IDA before the intervention [15]. Many factors could have led to the difference in the results between the current study and the two mentioned above. For instance, the age of the participants was a noticeable difference. This study included students aged 18 years and above, while the two associated studies both had younger students starting from 15 years old, hence why this study may have had more knowledgeable students. Additionally, the study design, this study used a cross-sectional survey while the other two used the intervention design.

Regarding the knowledge of treatment and prevention of anemia, results from this study showed that approaches to prevention were well recognized by students. 77.5% of students knew that increasing iron intake from food and 55.5% of students knew that increasing consumption of vitamin C-rich foods helps in preventing anemia. As for the treatment, a large number (83.5%) of students knew that iron and folic acid supplements are a treatment for anemia, and 54% knew that taking multivitamins is another method as well, which shows that students understand what is currently being used to treat anemia. Correspondingly, a study that was done at Rufaida College of Nursing in India, had similar results, revealing that their participant's knowledge ranged from average (64%) to good (36%) [17]. The similarity of the results is likely due to students being at a college level which is similar to this study. Also, another study that was done in health colleges at Jazan University in Saudi Arabia had similar results as they stated that the knowledge level was good overall [16]. Their results could have been high due to the sample characteristics, as being from health colleges give them the advantage of being exposed to the topic, and having a higher knowledge level is expected.   Similarly in this study, 32% of students were from the College of Natural and Health Sciences, and 45% of students took nutrition courses. Therefore, the knowledge and awareness levels were higher.

Regarding the awareness level of anemia. More than half of the students in this study (59%) recognized that anemia is a health problem. In contrast with another study in Indonesia, their findings revealed that their students did not understand the significance of anemia prevention and verbally stated that they did not know that anemia prevention is important and therefore did not

take the iron tablets they were given during the intervention [11]. The findings of their study might have been affected by the small sample size, as they had nine students while this study had 200 students, or it could be because of the age of the students, this study's students were older and therefore had more knowledge and experience regarding the topic. Their study design could have also contributed to their results, as purposive sampling was used in their intervention study while this study used convenience sampling and a cross-sectional survey.

More than half of the students (62.5%) were extremely aware that red meat, green leafy vegetables, nuts, and beans are great sources of iron. In contrast with another study that investigated the same topic, their findings showed that only 43% were able to identify food sources high in iron [10]. Despite the similarities between the sample characteristics and study design both being survey-based and targeting college students between the ages of 18 years and over, the results were different. This might be due to the difference in the sample size and gender. This study had 200 female students while theirs had 98 only of which 54 were males.

*Study Limitations*

This study has several limitations that could have played a role in determining the results. First, the relatively small number of responses slightly affected the data analysis, as calculating a comparison between students who studied nutrition courses versus those who did not, was not possible. Accordingly, including another method of data collection such as distributing physical copies or interviews might have increased students' participation Additionally, the sample cannot be seen as representative of the Emirati population as a whole, as only female students aged 18-26 years old were selected for this study. Moreover, the close-ended questions may have limited the respondent's ability to express their understanding properly, and clarifying unclear questions was not possible.

## 5. Conclusions

Based on the data gathered and according to the study results, female students from Zayed University in the Dubai campus have an overall high knowledge and awareness level of iron deficiency anemia as the number of students who were knowledgeable and had more awareness exceeded the number of those who did not. The majority of students knew the factors that lead to anemia, the signs, and symptoms of anemia, treatment, and prevention methods. The diagnosis and screening of anemia were understood by most as well. Additionally, anemia was recognized as a health issue that needs medical attention. However, when asking students to rate their awareness level, a few students had no awareness of some questions. For instance, 6.5% of students were not aware that vitamin C helps in iron absorption and 5% had no awareness that anemia can be prevented. In addition to that, there were a few gaps of knowledge as well, such as the majority not knowing that intensive exercise is a factor that contributes to anemia, and the medical personnel responsible for lab testing of anemia is a medical technologist rather than a doctor. These knowledge gaps and lack of understanding emphasize the need to raise awareness of iron deficiency anemia and spread more information to correct misconceptions.

For future steps, it is recommended to conduct studies with different sampling approaches and designs, on a bigger scale in a longer period to get a high number of responses that can be used to compare between variables. For example, comparing either the knowledge and awareness level between students who took nutrition courses and who did not or between anemic and non-anemic students, which could not have been done in the current study due to the limited number of responses. In addition to that, conducting more broad studies will help establish a much more accurate and representative outcome. Upon research, there have not been studies found that are exploring the knowledge and awareness level of iron deficiency anemia among college students in the UAE, and seeing how highly prevalent it is in the UAE, considering these types of studies is highly recommended.

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