Research Article (Araştırma Makalesi)

Evaluation of The Knowledge and Awareness of Anemia in Medical Faculty Students and Family Physicians

Tıp Fakültesi Öğrencilerinde ve Aile Hekimlerinde Anemi Bilgi ve Farkındalığının Değerlendirilmesi

Emirhan CAKAR[1], Raziye Sule GUMUSTAKIM[2], Celal KUS[2]

[1] Malatya Puturge State Hospital, Malatya, Turkey
[2] Kahramanmaras Sutcu Imam University, Faculty of Medicine, Department of Family Medicine, Kahramanmaraş, Turkey

Özet

Amaç: Anemi, dünyanın ve ülkemizin önemli bir sağlık sorunudur. Aile hekimliği anemi tanısının konması, anemi tedavisinin verilmesi ve anemiye neden olan patolojilerin taranması açısından sağlık sisteminde önemli bir konuma sahiptir. Bu çalışmada aile hekimlerinin ve tıp fakültesi öğrencilerinin aneminin önemine ilişkin farkındalıklarının değerlendirilmesi ve anemi tanısı koymadaki yeterlilik açısından bilgi ve birikimlerinin ölçülmesi amaçlanmıştır.

Gereç ve Yöntemler: Çalışmamız kesitsel ve tanımlayıcı tiptedir. Çalışmamızda öğrenciler için evren Kahramanmaraş Sütçü İmam Üniversitesi Tıp Fakültesi 4-5-6. sınıf öğrencileri olan 314 kişiden oluşmaktadır. Aile hekimleri için evren Kahramanmaraş il merkezinde aktif çalışan aile hekimi sayısı olan 206 kişiden oluşmaktadır. Basit rastgele örneklem yöntemiyle %5 hata payı ve %95 güven aralığı ile öğrenciler için örneklem 174, aile hekimleri için 135 olarak hesaplanmış olup, toplam örneklem sayısı 309'dur.

Bulgular: Araştırmaya 80 pratisyen aile hekimi, 24 uzman aile hekimi, 31 asistan aile hekimi, 27 tıp 4. sınıf öğrencisi, 76 tıp 5. sınıf öğrencisi ve 71 tıp 6. sınıf öğrencisi alındı. Katılımcıların ortalama yaşı 26.8±4.7'idi. Anemi konusunda en iyi bilgiye sahip olanlar aile hekimliği asistanları ve uzmanları iken ($p<0.001$) pratisyen hekimlerin çoğunluğu bu konuda hizmet içi eğitim verilmesi gerektiğini düşündü ($p=0.014$). Öğrencilerin büyük çoğunluğu anemi tanı ve tedavisinde kendilerini yetersiz hissetmekte ve bilgilerini sürekli yenileyememektedir ($p<0.001$).

Sonuç: Araştırmada başarı oranı %72.8 olup, öğrencilerin anemi hakkında yeterli bilgisi yoktur. Öğrencilerdeki bilgi eksikliğini gidermek için anemi konusunda verilen ders sayısının arttırılması, mezuniyetten önce anemi bilgilerini arttırmak ve tazelemek için halk sağlığı ve aile hekimliği rotasyonlarında eğitim programları düzenlenmesi gerekmektedir. Mezuniyet sonrası için de belli aralıklarla hizmet içi eğitim programları düzenlenmelidir.

Anahtar kelimeler: Aile Hekimliği, Anemi, Talasemi, Tıp öğrencileri

Abstract

Objective: Anemia is an important health problem in the world and our country. Family medicine has an important place in the healthcare system in terms of diagnosis of anemia, treatment of anemia, and screening of pathologies that cause anemia. This study aimed to evaluate the awareness of family physicians and faculty of medicine students about the importance of anemia and to measure their knowledge and experience in terms of their competence in diagnosing anemia.

Material and Methods: Our study is cross-sectional and descriptive. In our study, the population for the students was determined to be 314 students in the 4th-5th-6th grade of Kahramanmaras Sutcu Imam University, Medical Faculty. The population of family physicians is determined as 206, which is the number of active family physicians in the city center of Kahramanmaraş. With the simple random sampling method, with a 5% margin of error and 95% confidence interval, the sample was calculated as 174 for students and 135 for family physicians, and the total sample number was 309.

Results: The study included 80 general practitioners,24 specialist family physicians,31 assistant family physicians, 27 4th grade,76 5th grade, and 71 6th grade medicine students. The average age was 26.8±4.7. While those with the best knowledge of anemia were specialists and assistant family physicians ($p<0.001$), the majority of the general practitioners thought that in-service training should be given on this subject ($p=0.014$). The majority of the students felt inadequate in diagnosing and treating anemia and could not constantly refresh their knowledge ($p<0.001$).

Conclusion: The success rate in the study is 72.8%, and the students have insufficient knowledge about anemia. In order to eliminate the lack of knowledge in students, it is necessary to increase the number of courses given on anemia, to increase and refresh the knowledge of anemia in interns before graduation, to organize training programs on anemia in public health and family medicine rotations, and to organize in-service training programs at regular intervals after graduation.

Keywords: Anemia, Family practice, Medical students, Thalassemia

Yazışma Adresi: Celal KUŞ, Kahramanmaraş Sütçü İmam Üniversitesi Tıp Fakültesi, Aile Hekimliği AD, Kahramanmaraş, Türkiye
Telefon: +05432290799
Email: drcelalkus@gmail.com
ORCID No (Sırasıyla): 0000-0002-8415-6680, 0000-0003-0195-0895, 0000-0003-2535-6110
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INTRODUCTION

Anemia is defined as Hemoglobin (Hb) below normal values determined by age and gender (1). Anemia is an important health problem in the world and our country. According to the World Health Organization data, the prevalence of anemia in adults is 24.8% worldwide. This rate is 12.7% for men and 30.2% for women. The prevalence of anemia is 47.4% in preschool children, 41.8% in pregnant women, and 30.2% in non-pregnant women (2). Various studies have been conducted on the prevalence of anemia in our country. In extensive studies conducted in children of different age groups, it has been found that iron deficiency anemia (IDA) is at a very high rate of 30.0-78.0% (3). Different results were obtained in studies conducted with adults. In the study of Dilek et al., which included a total of 642 patients (168 males and 474 females) in the city of Van, the prevalence of anemia was found to be 15.9% (17.3% in women, 11.9% in men) (4). In the study of Memişoğulları et al., in which 2187 cases were examined, the prevalence of anemia was found to be 25.8% (565 cases) (5). In a study conducted with a geriatric population in which 430 people participated in Turkey, anemia was found with a rate of 32.0% and IDA at 13.0% (6). In studies conducted on the prevalence of IDA in pregnant women in our country, rates between 20% and 50% are reported depending on regional differences, and demographic characteristics of the population studied (7,8).

Studies show that anemia is a common health problem. Primary health care is central in the organization of health services. Primary health care service, which is an indispensable part of the health system of countries, is the health service produced in the health institution where people apply for various reasons, express their health problems, treat a large part of the society, refer to the second and third level if necessary and provide preventive health services can be defined as (9). Family physicians constitute the most important part of primary health care services. Family medicine has an important place in the health system in terms of diagnosis of anemia, treatment of anemia, and screening of pathologies that cause anemia.

This study aimed to compare the knowledge level and awareness of medical faculty students (who did not see enough patients) and family physicians who received anemia training for a long time (in practice, more patients).

MATERIALS AND METHODS

Our study is cross-sectional and descriptive. In our study, the population of students was calculated as 314, while the sample was 174 with a 5% margin of error and a 95% confidence interval using the simple random sampling method. For family physicians, the number of active family physicians in the city center of Kahramanmaraş was calculated as 206 and the sample as 135, and the total sample number was 309. Ethics committee approval was obtained from a University Faculty of Medicine Clinical Research Ethics Committee for the study, dated 05.02.2020 and numbered 08. The study was conducted in accordance with the Helsinki Declaration. Physicians who do not work as active family physicians and Faculty of Medicine 1.-2.-3. grade students were excluded from the study. In our study, the diagnosis of anemia, clinical findings of anemia, treatment of anemia, IDA, megaloblastic anemia, chronic disease anemia, and thalassemia subtypes were measured in 30 questions of a 40-question questionnaire created as a result of the literature review, while the participants' confidence in the diagnosis and treatment of anemia. The prevalence of anemia, the problems that may occur if anemia is not treated, and their opinions about the approaches to diagnosing and treating anemia were also evaluated. A 40-question questionnaire consisting of 10 questions in which socio-demographic characteristics such as age, gender, marital status, family physician's experience in the profession, place of work, and sources of information about anemia were questioned by the researcher using a face-to-face interview method. While evaluating the knowledge level of 30 questions, 1 point was given to each known correct answer, and 0 points to the wrong answer and not knowing option. The maximum score obtained from this section is 30, and the minimum score is 0. Those who scored 0-20 points in knowledge questions were considered unsuccessful, and those who scored 20-30 points were successful. In addition, in order to examine the answers given to the questions in detail, a grouping was made of physicians and students.

Statistical analysis

Statistical analysis R 3.5.1. made using the program. Descriptive statistics are presented as mean±standard deviation, median (minimum-maximum), frequency, and percentage. Pearson's Chi-Square test was used to evaluate categorical variables. Groups were compared in

pairs to find the source of the difference with more than two independent variables. The suitability of variables to normal distribution was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov and Shapiro-Wilk Tests). The Mann-Whitney U test was used for the statistical significance between two independent groups. The Kruskal-Wallis test was used between three or more independent groups for inconsistent variables with normal distribution. When a significant difference was found between three or more independent groups, Bonferroni Correction was applied to determine the source of the difference. The relationship between variables was evaluated using the Spearman Correlation test. The relationship status according to the correlation coefficient is presented in the table. The statistical significance level was accepted as $p<0.050$.

RESULTS

The study included 309 people, including 80 (25.8%) general practitioners, 24 (7.7%) specialist family physicians, 31 (10.0%) assistant family physicians, 27 (8.7%) 4th-grade medicine students, 76 (24.5%) 5th-grade medicine students and 71 (22.9%) 6th-grade medicine students. The mean age of the participants was 26.8±4.7 (median:25, min:21, max:45). The mean age of students was 23.56±1.23 (median:23, min:21, max:30), and the mean age of family physicians was 31.08±4.01 (median:31, min:23, max:45). Among the participants, 16 (51.6%) assistant family physicians, 47 (58.8%) general practitioners, and 20 (83.3%) specialist family physicians were married. In addition, 34 (45.3%) general practitioners, 15 (65.2%) specialist family physicians, and 25 (96.2%) assistant family physicians were working in the city center, and assistant family physicians were working in significantly more provincial centers ($p<0.001$).

To the question "Can you request a blood test at the place you work", general practitioners answered "yes" with a frequency of 60 (81.1%), specialist family physicians 22 (91.7%), and assistant family physicians 26 (100.0%). When the sources used by the participants to get information about the diagnosis and treatment of anemia were questioned, specialist family physicians (95.8%) and assistant family physicians (83.9%) mostly benefited from the literature (thesis, article). General practitioners (78.8%) internet, 4-5. (88.9%-75.0%) and 6th-grade students (69.0%) were getting information about anemia from Medical Specialty Examination (MSE) books. Also, 6th-grade students (69.0%) were getting information about anemia from the internet. Although the frequency of benefiting from other physicians' practices and drug prospectuses was lower than other sources, 4th students (70.4%) mostly benefited from other physician practices and assistant physicians (25.8%) from drug prospectuses. Medical resource books were mostly preferred by specialist family physicians (79.2%). It was observed that specialists and assistant family physicians used significantly more literature than general practitioners and medical students ($p<0.001$) (**Table 1**).

Participants' views on receiving in-service training on anemia were questioned. According to this; 78 (97.5%) of general practitioners, 20 (83.3%) specialist family physicians, 27 (87.1%) assistant family physicians, 24 (88.9%) of 4th students, 73 (96.1%) of 5th students, and 59 (83.1%) of 6th students thought it should be given.

Anemia knowledge score averages calculated according to the correct answers given to 30 questions measuring the level of knowledge about anemia are shown in **Table 2**. There was a significant difference between the groups ($p<0.001$). It was observed that specialist family physicians scored higher than general practitioners, assistant family physicians, and students of medicine in the 4, 5, and 6th grades. In addition, the knowledge scores of the general practitioners and assistant family physicians were significantly higher than the scores of the Faculty of Medicine 4, 5, and 6th grade students.

Table 3 shows the success status of the participants according to the scores they got from the anemia knowledge questions. There was a significant difference between the groups ($p<0.001$). The general practitioners, specialists, and assistant family physicians were statistically significantly more successful than the 4, 5, and 6th-grade students of medicine one by one. While the most successful group was family physicians, the most unsuccessful group was 4th-grade students.

When the correlation relationship between age, professional year, and anemia knowledge score of the participants was examined, there was a strong correlation in the same direction between anemia knowledge score and age ($r=0.555$, $p<0.001$) and a moderately significant correlation between anemia knowledge score and professional year ($r=0.419$, $p<0.001$). As age and professional experience increased, anemia knowledge scores increased significantly.

Table 1. Resources used by participants to obtain ınformation about the diagnosis and treatment of anemia

	Profession												p*
	Family physician (GP)		Family physician (Specialist)		Family physician (Assistant)		4th-grade student		5th-grade student		6th-grade student		
	n	%	n	%	n	%	n	%	n	%	n	%	
Medical books													
Yes	52	65.0	19	79.2	22	71.0	19	70.4	41	53.9	43	60.6	0.209
No	28	35.0	5	20.8	9	29.0	8	29.6	35	46.1	28	39.4	
Literature													
Yes	43	53.8	23	95.8	26	83.9	8	29.6	20	26.3	27	38.0	<0.001
No	37	46.3	1	4.2	5	16.1	19	70.4	56	73.7	44	62.0	
MSE books													
Yes	16	20.0	1	4.2	13	41.9	24	88.9	57	75.0	49	69.0	<0.001
No	64	80.0	23	95.8	18	58.1	3	11.1	19	25.0	22	31.0	
Internet													
Yes	63	78.8	9	37.5	19	61.3	19	70.4	54	71.1	49	69.0	0.008
No	17	21.3	15	62.5	12	38.7	8	29.6	22	28.9	22	31.0	
Prospectus													
Yes	15	18.8	1	4.2	8	25.8	6	22.2	11	14.5	12	16.9	0.358
No	65	81.3	23	95.8	23	74.2	21	77.8	65	85.5	59	83.1	
Physician practice													
Yes	12	15.0	2	8.3	18	58.1	19	70.4	24	31.6	36	50.7	<0.001
No	68	85.0	22	91.7	13	41.9	8	29.6	52	68.4	35	49.3	
Total	80	100.0	24	100.0	31	100.0	27	100.0	76	100.0	71	100.0	

GP: General Practitioner MSE: Medical Specialty Examination

* Chi-square test,

† More than one option could be selected,

‡ % = column percentage.

Table 2. Scores of the Participants for Anemia Information Questions

Profession group	Mean ± SD	Median	Minimum-Maksimum	p*
Family physician (GP)	24.7±2.8	25.0	19-30	<0.001
Family physician (Specialist)	27.8±4.3	29.0	9-30	
Family physician (Assistant)	24.6±2.6	25.0	19-30	
4th-grade student	20.6±2.2	20.0	17-24	
5th-grade student	20.6±2.6	21.0	15-26	
6th-grade student	21.9±3.5	23.0	10-29	
Total	22.9±3.7	23.0	9-30	

GP: General Practitioner SD: Standart Deviation

* Kruskal-Wallis Test

Table 3. Achievement Status of the Participants According to Their Scores from Anemia Knowledge Questions

	Points groups				p*
	Unsuccessful (0-20 points)		Successful (21-30 points)		
	n	%	n	%	
Family physician (GP)	9	11.3	71	88.8	<0.001
Family physician (Specialist)	1	4.2	23	95.8	
Family physician (Assistant)	2	6.5	29	93.5	
4th-grade student	14	51.9	13	48.1	
5th-grade student	35	46.1	41	53.9	
6th-grade student	23	32.4	48	67.6	
Total	84	27.2	225	72.8	

GP: General Practitioner

* Chi-square test,

† % = percent of rows.

Table 4 shows the frequency of responding correctly to the propositions measuring the anemia knowledge level of the participants. Family physicians and assistants gave significantly more correct answers than students in the proposal to Hb lower limit values (p=0.013), the most common type of anemia (p<0.001), MCV value (p<0.001), IDA treatment (p<0.001), increasing-decreasing parameters in chronic disease anemia (p<0.001 and p=0.003), anemia being a common pathology in the society (p=0.012), diagnosis of anemia in family health center environment (p=0.001), anemia follow-up in babies and pregnant women (p<0.001), check Hb electrophoresis in marriage reports (p<0.001).

Table 5 shows the participants' responses to some of the statements about anemia. İn the patient suspected of anemia, 164 (94.3%) of the students and 132 (97.8%) of the family physicians and assistants stated that they could request the necessary examinations and arrange their treatment. There is no statistical difference between students and physicians (p=0.126). While 47 (27.0%) of those who consider themselves competent in diagnosing and treating anemia were in the student group, 89 (65.9%) were in the physician group. Self-sufficiency was significantly higher in the physician group than in the student group (p<0.001). Thirty seven (21.3%) of the students and 60 (44.4%) of the physicians stated that the information about anemia was constantly refreshed. Refreshing information continuously in the physician group was significantly higher than in the student group (p<0.001).

DISCUSSION

Anemia is a significant public health problem in terms of its prevalence in the world, in our country, and in Kahramanmaraş and the pathologies it causes. In order to cope with this problem, anemia is a subject that all physicians and physician candidates should know well, together with family physicians. In a study conducted in Kahramanmaraş on 1120 children between the ages of 6 months and 18 years, 77.9% of the children had iron deficiency anemia, 2.2% had B12 deficiency anemia, 16.4% had minor thalassemia, 0.3% had thalassemia major, 0.4% were found to have thalassemia intermedia (10). Our study was conducted to evaluate the knowledge and awareness of family physicians, who have an essential role in combating this problem, and medical faculty students who will step into the medical profession in a few years. If we look at the success rates in our study, most of the participants were successful with 72.8%. When the physicians and students were evaluated separately, the physicians participating in the study were highly successful, but the same was not the case for the students. The students had insufficient knowledge about anemia.

Participants use the internet, medical books, MSE books, literature, drug prospectuses, and other physician practices to get information about anemia. The internet will inevitably be the most frequently referenced resource due to its ease of access and widespread use. While medical books and MSE books are followed, this can be explained because most physicians and medical students have at least one medical resource. Students who do not have books can easily access medical resources through libraries in medical schools.

Our study observed that specialist family physicians used more literature than general practitioners and medical students. Assistant family physicians also consulted significantly more literature than medical students and general practitioners. If we look at the results of using the literature and the internet, it can be thought that the specialty training gives physicians a more scientific perspective on obtaining information, and therefore, specialist and assistant family physicians use the internet less and turn to the literature more than other groups. When Zafar et al.'s study on thalassemia awareness among medical and non-medical professionals was examined, it was seen that 92.0% of medical professionals benefited from the literature. There was a significant difference between non-medical professionals and students studying health in this field (11). Although the literature is an indispensable source of scientific research, it can be said that this result is caused by the fact that most of the resources are published in foreign languages. Especially the students do not know how to access these resources.

Our study observed that specialist family physicians scored significantly higher than general practitioners, assistant family physicians, and medical students in terms of the average scores of anemia knowledge calculated based on correct answers given to 30 questions measuring the level of knowledge about anemia. In addition, the knowledge scores of general practitioners and assistant family physicians were significantly higher than the scores of medical students. However, there was no significant difference between medical faculty students. In our study, there was no significant difference between the education year and the students' level of knowled-

Table 4. Correct answer status of the participants to questions about anemia

	Family physicians and assistants		4th, 5th, and 6th-grade students		p*
	n	%	n	%	
Anemia is the decrease in Hb in the blood below the reference values according to age and gender.	132	97.8	163	93.7	0.086
Symptoms such as weakness, fatigue, shortness of breath, and palpitations can be seen in anemia.	134	99.3	173	99.4	0.684
Anemia can occur without any symptoms.	130	96.3	165	94.8	0.538
Hb lower limit is 13 mg/dl in men, 12 mg/dl in women, 11 mg/dl in pregnant women.	123	91.1	141	81.0	0.013
The most common type of anemia in the world is chronic disease anemia.	91	67.4	82	47.1	<0.001
Iron is stored in serum as ferritin.	120	88.9	149	85.6	0.398
In IDA, its capacity to bind total iron decreases.	127	94.1	153	87.9	0.066
The MCV value indicates that the mean erythrocyte volume and normal limits are between 60 and 100 fl.	72	53.3	56	32.2	<0.001
Hypochromia and microcytic anemia are seen in IDA.	132	97.8	164	94.3	0.126
Ferritin amount increases in IDA.	122	90.4	158	90.8	0.897
In IDA, 100-200 mg of oral iron is administered daily in adults.	113	83.7	86	49.4	<0.001
Side effects of "abdominal pain, nausea, blackening of teeth, blackening of stools, epigastric pain, etc." can be seen in the treatment of IDA.	130	96.3	169	97.1	0.461
Megaloblastic anemia is seen in vitamin B12 and / or folic acid deficiency.	132	97.8	172	98.9	0.382
The amount of ferritin increases in chronic disease anemia.	101	74.8	85	48.9	<0.001
Total iron binding capacity decreases in chronic disease anemia.	77	57.0	70	40.2	0.003
Hb A2 and Hb F levels decrease in thalassemia disease.	110	81.5	100	57.5	<0.001
It is Hb A2 <3.4% in Hb electrophoresis in thalassemia carriage.	70	51.9	37	21.3	<0.001
Thalassemia shows hereditary transmission.	134	99.3	170	97.7	0.274
When the Hb value falls below 7, blood transfusion is required.	129	95.6	161	92.5	0.272
Anemia is a very common pathology in our society.	134	99.3	163	93.7	0.012
Anemia can be diagnosed in the FHC environment.	127	94.1	140	80.5	0.001
Anemia can lead to serious pathologies if left untreated.	133	98.5	171	98.3	0.618
If iron deficiency is detected in men and postmenopausal women, a referral for further examination is required.	125	92.6	140	80.5	0.002
In babies, a hemogram should be checked at the 9th month.	119	88.1	70	40.2	<0.001
Control hemogram should be checked at the age of 5 in children.	90	66.7	61	35.1	<0.001
There is no need to check the hemogram at every visit for pregnant women.	93	68.9	101	58.0	0.050
Hb electrophoresis should be checked for those who come to get a marriage report.	125	92.6	133	76.4	<0.001

FHC: Family Health Center, Hb: Hemoglobin, IDA: Iron Deficiency Anemia, MCV: Mean Corpuscular Volume,
* Chi-square test,
† % = percent of rows.

Table 5. Responses of Participants to Some Statements About Anemia

	Family physicians and assistants		4th, 5th, and 6th-grade students		Total		p*
	n	%	n	%	n	%	
I request the necessary tests and arrange the treatment of the patient I suspect of anemia.							
I am not sure	3	2.2	10	5.7	13	4.2	0.126
Yes	132	97.8	164	94.3	296	95.8	
I find myself competent in the diagnosis and treatment of anemia.							
I am not sure	34	25.2	74	42.5	108	35.0	<0.001
Yes	89	65.9	47	27.0	136	44.0	
No	12	8.9	53	30.5	65	21.0	
I constantly refresh my knowledge about anemia.							
I am not sure	52	38.5	69	39.7	121	39.2	<0.001
Yes	60	44.4	37	21.3	97	31.4	
No	23	17.0	68	39.1	91	29.4	

*Chi-square test, †% = percent of rows.

ge. Unlike our study, a significant correlation was found between the academic year and the level of knowledge and attitude in the study of Rabbani et al. to evaluate thalassemia awareness in a group of 200 students studying in the field of health (12). According to these results, it can be said that knowledge accumulation will increase over time and with education.

General practitioners, specialists, and assistant family physicians were statistically significantly more successful in knowledge questions than students of medicine 4, 5, and 6th grade. In our study, when the undergraduate and graduate groups were compared, it was seen that the average score and success rate of the graduate group were higher. Patharkar et al., in the comparative study conducted by 50 undergraduate and 50 graduate medical students on anemia awareness, average scores were found to be higher in undergraduate students than graduate students. This result contrasts our study, but Patharkar was also surprised by these results (13).

Our study showed a significant correlation in the same direction between anemia knowledge score with age and professional year. The anemia knowledge score increased significantly as the age and professional experience increased significantly. In the study conducted by Desai et al. on physicians' knowledge, attitude, and perception of anemia in the elderly, young physicians scored higher in the information questionnaire than physicians working over 40 years. The opposite result was obtained from our study. However, although no physicians worked for more than 40 years in our study, the most working physician was 21 years old. Too much difference in working time between the groups compared in the study conducted by Desai et al. may have led to such a result (14).

When the results of our study were evaluated in general, 72.8% of the participants were successful, and 27.2% were unsuccessful. In the study conducted by Chatterjee et al. on 188 doctors about the knowledge, attitudes, and practices of doctors growing up in preventing thalassemia, 78.7% of the participants were successful, and a result similar to our study was obtained (15).

In our study, the questions asked to the participants on knowledge and awareness of anemia were analyzed separately, and the correct answer rates were determined. While comparing the groups, the groups were evaluated into two categories as family physicians and medical school students.

The frequency of the participants knowing the limit values of Hb correctly for anemia was 81.0% in the student group. It was significantly higher in the family physician and assistant group and was 91.1%. Also, 97.8% of the family physician and assistant group and 93.7% of the student group knew the definition of anemia. Besides, 99.3% of the family physician and assistant group and 99.4% of the students knew the symptoms of anemia. Malay et al., 96.0% of the students knew the Hb limit values, and approximately 100.0% of the students heard the word anemia and knew the definition of anemia. In contrast, only 51.0% of the students knew the symptoms of anemia. It was surprising that they knew the

definition of anemia and Hb breakpoints higher than the participants in our study (16).

In our study, the frequency of correctly knowing the proposition "100-200 mg oral iron treatment is administered daily in adults in IDA" was 49.4% in the student group. At the same time, it was significantly higher in the family physician and assistant group and was 83.7%. Patharkar et al., in their study on 50 undergraduate and 50 graduate medical students, found that graduate participants had more information about anemia treatment, and they obtained a result in parallel with our study (13).

In our study, family physicians and students answered the questions about the amount of ferritin and total iron-binding capacity, which are among the criteria used in diagnosing IDA, and there was no significant difference between the groups. However, when the same criteria were asked for chronic disease anemia, the correct answer rates of the participants were lower, and there was a significant difference between the groups. The frequency of correctly knowing the statement "The amount of ferritin increases in chronic disease anemia" was 48.9% in the student group. It was significantly higher in the family physician and assistant group and was 74.8%**.** The frequency of correctly knowing the statement "Total iron-binding capacity decreases in chronic disease anemia" was 40.2% in the student group. It was significantly higher in the family physician and assistant group and was 57.0%. According to these results, it is seen that the participants have sufficient knowledge about IDA but less about chronic disease anemia, and this result gives us an idea about why the two types of anemia that are mixed are so confused.

In a study conducted by Güler et al. In 2010 in Kahramanmaraş with 48126 participants, pre-marital test results were screened. According to the results of beta-thalassemia, Turkey was above the average (2.8%) it was found frequency (17). In Turkey, one of the Mediterranean countries and in the region where we work, thalassemia carriage is a common condition, so family physicians, in particular, have an essential role in identifying the carriers, providing the patients with the necessary information and taking precautions. In this context, the proposition "Hb electrophoresis should be checked for those who come to get a marriage report" was asked to the participants. The frequency of correct knowledge of the participants was 76.4% in the student group, while it was significantly higher in the family physician and assistant group and was 92.6%. In the study conducted by Rabbani et al. to evaluate thalassemia awareness in a group of 200 students studying health, it was observed that 87.5% of the participants had a positive attitude. The student group in our study had a lower positive attitude with 76.4% compared to the study conducted by Rabbani et al., but the family physician group had a higher positive attitude with 92.6% (12).

While 21.3% of the student group said "yes" to the proposition "I constantly refresh my knowledge about anemia", 44.4% of the physician group said "yes". Continuous refreshing of information was significantly higher in the physician group than in the student group. The physician group will inevitably be better at keeping their knowledge fresh than the students since they take an active role and take responsibility in their professional life. Still, the result is not very pleasant when both groups are examined within themselves. Both groups should pay more attention to keeping their knowledge fresh. Medical science is a science that constantly renews itself and expands. For this reason, physicians should always have the most up-to-date information to protect the health of the individual and society.

Our results cannot be generalized since our study population is composed of family physicians in a single province and students and assistants from a single university. In addition, another limitation of our study is that it is not questioned whether the subject of anemia was explained to 4th-grade students or not.

When asked if the participants think that in-service training should be given about anemia, 90.9% of them say that training is required, and both groups highly agree with this issue. In addition, more than 90 percent of the participants responded positively to our suggestion that anemia is very common in our society. If not treated, it will lead to serious pathologies. These results show us that the awareness of the participants is high.

While 27.0% of the students and 65.9% of the physicians consider themselves competent in diagnosing and treating anemia, 21.3% of the students and 44.4% of the physicians constantly refresh their knowledge about anemia. It is possible to attribute the participants' lack of self-evaluation in the diagnosis and treatment of anemia to the lack of refreshing their knowledge.

According to our study, since the students have insufficient knowledge about anemia, we think that the number of courses given on anemia should be increased to eliminate the lack of knowledge in students. Training programs on anemia in public health and family medici-

ne rotations and in-service training programs should be organized at regular intervals for post-graduate students to increase and refresh their knowledge of anemia before graduation, at least for intern students. In addition, the rate of restoring the information among the participants is very low. We believe that there is a need for compelling reasons other than their initiative for physicians to refresh their knowledge, and physicians should be subject to midterm exams at regular intervals for this.

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