

Tıp eğitimi sırasında Türk tıp öğrencilerinin uzmanlık tercihlerinde değişiklik

Change in choices regarding the residency of Turkish medical students during medical education

Perihan Elif Ekmekci * (ORCID: 0000-0001-6592-2960)

Berra Kurtoglu *(ORCID: 0000-0002-9085-7563)

Müberra Devrim Güner *(ORCID: : 0000-0001-6982-9026)

* TOBB Economics and Technology School of Medicine. Ankara, Türkiye

Corresponding Author: Müberra Devrim Güner, E-mail: devrimguner@etu.edu.tr

Özet

Arka Plan: Tıp öğrencilerinin seçimleri, ahlaki değerlerine ve gelecekteki mesleklerinden beklentilerine bağlıdır. Bu seçim kişisel olsa da sağlık sistemi üzerinde etkileri vardır. Türkiye’de doktorların uzmanlık alanına göre yanlış dağılımı önemli bir sorun ve sağlık sunum sisteminin sürdürülebilirliği için bir risk haline gelmiştir.

Amaçlar: Tıp öğrencilerinin eğitimleri sırasında güncel uzmanlık algılarının ve tercihlerinin nasıl değiştiğini ve bu süreçte hangi ahlaki değerlerin etkisi olduğunu anlamaktır.

Gereç ve Yöntemler: Çevrimiçi olarak planlanan anket 706 tıp öğrencisi tarafından yanıtlandı. Anket uzmanlaşma, kariyer hedefleri, tıpta uzmanlık sınavı (TUS) ve zorunlu hizmet ile ilgili soruları içeriyordu. Bu anketin değerlendirilmesini takiben, toplanan verilerin daha ileri analizi için toplam 19 kişilik 2 odak grubu oluşturulmuştur. Odak grup görüşmeleri 24 Ekim - 25 Ekim 2019 tarihleri arasında kampüste 50 dakikalık oturumlar olarak gerçekleştirildi.

Bulgular: Öğrencilerin neredeyse tamamı (%98,81) uzmanlık eğitimi almayı planladıklarını belirtmişlerdir. Klinik aşama (4., 5. ve 6. yıl) öğrencilerinin çoğunun (%74.01) uzmanlık tercihi tıp fakültesindeki ilk yıllarına göre değişmiştir. Odak grup oturumlarında, bu değişikliğin klinik aşamadaki stajlarından kaynaklandığı açıklandı. Erkek öğrencilerin uzmanlık eğitimi alma nedeni “maddi” olarak belirtilmiştir (p=0,016). Odak grup tartışmaları, ilk üç sınıf öğrencilerinin cerrahi uzmanlık alanlarını daha fazla seçme eğiliminde olduğunu, ancak son üç yıldaki öğrencilerin yaşam standartlarını göz önünde bulundurarak dahili branşları seçme eğiliminde olduklarını ortaya koydu.

Sonuç: Tıp eğitimi sırasında, tıp öğrencilerinin uzmanlık tercihlerinin cerrahi uzmanlıklardan dahili bilimlere doğru, ağır iş yükü, mali sorunlar, yanlış uygulama davaları ve bezdirme (mobbing) nedeniyle değiştiğini kabul etmeliyiz. Doktorların uzmanlık alanlarına göre yanlış dağılımını önlemek için çalışma koşullarında iyileştirme yapılmalıdır..

Anahtar sözcükler:

Tıp eğitimi, uzmanlık, uzmanlık tercihi, uzmanlık eğitimi, çalışma koşulları

Keywords:

Medical education, residency, residency choice, residency training, work conditions.

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Abstract

Background: Medical students' choices depend on their moral values and expectations from their future profession. Although this choice is a personal one it has impacts on the health system. In Turkey, the misdistribution of doctors by specialty has become a significant problem and a risk for the sustainability of the health provision system.

Objectives: The aims were to understand how medical students' up-to-date perceptions and choices of specialization change during their educations, and which moral values have an impact on this process.

Material and Methods: An online survey was conducted on 706 medical students. The questionnaire included questions on specialization, career aspirations, the national examination on specialization in medicine (SIM), and compulsory service. After the analysis of this survey, 2 focus groups with a total number of 19 were conducted for further analysis of the data that was collected previously. 50 minutes-long focus group discussions were held on campus between October 24 and October 25, 2019.

Findings: Almost all students (98.81%) stated they are planning to get specialty training. Most of the clinical phase students' (74.01%) specialty preference has changed compared to their first year at medical school. They explained during the focus group sessions that this change was because of their internships during the clinical stage phase (4th, 5th, and 6th year). Significantly more male students stated "financial reasons" as their reason for undergoing specialty training ($p=0.016$). Focus-group discussions revealed the fact that first three year students tend to choose surgical specialties more, but last three years students tend to choose medical sciences considering their standard of living.

Conclusion: We must acknowledge that medical students' choices on specialization change from surgical specialties towards medical sciences during medical education due to the heavy workload, financial issues, malpractice lawsuits and mobbing. In order to prevent the

misdistribution of doctors by specialty, improvement in work conditions should be made.

INTRODUCTION

Medical students' choices regarding specialization shape the balance between the tiers of the healthcare system. In order to provide the best healthcare service possible, a strong primary care system is important. In Turkey, the total number of physicians per 100,000 population is 187. This is the lowest among all Organisation for Economic Co-operation and Development (OECD) member countries (1). The scarcity in the number of physicians means that they need to be distributed evenly across specialties and across the tiers of the healthcare system for the health system to work efficiently. Previous studies have shown that Turkish medical students have concerns regarding working as a general practitioner for the rest of their careers and almost all students would like to become specialists (2-8). The desire to specialize was 89.6% in the years 1995-1996 for 2nd to 6th-year İstanbul-Cerrahpaşa University medical students (7); in 2016, it was 92.9% for 6th-year Akdeniz University medical students (6).

According to the most current health statistics yearbook, the total number of physicians in Turkey is 153,128; 82,894 of these are specialists, 44,053 are general practitioners and 26,181 are medical residents (1). These statistics also emphasize the gap between the number of general practitioners and specialists. This might be an indicator of the necessity to focus on the primary care field to improve work conditions (2).

Another important point is the potential shortage of doctors in surgical specialties. Students' of the first three year of medical school surgical specialty choice decreases during medical education according to a study conducted in 2011 (4) and also, according to another study

conducted in 2019 (5). This recurrent theme makes us question what has changed the mind of Turkish medical students during 6 years of education.

The aim of this study was to observe medical students' up-to-date perceptions of specialization, to analyze their expectations from their future careers, and to record their solutions for the current specialty training system.

METHODOLOGY

Ethical approval for the online survey and focus group semi-structured discussion points was obtained from TOBB ETU Medical School Clinical Research Ethics Committee (KAEK-118/037, 03.20.19).

This survey uses qualitative and quantitative methodologies. Qualitative methods are suitable for explaining and conceptualizing the perceptions, expectations and thoughts from the standpoint of the participants. In this respect focus groups are conducted to investigate the thoughts and perspectives of the medical students (9).

On-line survey constitutes the quantitative aspect of the research.

Online survey

Turkish medical students across all year groups (1st to 6th year), undertook an online survey, data from which was used for our quantitative analysis. The online survey was powered by the SurveyMonkey platform.

The questionnaire was sent to students via e-mail through each university's Scientific Research Society of Medical Students. We included both private and public universities. In order to have a balanced distribution, 64 universities were chosen from all around Turkey, from all seven regions of the country: Marmara (18 universities), Central Anatolia (18 universities), Aegean (10 universities), Black Sea (6 universities), Mediterranean (4 universities), Eastern Anatolia (4 universities), and Southeast

Anatolia (4 universities). The total number of medical students in Turkey is approximately 73,000 and we assumed 1% (730) of these were members of Scientific Research Societies of their universities and we requested the help of them for distribution of the link of our survey. With confidence level of 95% and confidence interval of 5% we calculated the needed sample size as 382. However we received answers from 706 students to online survey which we conducted between April and July 2019.

The questionnaire included questions on specialization, career aspirations, the SIM, and compulsory service. In order to be able to see the effect of the SIM on career choices, we decided to divide our questions on specialty choices into two categories:

1. Realistic specialty choice: Participant's selection of a specialty according to the score they would get from the SIM.
2. Idealistic specialty choice: Participant's selection according to their dream job, not according to the score they would get from the SIM.

Multiple-choice, open-ended, checkbox, dropdown, and matrix questions were included. Emerging themes in the answers of open-ended questions were classified by one researcher from our research group, and these classifications were evaluated by the researchers at a consensus meeting.

Focus groups

The focus group method is a different system of interview that uses the benefits of the communication and interaction between participants in order to collect data. Instead of having a researcher that asks questions around the table, this method allows participants to ask each other questions and to comment on the answers (10), which helps the researchers to examine people's thoughts in more depth.

After the analysis of our online survey, we recruited 19 Turkish medical students from

TOBB University of Economics and Technology for a focus group discussion session. We prepared 14 questions for a semi-structured discussion to further analyze the data we collected previously.

An online application form was sent to 1st to 6th-year students. Out of 25 applicants, at least 1 female and 1 male student from each class were randomly chosen. We formed two focus groups, which consisted of 19 students in total (Group 1 - "preclinical students": 1st, 2nd, 3rd-year medical students) (Group 2 - "clinical students": 4th, 5th, and 6th-year medical students).

We conducted the focus groups between October 24 and October 25, 2019. Focus group discussions were held at the university campus and lasted approximately 50 minutes. Discussions were audiotaped with the consent of participants for detailed analysis.

Data analysis

All demographic variables and questionnaire responses were categorized using the mean and the standard deviation for continuous measures, and count and percent for categorical measures. Comparisons across groups were performed using the Chi-squared test. Focus group data was analyzed by classical content analysis technique. Statistical significance was indicated by $p < 0.05$. SPSS version 25 software (IBM Corp., Armonk, New York) was used for data analyses.

RESULTS

Online survey

Seven hundred and six students agreed to answer online survey questions: 64.57% were female, 34.57% were male, and 0.86% preferred not to

declare their gender. The distribution of the year of medical school was as follows: 24.63% of students were in their 1st year, 24.63% of students were in their 2nd year, 24.49% of students were in their 3rd year, 9.09% of students were in their 4th year, 11.29% of students were in their 5th year, and 5.57% of students were in their 6th year. The first three year students were classified as Group 1 ($n=505$; 74.05%) and last three year as Group 2 during several analysis.

Specialty training

Of the participants, 662 (98.81%) stated they were planning to undergo specialty training. There was a significant association between reasons for undergoing specialty training and the training stage ($X^2=24.853$; $p=0.003$); and between reasons for undergoing specialty training and gender ($X^2=29.432$; $p=0.001$). Significantly more male students stated "financial reasons" as their reason for undergoing specialty training ($X^2=20.250$; $p=0.016$) (Table 1).

Six of the students who preferred not to undergo specialty training stated their reasons as not being enough of an idealist to advance in one area, not enjoying study and/or not finding specialty worth studying for, and finding the exam for medical specialty ridiculous and commercialized, therefore, protesting it. Only one student stated that the real goal of the medical profession is to prevent diseases and to improve public health, and being a general practitioner is the best way to do so.

Table 1: Top 10 reasons for undergoing specialty training by training stagea

Reason	Total n (%)	Training stage		Gender	
		Group 1 n (%)	Group 2 n (%)	Female	Male
1. Being competent in the area of my interest, self-improvement	236 (33.19%)	175 (74.14%)	61 (25.84%)	174 (73.72%)	62 (26.27%)

2.Specialization is needed for the area that I would like to work in	111 (15.61%)	94 (84.68%)	17 (15.3%)	72 (64.86%)	39 (35.13%)
3.Negative perceptions of self and community about general practitioners	75 (10.54%)	53 (70.66%)	22 (29.33%)	45 (60.00%)	30 (40.00%)
4.To have a carrier that is open to advancement	68 (9.56%)	48 (70.58%)	20 (29.41%)	46 (67.64%)	22 (32.35%)
5.It is easier to work in a specific area than in general medicine (because of the broadness of medicine)	44 (6.18%)	23 (52.27%)	21 (47.72%)	32 (72.72%)	12 (27.27%)
6.It is necessary to have a specialty because 6 years of medical education is not sufficient	42 (5.90%)	32 (76.19%)	10 (23.80%)	24 (57.14%)	18 (42.85%)
7.To contribute to my country, my patients and to the scientific world	37 (5.20%)	25 (67.56%)	12 (32.43%)	25 (67.56%)	12 (32.43%)
8.Specialization is necessary to be a better physician	36 (5.06%)	30 (83.33%)	6 (16.66%)	26 (72.22%)	10 (27.77%)
9.Financial reasons	35 (4.92%)	25 (71.42%)	10 (28.57%)	11 (31.42%)	24* (68.57%)
10.Professional satisfaction	27 (3.79%)	15 (55.55%)	12 (44.44%)	18 (66.66%)	9 (33.33%)
Total	711	520	191	473	238

a: This was an open-ended question; participants could provide multiple reasons.

*p<0.05 when males compared with females (in bold text)

Change of specialty preference

The 177 students in Group 2 were asked whether their specialty preference has changed compared to their first year at medical school, and 131 (74.01%) said yes. The original choice of specialty (the specialty they desired when they were 1st-year medical students) of 70 (53.44%) students indicated surgical sciences, 55 (41.98%) students indicated medical sciences, and 6 (4.58%) students' choices were basic medical sciences. The number of students who preferred surgical sciences was significantly different between original and idealistic choice of surgical sciences ($p=0.0381$). Similarly, the original choice of basic medical sciences was significantly increased in terms of idealistic choice ($p=0.0057$). The number of female

students who chose surgical sciences significantly decreased when compared to the number of students that originally preferred this field ($p=0.039$ for realistic and $p=0.026$ for idealistic, respectively). Female students' idealistic choices of medical sciences increased significantly when compared to their original medical sciences choices ($p=0.0176$). Male students' surgical or medical sciences choices did not change significantly.

Reason for change of specialty preference

Students were asked to state the reasons for this change and 115 students provided reasons (Table 2). There was a significant association between reasons for change of specialty and gender ($X^2=9.016$; $p=0.029$). "Change due to increased information and experience about the

content and conditions of various specialties” medical students (52.77%).
was the most chosen answer by clinical stage

Table 2. Top 4 reasons for change of specialty according to clinical students

Reason	Total n (%)	Female n (%)	Male n (%)
1. Change due to increased information and experience about the content and conditions of various specialties	57 (52.77%)	39 (68.42%)	18 (31.57%)
2. Hard and tiresome work conditions of the previous specialty ^b	40 (37.03%)	33 (82.50%)	7 (17.50%)
3. High malpractice risk	6 (5.55%)	5 (83.33%)	1 (16.66%)
4. The previous specialty required a higher score than the student could get at SIM (according to the student)	5 (4.62%)	1 (20.00%)	4 (80.00%)
Total	108	78	30

^a: This was an open-ended question; participants could provide multiple reasons.

^b: The previous specialty refers to the specialty that the student chose in 1st year of medical school.

SIM: The national examination on specialization in medicine

SIM score and specialty choice

SIM score was one of the reasons for the change in choice of specialty. We evaluated the mean scores of the original, realistic, and idealistic specialty choices. Although there was no difference between genders, the idealistic specialty scores were significantly higher than both realistic ($p < 0.0001$) and original ($p < 0.0001$) specialty scores. Realistic specialty scores were also significantly higher than the original specialty scores ($p = 0.0045$).

Medical students were asked about their realistic and idealistic specialty choices. There was a significant decrease in the number of students' idealistic choice of obstetrics and gynecology, internal medicine, neurology, and family medicine, and an increase in ophthalmology, dermatology, and radiology specialties.

Difference between the medical specialty exam scores of idealistic and realistic specialty choices were significant for each class, with idealistic being significantly higher for all of them.

Reasons for realistic and idealistic specialty choice

Reasons for realistic and idealistic choice of specialty were compared by training stage (Group 1/Group 2). There was a significant association between realistic specialty choice reasons and training stage ($X^2 = 33.142$; $p < 0.001$); and between idealistic specialty choice reasons and training stage ($X^2 = 18.348$; $p = 0.031$) (Table 3).

While having a childhood ideal or having an interest in the area (Reason 3) was significantly more important for Group 1 (89.1%) than Group 2 (10.9%) for realistic specialty choice ($p = 0.016$); Reason 3 was not significantly different between Group 1 and Group 2 for idealistic specialty choice ($p = 0.550$).

When compared, reasons such as “no sentry duty”, “less sentry duty” and “economic worries” was stated in top 10 reasons for idealistic specialty choice but not in top 10 reasons for realistic specialty choice; and reasons

such as “convenience for working abroad”, choice but not in top 10 reasons for realistic “sufficient score at SIM” and “social status” was stated in top 10 reasons for realistic specialty

Table 3. Top 10 reasons for realistic and idealistic specialty choice

Reasons for “realistic specialty choice”	Total n (%)	Group 1 n (%)	Group 2 n (%)	Reasons for “idealistic specialty choice”	Total n (%)	Group 1 n (%)	Group 2 n (%)
1. Professional satisfaction	279 (25.8)	199 (71.3)	80 (28.7)	1. Professional satisfaction	213 (21.9)	155 (73.1)	57 (26.9)
2. Having talent in that area	208 (19.3)	149 (71.6)	59 (28.4)	2. Having talent in that area	155 (16.0)	104 (67.1)	51 (32.9)
3. Childhood ideal / interest to the area	138 (12.8)	123* (89.1)	15 (10.9)	3. Childhood ideal / interest to the area	111 (11.6)	94 (83.2)	19 (16.8)
4. Convenience for scientific research	89 (8.2)	67 (75.3)	22 (24.7)	4. Good work-life balance	88 (9.1)	55 (62.5)	33 (37.5)
5. Good work-life balance	76 (7.0)	50 (65.8)	26 (34.2)	5. Convenience for opening a private clinic/for working at a private hospital	88 (9.1)	64 (72.7)	24 (27.3)
6. Convenience for opening a private clinic/for working at a private hospital	72 (6.7)	54 (75.0)	18 (25.0)	6. Convenience for scientific research	84 (8.7)	62 (73.8)	22 (26.2)
7. Convenience for building an academic career	67 (6.2)	47 (70.1)	20 (29.9)	7. Convenience for building an academic career	71 (7.3)	51 (71.8)	20 (28.2)
8. Convenience for working abroad	53 (4.9)	42 (79.2)	11 (20.8)	8. No sentry duty	55 (5.7)	41 (74.5)	14 (25.5)
9. Sufficient score at SIM for getting accepted to that specialty.	51 (4.7)	27 (52.9)	24 (47.1)	9. Economic worries	53 (5.5)	41 (77.4)	12 (22.6)
10. Social status	47 (4.4)	34 (72.3)	13 (27.7)	10. Less sentry duty	51 (5.3)	30 (58.8)	21 (41.2)

*p<0.05 when Group 1 compared with Group 2 (in bold text)

SIM: The national examination on specialization in medicine

Concerns on specialty choice

Students were asked if they had concerns regarding their specialty choice. Of the 519 students who answered the question, 344

(66.28%) stated that they had concerns about their specialty selection; of these, 254 (73.84%) were female and 88 (25.58%) were male students; two preferred not to share gender

information. Significantly more Group 2 students (n=113, 78.47%) were concerned about their specialty selection compared to Group 1 students (n=231, 61.6%; p=0.0003) (Table 4).

The number of students agreeing with the solutions to alleviate their worries were as follows: 34 (9.94%) agreed that the specialty

exam should be discontinued, 231 (67.54%) agreed that specialty exam system should be changed, 130 (38.01%) students favored discontinuing compulsory duty, and 241 (70.47%) favored changing the system of compulsory duty (participants could choose multiple options). There were no differences between genders and Group 1 and Group 2..

Table 4: Students' concerns for their specialty choice

Concerns	Total n (%)	Female n (%)	Male n (%)	Group 1 n (%)	Group 2 n (%)
Not being able to get accepted to the specialty I want	118 (34.50)	89 (35.18)	29 (33.72)	77 (33.62)	41 (36.61)
Concern about not being good enough	52 (15.20)	37 (14.62)	14 (16.28)	34 (14.85)	18 (16.07)
Heavy workload	48 (14.04)	35 (13.83)	13 (15.12)	34 (14.85)	14 (12.50)
Facing a lot of malpractice lawsuits	28 (8.19)	18 (7.11)	10 (11.63)	21 (9.17)	7 (6.25)
Having a lot of sentry duty	23 (6.73)	14 (5.53)	8 (9.30)	14 (6.11)	9 (8.04)
Not having comprehended the requirements for the specialty	16 (4.68)	10 (3.95)	6 (6.98)	10 (4.37)	6 (5.36)
Compulsory service	15 (4.39)	14 (5.53)	1 (1.16)	12 (5.24)	3 (2.68)
Professional satisfaction	12 (3.51)	10 (3.95)	2 (2.33)	9 (3.93)	3 (2.68)
Having tough sentry duties	8 (2.34)	8 (3.16)	-	5 (2.18)	3 (2.68)
Being temporarily assigned to high-risk regions	6 (1.75)	5 (1.98)	1 (1.16)	4 (1.75)	2 (1.79)
Not liking or not being sure about the selection	6 (1.75)	4 (1.58)	1 (1.16)	1 (0.44)	4 (3.57)
Requirement for considerable patient contact	5 (1.46)	5 (1.98)	-	3 (1.31)	2 (1.79)
Financial worries	4 (1.17)	3 (1.19)	1 (1.16)	4 (1.75)	-
Possibility of becoming uninterested in the area in the future	1 (0.29)	1 (0.40)	-	1 (0.44)	-

Focus group Twenty-five medical students from TOBB University of Economics and Technology agreed to participate in the focus group discussion sessions. Twenty-two students were chosen in

order to equally represent the classes (3 students out of 25 students were eliminated randomly), but three of the 22 students that had earlier agreed to participate in the focus group did not attend the meeting due to personal reasons (one

1st -year male student and two 6th -year students). The distribution was as follows: 21.05% of students were in their 1st year, 15.78% of students were in their 2nd year, 15.78% of students were in their 3rd year, 10.52% of students were in their 4th year, and 36.84% of students were in their 5th year. The overall sex distribution was 73.68% female and 26.31% male.

During our semi-structured focus group discussions, seven major themes were frequently articulated:

1. Reasons for choosing medicine
2. Specialty choice and concerns
3. Specialties that are on the rise
4. SIM
5. Being a general practitioner
6. Sex and specialty
7. Workplace preferences for residency

1. Reasons for choosing medicine
We asked medical students why they chose medicine. This major discussion topic revolved around eight main ideas:

1. My parents wanted me to study medicine.
2. I obtained a very high score in the university entrance exam.
3. Medicine offers a good sociocultural status.
4. I wanted to work in the positive sciences field and medicine seemed more suitable for me.
5. I have wanted to be a doctor ever since I was a child.
6. Medicine offers a good income and you can find work easily.
7. I wanted to help people, which is why I chose medicine.
8. The medical dramas that I was watching at the time influenced me to choose medicine.

2. Specialty choice and concerns

Overall, students expressed concerns about not being sure of which specialty they desired. We observed that clinical medical students were not as interested in surgical areas as pre-clinical students (except for ophthalmology and

otorhinolaryngology, which are considered “minor surgical specialties” in Turkey). We also noted that students were usually considering surgical specialties as their second choice due to low scores in the SIM that are required to undertake those specialties in Turkey. Students pointed out the hard working conditions that are associated with surgical specialties.

Last three year students also mentioned that they would like to work in a specialty that has clinical work but also some minor surgical interventions to an extent, but they emphasized that work-life balance was crucial.

First three year students were not very interested in work-life balance and they mentioned that they cared about professional satisfaction more.

On the other hand, a 5th year female medical student and a 5th-year male student mentioned that they were planning on taking the United States Medical Licensing Examination (USMLE). The female student talked about her concerns about not being able to undertake a surgical specialty as a non-US medical graduate, and that is why she gave up on surgical specialties.

Also, one 2nd-year female medical student and one 5th-year female medical student told us they would like to work in the field of obstetrics and gynecology because they would like to specialize in “in vitro fertilization” (IVF). They claimed that they want to specialize in this area because seeing people crying from happiness would satisfy them morally.

3. Specialties that are on the rise

We asked students as to why specialties such as ophthalmology, dermatology, radiology, and biochemistry are on the rise in Turkey, given how frequently they are chosen by doctors who have sat the SIM. The focus group responded, in general, that these specialties see fewer patients, have less sentry duty, and have fewer risks. Also, a 5th-year male medical student mentioned that these specialties have fewer risks in terms of

experiencing violence from their patients or patients' families, emphasizing the violence that doctors face in Turkey.

4. SIM

Students were dissatisfied with the current format of the SIM because they thought that multiple-choice questions are not sufficient to measure their knowledge, and they also were worried about the lengthy preparation time that is required for SIM, because of the competitive environment. Most of the students indicated that the SIM should not be the main criteria for getting into a residency. The medical students suggested a system that involves building a good CV and gaining more experience in the area of the students' choosing.

5. Being a general practitioner

Overall opinions on becoming a general practitioner were negative. Students mentioned the stress that they were facing because of society's bad impressions of general practitioners and they all stated that they would like to specialize. Some students indicated that they would like to gain more knowledge in certain areas and that is why they would like to specialize.

On the other hand, a 5th-year male medical student stated that he would like to work as a general practitioner for 1-2 years in a rural area because he is curious about the conditions there, but he would like to specialize after a few years.

6. Gender and specialty

During focus-group discussions, students mentioned that there are fewer female physicians in specialties such as orthopedics and urology. They also pointed out that mobbing is really common in surgical specialties, especially for women. Two 1st-year female medical students who would like to choose a non-surgical specialty stated that specialties that are more physically demanding may be more physiologically suitable for men, as they would tire less in those specialties.

5th-year male medical student: "I wish that more women would work in orthopedics. But women and men have different physiology. For example, orthopedics asks for a lot of physical strength, and every woman cannot succeed in orthopedics. I'm not saying that 'no woman' can succeed in orthopedics, not every man can do it either..."

7. Workplace preferences for residency

In general, students mentioned that they did not want to work in rural areas or in risky areas such as the borderlands. Some students said that they would like to go abroad for their residency (two 5th-year medical students specifically mentioned that they would like to do their residency in the USA). The reasons for working abroad revolved around four points: role models, quality of education, good income, and quality of life.

DISCUSSION

Career-decision making is a complex process that involves many variables. Through our study, our aim was to take a detailed look inside this process and identify problems within the current system, in order to help young doctors and to prevent misdistribution of doctors by specialty and tier of the healthcare system in the future.

Even though specialization in medicine is an important part of patient care, primary care physicians are essential for preventive medicine and public health, as well as mother and child health. In Turkey, as our study and previous studies (2-8) have shown, medical students are concerned about working as a general practitioner and almost all students would like to become specialists especially because of society's bad impression on general practitioners. Turkish medical students' wish to specialize was also a recurring theme in previous studies (2-8). The percentage of 2nd to 6th year medical students who wanted to specialize at İstanbul-Cerrahpaşa University in the years 1995-1996 was 89.6 (7); in 2016, the percentage was 92.9 for 6th year Akdeniz University

medical students (6). Our study and several others has shown that almost all medical students desire to specialize (8,11)

We are concerned that, if not fixed, this recurring theme may lead to suboptimal use of our doctors due to unnecessary applications to tertiary institutions, such as university hospitals, instead of primary care institutions because of the limited number of general practitioners.

Through our study, we also observed that 74.01% of Turkish medical students' specialty preference changed compared to their first year at medical school. Scott et al. (12) showed through their research that, similar to Turkey, there was a clear mismatch between student specialty choice at medical school entry and the current physicians' specialty percentages in Canada, which is also a country facing a shortage of physicians (13). On a similar note, in the USA, interest in surgery and pediatrics has been declining and interest in specialties such as radiology, dermatology, and ophthalmology has been increasing because of the controllable lifestyle they can offer (14). Through our focus-group discussions, we were able to confirm this pattern in Turkey as well, and similarly, students pointed out that these specialties see fewer patients and have fewer risks, which make these specialties more popular. We would like to underline the danger regarding the shortage of surgeons we might face in the future.

Another danger concerning surgical specialties was gender segregation. Even though the number of female medical students who prefer male-dominated specialties is increasing (15), we are still facing gender segregation in some specialties. A study in Japan showed that males preferred orthopedics, neurosurgery, and emergency medicine significantly more than women, while women preferred obstetrics & gynecology, pediatrics, and dermatology significantly more than men (16). A similar phenomenon was also reported by Mehmood et

al. in Saudi Arabia (17). We were curious whether Western countries had such misdistribution as well. A study conducted in Norway showed that female and male residents were equally distributed at the beginning of specialty training, but more men finished their training in surgery than women (18). During our focus-group sessions, students complained of a resembling situation: women surgery residents were facing more mobbing than their male colleagues in surgical specialties.

However, gender segregation in specialties is not specific to Turkey. Several studies have shown that there are more women in specialties such as obstetrics and gynecology, and pediatrics, internationally (4,16,17). Even though Kawamoto et al. (19) and Diderichsen et al. (20) suggest the importance of same-gender role models, especially in specialties such as obstetrics and gynecology, and pediatrics for women, our research has shown that role models was not in top 10 reasons and in fact, it came last when we asked students about their motivational factors for "realistic specialty choice"; "role models" was chosen by none of the participants for "idealistic specialty choice", suggesting that role models may not be a significant factor for choosing a specialty, similar to the results of research conducted in Saudi Arabia (17).

According to Diderichsen et al. (20), Swedish male and female last-year medical students' specialty choices were similar and good salary was not a significant motivational factor associated with the specialty preference of male students. Research in Saudi Arabia and UAE has shown that a good salary was not a significant motivational factor for either gender (17,21). On the other hand, Mutha et al. suggest that male physicians are more influenced by debt levels than female physicians, and that women chose specialties without regard for debt because of their anticipation of being in dual-income families (22). We also observed that financial

concerns were significantly more important for male students than female students, since the patriarchal family is still a dominant custom in Turkey.

The reasons of the change in specialty preferences were systematically reviewed by Cansever et al evaluating 9 research studies on the subject, and categorized in to two as before specialty education and after specialty education (11). According to this before specialty education preferences of specialty was effected by the factors such as interest /talent in the field of specialization, the desire to be more beneficial to patients, the effect of lessons and internships, SIM score, perception/view of society and family, gender suitability, personal ideals, desire not to work in primary care, and desire to specialize in a single branch. After specialty education in medicine, the factors effecting preferences in specialty were, financial satisfaction, professional satisfaction, insignificance of general practitioners, impact on family and social life, academic career opportunity, working conditions (number of shift, working hours, ease of working), personal development, career chance, desire to live in the city, prestige, risk of malpractice and level of responsibility. Financial satisfaction affects students' preference in all studies reviewed, except one study.

However, the scores of six specialist branches (emergency medicine, neurosurgery, gynecology, general surgery, orthopedics and pediatrics) with high risk have decreased significantly (11).

One of the disadvantages of the Healthcare Reform Program initiated in 2003 is the escalation of defensive medical practice (rise of the violence that the healthcare workers are subjected to, the increased number of claims and the amount of indemnity due to the higher risk of the medical application faults) which has an impact on post graduate training preferences

(23). Moreover the increase in malpractice lawsuits and more risky sections like gynecology and obstetrics or general surgery reduce the choice of these specialties. The scores of fields such as family practice, dermatology, physical medicine and rehabilitation and nuclear medicine have increased in time (11). Comparison of 2007 and 2015 examination statistics show a shift in specialty preferences from fields where malpractice risk is high to the ones of low risk. The most risky areas of specialty are least preferred (24).

To conclude, it is evident that in order to prevent the misdistribution of doctors by specialty, improvement in work conditions should be made. According to 2018 data, Turkey has the lowest total number of physicians per 100,000 population compared to OECD member countries (1). This situation means that reorganizing the current healthcare system is crucial in order to avoid the irreversible gap between specialties that we might face in the future, with the small number of doctors we have. By having listened to students' complaints, we believe that amelioration in the following cases should be made: mobbing, heavy workload, work-life balance, salary, violence towards doctors (and healthcare professionals). We also propose that medical schools give weekly or monthly seminars on specialties, as well as on general practice and becoming a primary care professional (especially for clinical students). This is based on the fact that around 66% of students stated that they have concerns about their specialty selection and of these, significantly more Group 2 students were concerned about their specialty selection, compared to the Group 1. Additionally, seminars on the doctor-patient relationship and first-tier healthcare services could be given publicly, to educate society, as well as improving doctors' work conditions, and decrease the number of patients that unnecessarily apply to institutions

that are considered second or third-tier healthcare providers.

CONCLUSION

Despite the importance of the primary care system, most Turkish medical students would like to specialize. This situation is due to many reasons such as society's prejudice towards general practitioners, economic worries, social status, and professional satisfaction. Among the specialties, surgical specialties are less chosen and/or seen as a "second option" due to lower scores at SIM. Most medical students do not want to work in surgical specialties and their tendency to choose surgical specialties decreases during medical education, notably because of the poor work-life balance, malpractice suits, as well as gender-specific mobbing. Some measures should be taken in order to avoid the misdistribution of doctors by specialty and tier of the healthcare system.

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