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The impact of the COVID-19 pandemic on medical students' specialty preferences in Turkey: a cross-sectional study

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Abstract

The COVID-19 pandemic has caused the deaths of thousands of physicians, especially in high-risk fields with very close patient contact. This study investigated the impact of the pandemic on the specialty preferences of senior medical students. A cross-sectional survey was conducted among sixth-year students at the Gaziantep University Faculty of Medicine between October and November 2021. Students were invited to participate anonymously in an online survey containing 15 questions regarding student characteristics and specialization preferences. Among the 229 students who participated, 31% reported having contracted COVID-19, and 22.7% reported that at least one family member/relative had died from the disease. As a result of the pandemic, 50.2% of students reported a decreased desire to become physicians, 44.5% reported no change, and 5.2% reported an increased desire. Approximately one-third (30.1%) stated that the pandemic had influenced their specialty preferences. In terms of physical contact with patients, 41% of students preferred specialties considered "somewhat distant", whereas 10.9% preferred those considered "very distant". Overall, the findings suggested that more than half of the students avoided selecting specialties with a high risk of COVID-19 exposure and close patient contact as their first choice.

Key words: COVID-19, pandemic, specialty, medical students.

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Introduction

The COVID-19 pandemic has greatly affected all areas of life, including healthcare systems, patient care practices, and medical education [1]. It caused major disruptions in medical education in Turkey, as in many other countries [2,3]. Shortly after the pandemic was declared in Turkey, educational activities were suspended in all universities and medical faculties on March 16, 2020, and education continued remotely and digitally after March 26, 2020 [4].

During the pandemic, which lasted for more than 2 years, medical students completed part of their clinical internships through remote education. During this challenging period, the fear that students themselves or their family members might catch the disease and uncertainties about the course of the pandemic have led to an increase in mental health problems, including stress, anxiety, depression, sleep disorders, and substance abuse in students [5]. A systematic review and meta-analysis reported that the prevalence of general anxiety among medical students was 28% during the COVID-19 pandemic [6].

The COVID-19 pandemic, which has changed people's lives and health systems around the world, has also affected medical students' career and specialty choices. While some studies reported increased willingness to pursue medicine, others noted changes in specialty choices [7-10]. Because of the pandemic, some medical students may not want to choose certain specialties with a high risk of COVID-19 transmission, such as emergency medicine, pulmonology, otolaryngology, and infectious diseases. In the pre-pandemic period, the uneven distribution of specialists worldwide and the shortage of physicians in some specialties was a known problem for the health care system [11]. The pandemic may exacerbate this problem.

Some international studies have investigated the impact of the COVID-19 pandemic on medical students' specialty choices; however, most of these were conducted during the early stages of the pandemic and included students from all years of medical education [9,10,12].

In Turkey, one previous study explored the psychological effects of the COVID-19 pandemic on medical students who had chosen the medical profession for different motivational reasons, rather than examining their specialty preferences [13].

Another study conducted in Turkey focused on dental students and investigated the effect of the pandemic on their intentions to pursue dental specialties [14]. However, there is limited evidence from Turkey specifically addressing final-year medical students at the national level.

This study was conducted to determine the changes in the desire to become a physician and the specialty preferences of senior medical students due to the COVID-19 pandemic.

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Materials and Methods

Study population and design

This cross-sectional study was conducted between October 15 and November 15, 2021, at the Gaziantep University Faculty of Medicine. All sixth-year medical students (n=312) were invited to participate in an online survey through their class representatives. The minimum sample size of responses in this study was calculated to be at least 173 participants to achieve a 95% confidence level and a 5% margin of error. The inclusion criteria for the study were: i) being registered as a sixth-year medical student; ii) being 18 years of age or older; iii) consenting to participate voluntarily in the research.

Questionnaire

The questionnaire consisted of three sections. The first section covered the demographic information of the students, which covers age, gender, family income, most common place of residence before starting medical school, and chronic disease history.

In the second section, students were asked about their experience of COVID-19 infection, the presence of COVID-19-related deaths among family members, and their level of anxiety concerning transmission.

The third section focused mainly on the impact of the COVID-19 pandemic on students' future specialty intentions. In the first question of this section, "How has your desire to work as a physician been affected during the COVID-19 pandemic?" was asked, and the answers were evaluated with the options "decreased", "did not change", and "increased". Other questions in this section were as follows: "Has the COVID-19 pandemic affected your specialty preference?" (yes/no); "How would you like your future specialty to be in terms of physical contact practices with patients?" (very distant/somewhat distant/close/very close); "The specialty you wanted most before the COVID-19 pandemic was ..."; "The specialty you wanted most during/currently during the COVID-19 pandemic was ..."; "How did the pandemic affect the desire to choose a family medicine specialty?" (decreased, unchanged, increased); "Do you intend to choose specialties with a high risk of COVID-19 transmission, such as emergency medicine, pulmonology, otolaryngology, and infectious diseases?" (yes/no).

The questionnaire was pre-tested among 10 students before the actual data were collected. Previously tested data was not included in the final analysis.

Ethics

Approvals from the Ministry of Health General Directorate of Health Services Scientific Research Platform, Gaziantep University Faculty of Medicine Clinical Research Ethics Committee (decision no: 2021/306, date: 13.10.2021) and the dean of the medical faculty were obtained prior to the study. The identity of the students participating in the study was not requested, and their digital informed consent was obtained.

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS), 25.0 (IBM Inc., Chicago, USA). Numbers and percentages were used in descriptive statistics, while Pearson's chi-square test was used to compare analytically expressed data. The p-values less than 0.05 were considered statistically significant.

Results

Characteristics of medical faculty students

A total of 229 students completed the survey (response rate: 73.4%). The mean age of the students was 24.84±3.07 years (min 21-max 48), and 50.7% (n=116) were male. Prior to commencing their medical studies, the majority of students (82.1%) indicated that they resided in urban areas. Additionally, 79% of students reported that their family income was sufficient, while 21% indicated that it was insufficient. Among the respondents, 9.6% (n=22) had chronic diseases and 31% (n=71) had contracted COVID-19 (tested positive for SARS-CoV-2 infection). Approximately 23% of participants reported that at least one family member had died from COVID-19. Most students (86%) stated that their level of anxiety about COVID-19 transmission was mild (31%) and moderate (55%). The anxiety level of female students (moderate and high, 59.3% and 17.7%, respectively) was significantly higher than that of male students (moderate and high, 50.9% and 10.3%, respectively) (p=0.023). Some characteristics of medical faculty students are shown in Table 1.

Table 1. Descriptive characteristics of medical faculty students.

		n	%
Age (mean ±standard deviation)	24.8±3.07		
Gender	Male	116	50.7
	Female	113	49.3
Family income	Sufficient	181	79
	Insufficient	48	21
Most lived place before starting medical school	Village-small town	41	17.9
	City	188	82.1
Chronic disease	Yes	22	9.6
	No	207	90,4
COVID-19 infection	Yes	71	31
	No	158	69
Death of a family member due to COVID-19	Yes	52	22.7
	No	177	77.3
Level of COVID-19 anxiety	Little	71	31
	Medium	126	55
	High	32	14

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COVID-19 pandemic, specialization preferences

Among the participants, 50.2% (n=115) stated that their desire to become a physician decreased, 44.5% said it did not change, and 5.2% (n=12) said it increased due to the COVID-19 pandemic. There was no significant relationship between the changes in the desire to become a physician according to gender (p=0.124). When answering the question "How would you like your future specialty to be in terms of physical contact with patients?" 10.9% of the students answered "very distant",41% "somewhat distant", 37.1% "close" and 10.9% "very close".

Approximately one third of the students (30.1%) stated that the pandemic affected their specialty preferences. This rate was significantly higher in women than in men and in those with chronic diseases than in those without (p<0.05). In addition, it was determined that 53.1% of those with high anxiety about COVID-19 transmission and 16.9% of those with low anxiety levels had their specialty preferences affected by the pandemic (p=0.001). The relationship between student characteristics and being affected by specialization preferences due to the pandemic is shown in Table 2.

While 13.5% of the students stated that their desire to specialize in family medicine decreased during the pandemic, 57.2% stated that it did not change, and 29.3% stated that it increased. The increase in the desire for family medicine specialization during the pandemic period was found to be significantly higher in female students (38.1%) than in male students (20.7%) (p=0.015). The question "Do you intend to choose specialties with a high risk of COVID-19 transmission such as emergency medicine, pulmonology, and otolaryngology and infectious diseases?" was answered as "no" by 77% of the female students and 56.9% of the male students (total 66.8%, p=0.001). The answers given by male and female students to the questions about the effect of the pandemic on the choice of specialization are shown in Table 3.

Table 2. The relationship between student characteristics and being affected by specialization preferences due to the pandemic.

Student characteristics		Has the COVID-19 pandemic affected your preferences for the specialty you want?		p*
		Yes, n (%)	No, n (%)	
Age category (years)	<24	44 (35.5)	80 (64.5)	0.055
	≥24	25 (23.8)	80 (76.2)	
Gender	Male	28 (24.1)	88 (75.9)	0.045
	Female	41 (36.3)	72 (63.7)	
Family income	Sufficient	51 (28.2)	130 (71.8)	0.211
	Insufficient	18 (37.5)	30 (62.5)	
Most lived place before starting medical school	Village town	17 (41.5)	24 (58.5)	0.081
	City	52 (27.7)	136 (72.3)	
Chronic disease	Yes	12 (54.5)	10 (45.5)	0.009
	No	57 (27.5)	150 (72.5)	
COVID-19 infection	Yes	23 (32.4)	48 (67.6)	0.617
	No	46 (29.1)	112 (70.9)	
Death of a family member due to COVID-19	Yes	19 (36.5)	33 (63.5)	0.252
	No	50 (28.2)	127 (71.8)	
Level of COVID-19 anxiety	Little	12 (16.9)	59 (83.1)	0.001
	Medium	40 (31.7)	86 (68.3)	
	High	17 (53.1)	15 (46.9)	

*Chi-square test.

Table 3. Comparison of the answers given by male and female students to the questions about the effect of the pandemic on the choice of specialization.

Questions		Male n (%)	Female n (%)	p*
How would you like your future specialty to be in terms of relationship and physical contact with patients?	Very distant	10 (8.6)	15 (13.3)	0.041
	Somewhat distant	40 (34.5)	54 (47.8)	
	Close	49 (42.2)	36 (31.9)	
	Very close	17(14.7)	8 (7.1)	
Has the COVID-19 pandemic affected your specialization preferences?	Yes	28 (24.1)	41 (36.3)	0.045
	No	88 (75.9)	72 (63.7)	
How did the pandemic affect your family medicine specialization preference?	Decreased	17 (14.7)	14 (12.4)	0.015
	Did not change	75 (64.7)	56 (49.6)	
	Increased	24 (20.7)	43 (38.1)	
Do you intend to choose specialties with a high risk of COVID-19 transmission such as emergency medicine, pulmonology, otolaryngology and infectious diseases?	Yes	50 (43.1)	26 (23.0)	0.001
	No	66 (56.9)	87 (77.0)	

*Chi-square test.

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A comparison of the specialties most desired by students before the pandemic and during the pandemic showed a decrease in the specialties of cardiology, pediatrics, infectious diseases, gynecology, otolaryngology, dermatology, general surgery, and orthopedics. However, it was determined that the preference for the family medicine specialty as the first choice increased during the pandemic period (8.3-14.4%). Table 4 shows the students' most desired specialization preferences before the pandemic and during the pandemic period.

Discussion

This study investigated the changes in medical students' perceptions of the medical profession and their specialty preferences in the aftermath of the COVID-19 pandemic. Our findings indicate that approximately half of the students reported a decreased desire to become physicians, and two-thirds (66.8%) were less willing to select specialties associated with a high risk of COVID-19 transmission as their first choice. Our study also found that students with a high level of anxiety about COVID-19 transmission intend to choose specialties with a high risk of COVID-19 transmission less compared to those with a low and moderate level of anxiety. These findings highlight the complex dilemma faced by medical students between safeguarding their own health and fulfilling their professional responsibility to care for others.

Approximately one-third of the students in our study reported that the pandemic influenced their specialty preferences. The majority of students were reluctant to pursue specialties such as emergency medicine, pulmonology, otolaryngology, and infectious diseases, which are associated with a high risk of COVID-19 exposure. Similarly, a study conducted among 1,027 medical students in Indonesia demonstrated that the fear of contracting COVID-19, the transmission of the disease, and dying from it was significantly associated with career choice hesitancy and influenced career decisions [15].

A study conducted in the early stages of the pandemic in the United States reported that approximately one-fifth of medical students believed the COVID-19 pandemic influenced their choice of specialty [9]. Research involving Chinese medical students demonstrated that changes in career choice were associated with their attitudes toward healthcare and the impact of the COVID-19 pandemic on their lives [16]. A French study conduct-

Table 4. The most desired specialties pre-pandemic and pandemic period.

	Pre-pandemic period		Pandemic period	
Specialties*	n	%	n	%
Cardiology	18	7.9	12	5.2
Pediatrics	18	7.9	9	3.9
Infection diseases	11	4.8	3	1.3
Gynecology and obstetrics	14	6.1	7	3.1
Dermatology	10	4.4	9	3.9
Psychiatry	14	6.1	14	6.1
Family medicine	19	8.3	33	14.4
Cardio-vascular surgery	2	0.9	3	1.3
Urology	4	1.7	4	1.7
Emergency medicine	18	7.9	18	7.9
Otolaryngology	23	10.0	14	6.1
Physical therapy and rehabilitation	2	0.9	5	2.2
Plastic surgery	5	2.2	8	3.5
Radiology	2	0.9	11	4.8
General surgery	14	6.1	10	4.4
Anesthesia	3	1.3	6	2.6
Internal medicine	18	7.9	18	7.9
Ophthalmology	10	4.4	12	5.2
Neurology	5	2.2	5	2.2
Basic sciences	4	1.7	12	5.2
Orthopedics	7	3.1	6	2.6
Pulmonology	1	0.4	1	0.4
Neurology	1	0.4	1	0.4
Undecided	6	2.6	8	3.5
Total	229	100.0	229	100.0

*Students were allowed to specify only one specialization.

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ed during the first quarantine period revealed that 12% of students reconsidered their future specialty [17]. Another study involving Chinese medical students reported that 9.5% experienced a decreased interest in pursuing specialties in respiratory medicine and infectious diseases [8].The findings of our study and previous studies show that the pandemic affects medical students' specialty preferences.

Our study found that the pandemic reduced the desire to become a physician in half of the students. In contrast, a study conducted in China between February and April 2020 found that 10.6% of students reported an increased desire to become physicians following the COVID-19 pandemic, and 6.9% reported a decreased desire, while the majority (82.5%) reported no change [8]. Similarly, Passemard *et al.* found that 17% of students expressed doubts about their ability to pursue a medical career in the aftermath of the pandemic [17]. The significant discrepancies between various studies may be attributed to the different periods during which the research was conducted and the varying pandemic-related practices across countries. Uncertainties and restrictions were more intense in the early stages of the pandemic. However, more people were harmed as it progressed.

Approximately one-third of the students in our study reported having been infected by SARS-CoV-2, and one-fifth experienced the loss of a relative due to COVID-19. This may have reduced their desire to become physicians.

Our results show that there was a significant increase in the popularity of the specialty of family medicine among medical students during the pandemic. Nearly one-third of the students stated that their desire for family physician specialization increased due to the pandemic. Additionally, it was observed that more students were considering specializing in family medicine compared to before the COVID-19 pandemic. These results can be explained by several reasons. The important role of family physicians in the healthcare system during the COVID-19 pandemic was better emphasized by providing easily accessible comprehensive healthcare services.

This may attract the attention of enthusiastic students. In addition, it is thought that this may be due to the fact that the specialty of family medicine is perceived by some students as less risky in terms of COVID-19 transmission compared to other specialties. This may indicate that the majority of students in our study do not want specialties with a high risk of COVID-19 transmission.

Our study has some limitations. Its main limitation is that it was conducted in a single medical faculty with a relatively limited sample size, which restricts the generalizability of the findings. However, to the best of our knowledge, this is the only study in Turkey that examines in detail the impact of the COVID-19 pandemic on the specialty preferences of final-year medical students. Despite these limitations, the study provides important insights into potential changes in the future career preferences of medical students and, consequently, in the future physician workforce in Turkey.

Conclusions

The findings of our study indicate that more than half of the students avoided specialties with a high risk of exposure to COVID-19. Working conditions and physician health protection should be increased in specialties with a high risk of COVID-19 transmission during the pandemic, which may increase medical students' career choices in these areas.

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