

# ANXIETY AND DEPRESSION LEVELS OF DOCTORS DURING STUDYING FOR EXAMINATION FOR SPECIALTY IN MEDICINE

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## Abstract

The aim of our study was to investigate the anxiety and depression levels of doctors and interns during studying for examination for speciality in medicine.

This research is a cross-sectional study. 396 doctors and interns participated from one of the preparation course for the exam in İstanbul. Beck Depression Inventory and Beck Anxiety Scale were applied to these participants.

According to the scale results, 49.5% of all participants carry depressive symptoms and this percentage is 58.8% for those who have anxiety symptoms among all participants. While 40.8% of participants who graduated from university have depression symptoms, 53.3% of those who are still medical students carry depression symptoms ( $p=0.0029$ ). When it is compared according to the existence of anxiety symptoms, the rates for former and latter ones are, respectively, 70.8% and %53.6 ( $p=0.002$ ). When it is based on aimed speciality, those who gave respond as "my exam score will shape my choice" have both the least anxiety and depression levels among all group. In this group, the rates for the existence of depression and anxiety symptoms are, respectively, 36.6% and 46.2% (respectively  $p<0.001$  and  $p=0.002$ ).

49.5% of all participants carry depressive symptoms and 58.8% of all participants have anxiety symptoms in our study. Because of the fact that this exam is very crucial to medical students for their professional careers, it is inevitable that this exam has some negative effects on their mental health status.

**Keywords:** Anxiety, depression, examination for speciality in medicine, intern doctor.

## TIPTA UZMANLIK SINAVINA HAZIRLANAN HEKİMLERİN ANKSİYETE ve DEPRESYON DÜZEYLERİ

Araştırmamızın amacı Tıpta Uzmanlık Sınavı'na hazırlanan hekim ve hekim adayları arasında sınava hazırlık sürecinde anksiyete ve depresyon görülme sıklıklarının belirlenmesidir.

Kesitsel türde olan araştırmaya İstanbul'daki bir Tıpta Uzmanlık Sınavı Hazırlık Merkezi'nde eğitim alan 396 hekim ve hekim adayları katılmıştır. Katılımcılara Beck Depresyon Envanteri ve Beck Anksiyete Ölçeği uygulanmıştır.

Ölçek sonuçlarına göre, katılımcıların %49.5'inde depresif belirti varlığı, % 58.8'inde ise anksiyete belirtisi varlığı bulunmaktadır. Mezunlarda depresif belirti varlığı %40.8, mezun olmayanlarda ise %53.3 olarak hesaplanmıştır ( $p=0.029$ ). Anksiyete belirtisi varlığı yönünden karşılaştırıldığında ise, mezunlarda oran %70.8 iken, mezun olmayanlarda ise %53.6'dır ( $p=0.002$ ). Hedeflenen branşa göre, hem depresif belirti varlığı hem de anksiyete belirtisi varlığının en az olduğu grup "Alacağım puana göre tercihim netleşecek" yanıtını verenler olmuştur. Bu grupta depresif belirti varlığı %36.6, anksiyete belirtisi varlığı %46.2'dir (sırasıyla  $p<0.001$  ve  $p=0.002$ ).

Çalışmamıza katılanların %49.5'inde depresif belirti, % 58.8'inde ise anksiyete belirtisi bulunmaktadır. Hekimlerin meslek hayatları için çok önemli olan bir sınavın, ruh sağlığı üzerinde olumsuz etkilerinin olması kaçınılmazdır

**Anahtar Kelimeler:** Anksiyete, depresyon, tıpta uzmanlık sınavı, intörn doktor.

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## Introduction

**D**epression and anxiety are two of the most frequently seen mental health disorders around the world. According to the data of WHO, there are more than 150 million people who have anxiety disorders and more than 300 million people who have depression worldwide (1). Depressive disorders are locating in top ten of the global burden of disease' list (2). Depression is the most frequently seen mental health disorder in Turkey.

Medical education is considered as a hard process around the world. Because it directly deals with human health; potential risks of the profession, the duration of education, and its difficulty are counted as main factors. (3). The aim of the medical education is to train medical students to have the adequate knowledge and ability to solve the health problems of the society, to conform the ethical and moral values, and to follow the current developments in the medicine as they can update their knowledge and abilities by themselves. (4). Medical students must complete their six-year education to become a medical doctor.

According to some studies, anxiety and depression are more frequently seen among medical students than other undergraduate students and people in society (5-7). Tough education period, exam pressure, concerns about the future, inadequate self-confidence caused by insufficient education, the anticipation of high income and prestige, uneasiness for the profession, and pressures to become specialist are the main factors for this situation (8). The last

year of undergraduate education period is called as internship. Interns i.e. sixth-degree students have active duties in different clinics for 12 months.

Examination for a speciality in medicine is required to start for speciality training through getting enough score enough for the desired department. The exam curriculum is comprehensive and competitives are physician who have gained intensive study habits, so that competition hardening. Numbers and quotas of medical schools increase in recent years, so the number of candidates who are taking exam increased and succeed in the exam is becoming difficult (9). On the other hand, intensive clinical duties are difficult for physician candidates to prepare exam during internship (10). Mental health problems are increasing in medical students while the date of graduation approaches by the fact that two major stress sources such as enter the profession and exam coincide. (3). Exam and concerns about the speciality are the most important factors that constitute future occupational anxiety among medical students. (11). This is thought to impair the professional skills of the physicians and increase their failure rate (12). According to the researches, the percentage of those who want to continue their profession as a general practitioner is 1.1-3.7% (3,11,13,14).

The aim of this study is to investigate the anxiety and depression levels of medical doctors and interns during their study period for examination for a speciality in medicine in Turkey.

## Material and Method

This study was conducted in February 2017 among doctors and medical students who have taken education from one of the preparation

course for the exam in Istanbul. It is a cross-sectional study and the data was collected from 396 course attendees through a survey.

The questionnaire contains 54 questions in which the divided into two sections. The first section has 12 questions about the sociodemographic characteristics of participants. The second section includes 42 questions in which the half of those questions are based on Beck Depression Inventory (BDI) while the other half considers Beck Anxiety Inventory (BAI). Some of those questions were prepared as fill-in-the-blanks and the other ones were formed as multiple choices.

The independent variables are sociodemographic characteristics such as age, sex, marital status, childbearing, education, having a doctor in first degree relatives, average study hours and speciality tendencies. The dependent variables are the scores of Beck Depression and Beck Anxiety Inventories.

**Beck Depression Inventory:** This is a self-evaluation scale developed by Beck et al. (15). The aim of the scale is not to make a diagnosis, but to determine symptoms. The scale is comprised of 21 clauses in which each clause refers to a situation related with depression. The options are placed from less to more and their scores are given between 0 and 3. The range of scale scores is between 0 and 63. While the score between 0 and 9 refers to Normal Level; between 10 and 18 indicates Depression in Mild Level, 19-29 demonstrates Depression in Moderate Level, and the score range of 30-63 shows the symptoms of Severe Depression. Participants who have 10 points and above were considered to

have depression symptoms. The validity and reliability of the scale for college students in Turkey were fulfilled by Hisli (16) and Cronbach's alpha is 0.80.

**Beck Anxiety Inventory:** This is also a self-evaluation scale developed by Beck et al. (17). The aim of the scale is not to make a diagnosis, but to determine symptoms. The scale is comprised of 21 clauses in which each clause refers to a condition concerning anxiety. The options are placed from less to more and their scores are given between 0 and 3. The range of scale scores is between 0 and 63. While the score between 0 and 7 refers to Minimal Level; between 8 and 15 indicates Anxiety in Mild Level, 16-25 demonstrates Anxiety in Moderate Level, and the score range of 26-63 shows the symptoms of Severe Anxiety. Participants who have 8 points and above were considered to have anxiety symptoms. The validity and reliability of the scale for Turkish were fulfilled by Ulusoy et al (18) and Cronbach's alpha is 0.93.

After the permissions for this research had provided by course officials, the surveys were distributed among participations. The surveys were filled by participants under the supervision of researchers and after they were collected by researchers.

SPSS 23.0 was used for data analyses. Descriptive statistics such as percentages and frequencies were calculated. Chi-square test was used to comparison among groups. Values of p less than 0.05 were accepted as the statistically significant.

## Results

**Table 1:** Sociodemographic features of participants (n=396)

	n	(%)
<b>Gender</b>		
Male	155	39.1
Female	241	60.9
<b>Age</b>		
≤25	254	64.1
>25	142	35.9
<b>Graduate Status</b>		
Undergraduate	276	69.7
Graduated	120	30.3
<b>Marital Status</b>		
Single	354	89.4
Married	42	10.6
<b>Having Child</b>		
Yes	19	4.8
No	377	95.2
<b>Is there any medical doctor among the first degree relatives?</b>		
Yes	102	25.8
No	294	74.2
<b>Number of taken exams</b>		
0	274	69.2
1	49	12.4
2	33	8.3
≥3	40	10.1
<b>Average study hours per day</b>		
≤3	205	51.8
3-6	141	35.6
≥6	50	12.6
<b>Desired speciality</b>		
Depends on exam results	145	36.6
Internal Sciences	119	30.1
Surgical Sciences	98	24.7
Basic Medical Sciences	34	8.6
<b>Makes a choice even couldn't gain aimed score</b>		
Yes	225	56.8
No	171	43.2
<b>TOTAL</b>	396	100.0

Table 1 shows some sociodemographic characteristics of participants. 60.9% of participants are women. 64.1% of participants older than 25, the rest of them are equal or younger than 25. While 30.3% of them at least have a bachelor degree from medical faculty, the other ones have not

graduated from their faculties yet. The percentage of participants who are married is 10.6% and the percentage of those who have at least a child is 4.8%. Participants who have at least a doctor in their first-degree relatives comprises 25.8% of the group.

According to the answers that were given to questions about the exam, 30.8% of participants took the exam at least once. Regarding the question about the daily average study hours, 51.8% of them responded as their average study hours were less than 3 per day. Furthermore, 36.6% of them answered the question about the specialized area choices in medicine as they claimed that the specialized area choices are very dependent on the exam results. It was calculated that the ratio of those who

responded this question as "Internal Sciences" is 30.1% and the ratio of those who responded as "Surgical Sciences" is 24.7%. 56.8% of all participants asserted that they are willing to make the speciality choices even though they do not acquire a good result from the exam. According to the results of anxiety and depression scales, 49.5% of participants have depressive symptoms and %58.8 of them have anxiety symptoms (Table-2)

**Table 2:** The distribution of participants according to scale scores (n=396)

	n	(%)
<b>Depressive Symptoms</b>		
Normal	200	50.5
Mild	155	39.1
Moderate	34	8.6
Severe	7	1.8
<b>Anxiety Symptoms</b>		
Normal	163	41.2
Mild	144	36.4
Moderate	68	17.2
Severe	21	5.3
<b>TOTAL</b>	<b>396</b>	<b>100.0</b>

**Table 3:** The comparison of independent variables with scale results (n=396)

	<b>Depressive Symptoms</b>				<b>p</b>	<b>Anxiety Symptoms</b>				<b>P</b>
	Exist		Non-Exist			Exist		Non-Exist		
	n	%	n	%		n	%	n	%	
<b>Graduate Status</b>										
Undergraduate	147	53.3	129	46.7	<b>0.029</b>	148	53.6	128	46.4	<b>0.002</b>
Graduated	49	40.8	71	59.2		85	70.8	35	29.2	
<b>Gender</b>										
Male	64	41.3	91	58.7	<b>0.010</b>	88	56.8	67	43.2	0.531
Female	132	54.8	109	45.2		145	60.2	96	39.8	
<b>Marital Status</b>										
Single	181	50.8	175	49.2	0.133	209	58.7	147	41.3	1.000
Married	15	37.5	25	62.5		24	60.0	16	40.0	
<b>Average Study Hours per day</b>										
≤3	94	45.8	111	54.2	0.154	99	48.3	106	51.7	<b>&lt;0.001</b>
3-6	79	56.0	62	44.0		100	70.9	41	29.1	
≥6	23	46.0	27	54.0		34	68.0	16	32.0	

<b>Desired Specialty</b>										
Depends on exam results	53	36.6	92	63.4	<b>&lt;0.001</b>	67	46.2	78	53.8	<b>0.002</b>
Internal Sciences	72	60.5	47	39.5		80	67.2	39	32.8	
Surgical Sciences	54	55.1	44	44.9		65	66.3	33	33.7	
Basic Medical Sciences	17	50.0	17	50.0		21	61.8	13	38.2	
<b>Number of taken exam</b>										
0	148	54.0	126	46.0	<b>0.011</b>	148	54.0	126	46.0	<b>0.015</b>
1	14	28.6	35	71.4		34	69.4	15	30.6	
2	15	45.5	18	54.5		26	78.8	7	21.2	
≥3	19	47.5	21	52.5		25	62.5	15	37.5	
<b>Makes a choice even couldn't gain aimed score</b>										
Yes	92	40.9	133	59.1	<b>&lt;0.001</b>	122	54.2	103	45.8	<b>0.039</b>
No	104	60.8	67	39.2		111	64.9	60	31.1	
<b>Is there any medical doctor among the first degree relatives?</b>										
Yes	46	45.1	56	54.9	0.358	64	62.8	38	37.2	0.414
No	150	51.0	144	49.0		169	57.5	125	42.5	

The comparison of independent variables with scale results are given in Table-3. While 40.8% of those doctors have depressive symptoms, 53.3% of medical students have depressive symptoms and the statistical difference between them is significant ( $p=0.029$ ). When the existence of anxiety symptoms is compared between these groups, 70.8% of former ones have anxiety symptoms and the rate is 53.6% for the latter ones. Again, the statistical difference between these two groups is significant ( $p=0.002$ ). When it is compared based on sex, 54.8% of women from all participants carry depression symptoms and the rate is 41.3% for men from all participants and the difference is statistically significant ( $p=0.010$ ). In terms of the existence of anxiety symptoms, there is no statistically significant difference between men and women.

When the anxiety symptoms are compared in terms of average study hours per day, there is a statistically significant difference between those groups ( $p<0.001$ ). It was confirmed by further analysis that the reason of this difference results from who study less

than 3 hours per day compared to those other two groups.

The comparison of scale results based on aimed speciality suggests that the difference between groups is statistically significant regarding both depressive and anxiety symptoms (respectively  $p<0.001$  and  $p=0.002$ ). This difference is caused by those who gave response as "my exam score will determine my choice". In terms of the existence of depressive symptoms, the percentage is 36.6% for this group and 46.2% of this group members carry anxiety symptoms. When it is compared to other groups, these differences are statistically significant.

In terms of the number of taken exams, it was found out that those who have not entered the exam yet have the highest rate of depression by 54.0% and those who took the exam only once have the least rate of depression by 28.6%. For the existence of anxiety symptoms, those who entered the exam twice have the highest rate by 78.8% and those who have not entered the exam yet have the least rate by 54.0%. In both scales, the difference between groups are statistically significant (respectively  $p=0.025$  and  $p=0.031$ ). This differences

is caused by those who have not entered the exam yet.

Among those who answered the question of "Will you choose if you do not gain your aimed score?" as 'No', the rates for the existence of depressive and anxiety symptoms are, respectively, 60.8% and 64.9%. The difference between this group and those who

## Discussion

Among all participants in our research, 49.5% of them have depressive symptoms and 58.8% of them have anxiety symptoms. During the research of depression and anxiety levels among participants from Ankara University Medical Faculty, it was found out that 41% of them carry depressive and 45% of them carry anxiety symptoms (19). Another research was conducted in a medical school in Sivas as the rate for the prevalence of depression among medical students was calculated as 35.2% (20).

When the groups are compared regarding graduation status, the existence of depressive symptoms tend to be higher among those who have not graduated yet. On the other hand, the existence of anxiety symptoms tend to be higher among graduated people. Because of the situation that graduated people took the exam at least once and they have experience about the process, they incline to have fewer depressive symptoms. However, the reasons why they tend to have a higher rate for anxiety symptoms might be related to concerns towards future or the fear of repeated failure.

During a research which was conducted in Konya among intern doctors, it was found out that the rate for the interns who have certain concerns about future is 81.8% (3). Another research was conducted in Izmir among intern doctors and it was indicated that the situation that concerns them at most

answered the same question as 'Yes' is statistically significant (respectively  $p < 0.001$  and  $p = 0.032$ ).

There is no statistically significant difference for the question of "Do you have any doctors in your first degree relatives" when the existence of depressive and anxiety symptoms are compared between each other.

was to fail the specialization exam. In the same study, the second most common answer for the same question was to not study enough for the exam and the third one was to not being able to work as a specialist ever.

Examination for speciality in medicine constitutes a critical aim for medical students. According to the different studies that were conducted among medical students, it was found out that the rate for those who do not want to take the exam and continue their professional career as a practitioner was between 1.1% and 3.7% (3,11,13,14, 21). It is inevitable that the mental status of medical students is influenced negatively since this exam determines every aspect of their career for interns. However, according to the Health Statistics Annual 2016, there are 144.827 doctors in our country and 43,058 of them are practitioners (22). In other words, one-third of doctors are practitioner. Most interns who aimed to become specialist tend to continue their professional careers as practitioners.

When the existence of depressive and anxiety symptoms are examined in terms of the aimed subject for specialization training, it turns out that those who gave response as "My exam score will shape my choice" have both the least depression and anxiety levels. Being successful for medical students and doctors who take the TUS exam is to be able to end up in their aimed subjects. If a candidate can start working for her

aimed subject even though her exam result was low, she would still recognize herself as successful and be happy about her career. It can be interpreted that those who can be classified into the same category with her tend to have less depression and anxiety symptoms since they have more alternative subjects than their peers. Similarly, those who do not decide if they cannot acquire their aimed scores tend to have higher rates of depression and anxiety symptoms compared to those who intend to select a subject although they might not get their aimed scores. The former ones have more concerns than the latter ones as they do not have alternative subjects and this tends to increase their fears and worries towards their professional career.

It is known that the provision of health services in our country has been centred around specialist doctors and this situation leads medical faculties to encourage medical students to become specialists. However, the role of practitioners is vital to meet the health-related needs of the community as well. Medical students and specialist

candidates should not recognize being practitioner as a form of second-class doctor. In order to decrease the impact of this bias, further studies should be conducted during the whole education period in medical faculties. Furthermore, those who have failed to pass the specialization exam should not be recognized as unsuccessful doctors by the community (3).

At the end of their tough education duration, medical students have to deal with another compelling process which refers to the situation that they have to prepare for the exam. Further studies are needed in order to provide interventions that can ease this process. The results of further studies might be able to produce more effective solutions about the exam itself and the process of the exam by implementing better changes and interventions.

Our study was conducted in a preparation course for examination for speciality in medicine. Although there are many course attendees from different medical faculties, the generalization of these results might be limited.

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