Anxiety and Depression in Medical Students Related to Desire for and Expectations from a Medical Career

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ABSTRACT

Objective: *In this article, we aimed to analyse the anxiety and depression levels of medical student's related to their desire for a career in medicine and expectations from that career.*
Methods: *In a cross-sectional design, students from the first two years of medical school filled-out a questionnaire consisting of demographics, Hospital Anxiety and Depression Scales (HADS) and questions about their medical career decision.*
Results: *The mean anxiety score was 7.66 ± 3.21 and the mean depression score was 5.77 ± 3.45. According to cut-off levels, 20.3% of medical students had anxiety, 29.3% had depressive symptoms. Males and second year students had significantly high levels of depression (*$p < 0.05$*). Students who were pressured to become doctors and who expected to gain much money were both more anxious and more depressed (*$p < 0.05$*).*
Conclusion: *External pressures, desire to become a medical doctor and expectations from a medical education have significant effects on anxiety and depression levels of medical students. Guidance for affected students is important and this is the responsibility of medical educators and faculties.*

Key words: Anxiety, depression, medical students

Ansiedad y Depresión en los Estudiantes de Medicina en Relación con el Deseo y las Expectativas de la Carrera de Medicina

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RESUMEN

Objetivo: *En este trabajo, nos proponemos analizar los niveles de ansiedad y depresión entre los estudiantes de medicina en relación con su deseo por realizar estudios de medicina y sus expectativas en esa carrera.*
Métodos: *Sobre la base de un diseño transversal, estudiantes de los dos primeros años de la Facultad de Medicina respondieron un cuestionario contentivo de aspectos demográficos, la Escala Hospitalaria de Ansiedad y Depresión, y preguntas sobre su decisión por la carrera de medicina.*
Resultados: *La puntuación promedio de la ansiedad fue 7.66 ± 3.21 y la puntuación promedio de la depresión fue 5.77 ± 3.45. De acuerdo con los niveles límites, 20.3% de los estudiantes de medicina padecían ansiedad, y 29.3% tenían síntomas de depresión. Los varones y los estudiantes de segundo año tenían niveles significativamente altos de depresión (*$p < 0.05$*). Los estudiantes que sentían presión por hacerse médicos y esperaban ganar mucho dinero, estaban más ansiosos y más deprimidos (*$p < 0.05$*).*
Conclusión: *Las presiones externas, el deseo de hacerse doctor en medicina, y las expectativas de la educación médica, poseen efectos significativos sobre los niveles de ansiedad y depresión de los estudiantes de medicina. Es importante ofrecer orientación a los estudiantes afectados, y esto es responsabilidad de los educadores y las facultades de ciencias médicas.*

Palabras claves: Ansiedad, depresión, estudiante de medicina

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INTRODUCTION

The goal of medical education is to train knowledgeable, competent and professional physicians to care for the nation's sick, advance the science of medicine and promote public health (1). Medical school can impose significant psychological stress on medical students (2–7), mainly through time pressure, large amount of new information, excessive working hours and the knowledge that at the end of their training they will be directly responsible for the health and welfare of others and their post matriculation (2, 8, 9). A considerable degree of psychological morbidity has been reported in medical students ranging from stress, interpersonal problems and suicidal ideation to psychiatric disorders (2, 8). These reports have given rise to concern on how students' distress can affect their learning, professional development and patient contacts (1, 6, 9). Psychological problems from medical school stress may predict later mental health problems; students seldom seek help for their problems (8, 10, 11). In this respect, attention has been paid to the increase in stress, health concerns and emotional problems among medical students (3, 7, 12).

Decision to make a career in medicine can be affected by many factors. Besides external factors, such as parental influence, anticipated income and prestige, factors such as willingness to help others, primary interest in medicine or wanting to be skilful in medicine were also reported as more personal factors in the literature (13–16). Desire is defined as a strong wish to have or to do something perceived in order to have an effect on career choice and psychological well-being (17). University education in Turkey is based on a selective examination conducted by the State of Turkey once a year (the Student Selection Examination [SSE]) after high school and medical schools require high grades based on this examination. A student may develop a list limited to 18 choices about career preferences according to his/her examination score. Government decides the faculty that the students can enter. Students must therefore strive for high grades and prospective medical students must list medical faculties at the top of the 18 choices. The fact that the students made out a list and the medical faculty was placed on the list indicates career desire. This means that a student who placed the medical faculty at the seventeenth order desired medicine less than a student who listed medicine in the first rank. Desire may make one happy or satisfied in spite of the challenges and thus may be a protective factor against the harsh experience of medical school mentioned before. Expectation is a belief that is considered the most likely to happen, maybe non-realistic and could result in disappointment (17). Some conditions such as health policy changes or lower income *etc* may result in a disappointment in the volunteers (18, 19). In this point of view, unfulfilled expectations are supposed to add to the unfortunate experiences of the medical faculty. Literature on students' anxiety and depression levels generally focusses on causes such as gender, school year, academic pressures and on the end points such as poor academic performance, sleep disorders and suicidal ideation (1, 2, 4–6 ,8 , 20). There is a need to investigate the effect of desire and expectations from medicine on anxiety and depression levels of medical students and this study primarily aims to explore this aspect in medical students in their first two years of medical school in Turkey.

SUBJECTS AND METHODS

This is a cross-sectional study. All medical students in their first (n = 164) and second (n = 186) years who began medical training in 2007 and 2008 academic years at the Selcuk University Meram Medical Faculty were invited to participate based on the hypothesis that adjustment issues are anticipated to be more intense in those two years and that students could recall their preference list, reasons of preferring a medical career and expectations more easily without the confounding factor of time on memory. Informed consent was obtained orally since the questionnaire was self-administered and students remained anonymous. Participation was voluntary. The students were asked to complete the questionnaire in a class at the end of a lecture and returned them to the author in the same session.

The questionnaire was not applied shortly before examinations because anxiety was noted to be the highest in pre-exam periods (1). The questionnaire consisted of demographic variables and questions on a career preference list. Demographic variables were: age, gender, hometown, family income and last graduated school. Via open ended questions, reasons for being a doctor and expectations from a medical career were asked and classified according to the theme of the answers. In addition, anxiety and depression symptoms were assessed with Hospital Anxiety and Depression Scale (HADS) in the same questionnaire (21). This self-report scale consists of 14 items, seven for anxiety and seven for depression. Each item is rated on a scale from 0 to 3. It was found to perform well in assessing anxiety disorders and depression in both somatic, psychiatric and primary care patients and general population (22). Validity and reliability of the Turkish version of the scale was made and the cut-off was determined as seven for depression and 10 for anxiety in Turks (23).

The desire to be a medical student appears at SSE as making a selection just among medical faculties on the application form or as sorting medical faculties in the first three alternatives in career selection among other faculties as it was mentioned in the introduction. Reasons for being a doctor were categorized as occupation guarantee, external pressures (parents wish, doctor relatives, teachers *etc*) and ideal of being a doctor. Expectations were classified according to their answers: prestige of medicine, economic factors (better economic conditions *etc*) and occupational satisfaction.

All analyses were performed with SPSS 10.0 software®. Total scores for HADS were calculated and analysed

by gender, study year, hometown, family income, last graduated high school, sort of preferences, reasons for being a doctor and expectations from medical career. Frequency tables were used to calculate the prevalence rates of demographic variables. One-way Analysis of Variance (ANOVA) procedures and *t*-tests were performed to compare parametric variables. For non-parametric variables, chi-square and Kruskal-Wallis tests were conducted; $p < 0.05$ was considered significant.

RESULTS

We received 290 completed questionnaires, representing a response rate of 82.85% (84.75% in first year and 81.18% in second-year students). The mean age of the students was 19.02 ± 1.3 years. There were 55.9% (n = 162) of the respondents who were male and only 12.1% (n = 35) of them were from the rural parts of Turkey. The majority of them (61.7%, n = 179) graduated from state high schools which need examinations for their admission. While most of them (87.9%, n = 255) preferred a medical education as the first three alternatives over a half (51.7%, n = 150) did not prefer any other careers except medicine in the student selection examination.

The main reason for being a doctor was occupational guarantee (49.0%, n = 142) and the most expected thing from medical education was prestige (71.0%, n = 206). Table 1 shows the characteristics of medical students.

The mean anxiety score was 7.66 ± 3.21 and the mean depression score was 5.77 ± 3.45. According to cut-off levels, 20.3% of medical students had symptoms of anxiety and 29.3% had symptoms of depression. Thirty (10.3%) female students and 29 (10.0%) male students had anxiety symptoms; 25 (8.6%) females and 60 (20.7%) males had depressive symptoms. In terms of anxiety, there were significant differences according to family income, reasons for being a doctor and expectations from medicine ($p < 0.05$). Table 2 shows the effect of different variables on anxiety levels of medical students.

Depression levels were significantly higher in second year students and males ($p < 0.05$). Also, students from rural areas and lower income families were more depressed ($p < 0.05$). The preferred faculties related to social sciences instead of medicine. External pressure in the decision process and expecting better economic conditions from a medical profession were making students more depressed ($p < 0.05$). The differences in depression levels are presented in Table 3.

Table 1: The main characteristics of students participating in the study

Characteristics	n	%
Age	19.02 ± 1.30	
Gender		
Man	162	55.9
Woman	128	44.1
Study year		
First year	139	47.9
Second year	151	52.1
Hometown		
Rural	35	12.1
Urban	255	87.9
Family income		
0 – 1000 YTL	143	49.3
1001 YTL and over	147	50.7
Last graduated school		
High school with examination	179	61.7
State high school	60	20.7
Private school	51	17.6
Medical faculty preference		
First three choices	255	87.9
After first three choices	35	12.1
Other career preferences		
Only medical faculty	150	51.7
Health-related faculties (dentistry, pharmacy)	99	34.1
Technical faculties (engineering, architecture)	26	9.0
Social faculties (law, letters etc.)	15	5.2
Any knowledge about medical education		
Yes	182	62.8
No	108	37.2
Any knowledge about working conditions		
Yes	170	58.6
No	120	41.4
The reasons for choosing medical education		
Occupation guarantee	142	49.0
External pressures	47	16.2
Ideal of being a doctor	101	34.8
Expectations from medical education		
Prestige	206	71.0
Better economic conditions	37	12.8
Occupational satisfaction	47	16.2
Total	**290**	**100.0**

DISCUSSION

According to a study on Estonian medical students, 21.9% had symptoms of anxiety and 30.6% symptoms of depression (4). Similarly, in this study, 20.3% of medical students were above the cut-off level for anxiety and 29.3% for depression. There was not a consensus on gender effect in the literature. While some studies reported a female dominance in anxiety and depression levels, others pointed out that there was not a gender difference (1, 4–6, 24). Some noted that men were lonelier but women scored higher on general anxiety level and there was no difference in depression (20). In contrast to all of these studies although there was no gender difference for anxiety, men were significantly more depressed in the present study. It may be the consequence of cultural factors. The male child in Turkey who takes the role of the father for the whole family has more responsibilities and must be more competent. Besides, the negative effect of medical education on the psychological state of students was rather heavy among Turkish medical students (2).

The present study found 7.6% and 9.3% of first-year students were above the cut-off level for anxiety and depression, respectively. Anxiety scores of second year students were higher but depression scores were significantly higher than for first year students. This worsening in the well-being of students in just one academic year in a medical faculty

Table 2: Anxiety levels of students according to different variables

	Anxiety score ≤ 10		Anxiety score > 10		Total		P^*	Mean anxiety score	P^{**}
	n	%*	n	%*	n	%*			
Gender									
Man	133	45.9	29	10.0	162	55.9	0.245	7.6605	0.976
Woman	98	33.8	30	10.3	128	44.1		7.6719	
Study year									
First year	117	40.3	22	7.6	139	47.9	0.067	7.3741	0.139
Second year	114	39.3	37	12.8	151	52.1		7.9339	
Hometown									
Rural	27	9.3	8	2.8	35	12.1	0.694	8.2571	0.246
Urban	204	70.3	51	17.6	255	87.9		7.5843	
Family income									
≤ 1000YTL	104	35.9	39	13.4	143	49.3	**0.004**	8.2168	**0.004**
> 1000YTL	127	43.8	20	6.9	147	50.7		7.1293	
Last graduated school									
High school with examination	138	47.6	41	14.1	179	61.7	0.324	7.6313	0.325
State high school	49	16.9	11	3.8	60	20.7		8.0167	
Private school	44	15.2	7	2.4	51	17.6		7.3725	
Medical faculty preference									
First three choice	201	69.3	54	18.6	255	87.9	0.342	7.6235	0.549
After first three choice	30	10.3	5	1.7	35	12.1		7.9714	
Other career preferences									
Only medical faculty	119	41.0	31	10.7	150	51.7	0.239	7.5533	0.706
Health related faculties	82	28.3	17	5.9	99	34.1		7.8283	
Technical faculties	21	7.2	5	1.7	26	9.0		7.3077	
Social faculties	9	3.1	6	2.1	15	5.2		7.6655	
Any knowledge about medical education									
Yes	141	48.6	41	14.1	182	62.8	0.231	7.8681	0.164
No	90	31.0	18	6.2	182	62.8		7.3241	
Any knowledge about working conditions									
Yes	132	45.5	38	13.1	170	58.6	0.312	7.6588	0.966
No	99	34.1	21	7.2	120	41.4		7.6750	
The reasons for choosing medical education									
Occupation guarantee	120	41.4	22	7.6	142	49.0	**0.023**	7.4718	**0.024**
External pressures	31	10.7	16	5.5	47	16.2		8.1277	
Ideal of being a doctor	80	27.6	21	7.2	101	34.8		7.7228	
Expectations from medical education									
Prestige	165	56.9	41	14.1	206	71.0	**0.081**	7.6165	**0.044**
Better economic conditions	25	8.6	12	4.1	37	12.8		8.7568	
Occupational satisfaction	41	14.1	6	2.1	47	16.2		7.6655	
Total	**231**	**79.7**	**59**	**20.3**	**290**	**100.0**		**7.6655**	

P^* ***P*** value according to chi-square and Kruskal –Wallis tests

p^{**} ***P*** value according to *t*-test and One-way ANOVA tests

resembles the previous studies which reported the same worsening in psychological health of students during medical education (2, 3, 5, 24). Although anxiety levels of students from rural areas were not different than others, their depression levels were significantly higher. This may be attributed to the urban adaptation problems of these students and differences in the quality of life (25, 26). But another study reporting on students preparing for the transition gave a favourable report and regarded the transition as advantageous (27). In contrast to previous reports, half of the students from the present study were from low income families and had significantly higher levels of anxiety and depression (13, 28). Contrary to a previous study, students in this study graduated mostly from state high schools instead of private schools (13).

A study claims that the main "filter" which defines who will enter medical school, is not the medical school admission process but rather an individual's decision to apply for

Table 3: Depression levels of students according to different variables.

	Depression score ≤ 7		Depression score > 8		TOTAL		P^*	Mean depression score	P^{**}
	n	%*	n	%*	n	%*			
Gender									
Man	102	35.2	60	20.7	162	55.9	**0.001**	6.4321	**0.000**
Woman	103	35.5	25	8.6	128	44.2		4.9375	
Study year									
First year	112	38.6	27	9.3	139	47.9	**0.000**	6.4503	**0.000**
Second year	93	32.1	58	20.0	151	52.1		5.0360	
Hometown									
Rural	18	6.2	17	5.9	35	12.1	**0.008**	7.5143	**0.000**
Urban	187	64.5	68	23.4	255	87.9		5.5333	
Family income									
≤ 1000YTL	91	31.4	52	17.9	143	49.3	**0.009**	6.5035	**0.000**
> 1000YTL	114	39.3	33	11.4	147	50.7		5.0612	
Last graduated school									
High school with examination	129	44.5	50	17.2	179	61.7	0.807	5.5754	0.464
State high school	41	14.1	19	6.6	60	20.7		6.1333	
Private school	35	12.1	16	5.5	51	17.6		6.0392	
Medical faculty preference									
First three choice	179	61.7	76	26.2	255	87.9	0.618	5.6706	0.877
After first three choice	26	9.0	9	3.1	35	12.1		5.8571	
Other career preferences									
Only medical faculty	106	36.6	44	15.2	150	51.7	**0.026**	5.8467	**0.011**
Health related faculties	71	24.5	28	9.7	99	34.1		5.5354	
Technical faculties	22	7.6	4	1.4	26	9.0		4.7692	
Social faculties	6	2.1	9	3.1	15	5.2		8.3333	
Any knowledge about medical education									
Yes	132	45.5	50	17.2	182	62.8	0.372	5.6099	0.299
No	73	25.2	35	12.1	108	37.2		6.0463	
Any knowledge about working conditions									
Yes	124	42.8	46	15.9	170	58.6	0.316	5.5941	0.296
No	81	27.9	39	13.4	120	41.4		6.0250	
The reasons for choosing medical education									
Occupation guarantee	100	34.5	42	14.5	142	49.0	**0.017**	5.8592	**0.013**
External pressures	26	9.0	21	7.2	47	16.2		6.8936	
Ideal of being a doctor	79	27.2	22	7.6	101	34.8		5.1287	
Expectations from medical education									
Prestige	152	52.4	54	18.6	206	71.0	**0.000**	5.4515	**0.000**
Better economic conditions	16	5.5	21	7.2	37	12.8		5.2128	
Occupational satisfaction	37	12.8	10	3.4	47	16.2		8.2703	
Total	**205**	**70.7**	**85**	**29.3**	**290**	**100.0**		**5.7724**	

P^* ***p*** value according to Chi-square and Kruskal –Wallis tests

p^{**} ***p*** value according to *t*-test and One-way ANOVA tests

admission (14). Medical faculty preference is the first sign of desire for medicine. In a study from Turkey, the authors noted that 43.7% of medical students made a selection only for medical faculties in their first five options at SSE (29). In the index study, 87.9% of students chose medical faculties in their first three preferences. This shows the higher desire of Selcuk University students for medical education. Another sign of desire is the content of the career preferences list. One can select just medical faculties which shows desire or different faculties outside of medicine. More than a half of the students in this study preferred just medical faculties. As may be the consequence of lower desire depending on the career preference list, students who had different career preferences besides medicine especially ones who listed a social science education at the top of the list were significantly more depressed.

Benbassat and Baumal suggest giving detailed information which should consist of requirements for medical

training in general, working hours, quality of life of doctors, the most common causes of dissatisfaction, medical errors *etc* in order to help applicants in making an informed decision (14). In favour of their view, most of the students in this study had the knowledge about medical education and social conditions and results revealed that they were not disappointed.

For approximately half of the students reported herein, occupation guarantee was the main reason for choice of a medical career. That may be attributed to economic conditions within this country. In Turkey, medical career is one of the professions which provide an occupational guarantee. What about ideals? In a previous study, medicine was the ideal of 61.7% of the medical students (29). In this study, 34.8% of the students had the ideal of being a doctor. This may be due to changing factors in career selection in Turkey. The most important result of this study was the significantly higher levels of anxiety and depression in students who declared that external pressure came to bear on their decisions. As some authors pointed out, since the students were not mature enough to assess realistically and objectively their own abilities, motives and future aims, they sometimes begin medical education unwillingly (14).

Expectation was the last factor hypothesized as affecting anxiety and depression levels. At the same time, these expectations show the status that medicine hold in the public arena. It may be probable to say that being a doctor still carries tremendous prestige in Turkey and students who expected such were not disappointed. But the economic aspect of this profession made students more anxious and depressed and this disappointment may point to the poorer economic conditions physicians experience in reality. Contrary to another study which noted that 8.5% of students decided to be doctors for prestige and money, we found that 83.8% of medical students expected to gain much money (29). This may be also attributed to the changing profile of medical students in Turkey. But this expectation seems not to be realistic. Perhaps because of the academic year of the students, professional satisfaction had no effect on anxiety and depression levels.

The limitations of this study are its cross-sectional design, self-reported questionnaire and voluntary participation. These results cannot be generalized to the medical students of other faculties. Although the scale we used was validated in different study groups, it is a screening scale and only shows the student at risk. As educators, our first responsibility is to recognize the risk and help to change the factors that increase the risk, so we think that only a screening test may be enough.

In conclusion, although medical schools should undertake an extensive selection process to identify intelligent and altruistic students, medical faculties which cannot decide on applicants as in Turkey must know the students demographic profiles, factors affecting their decision process and their expectations in order to guide them (1, 30, 31). As mentioned before, medical training is long, arduous and expensive and it is necessary to ensure the attrition rate is minimum in order to reduce wastage of endeavour and resources (30). We believe that the index study brought a new aspect to the causes of anxiety and depression of medical students. Still, prospective, longitudinal and multicentre studies are needed to identify student or education-related factors that affect the psychological health of medical students.

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