European Review for Medical and Pharmacological Sciences 2022; 26: 5774-5779

The relationship between exam anxiety, depression, and back pain in physicians preparing for the specialty exam

Ö. YÜKSELMIŞ[1], S. DÖNMEZDIL[2]

[1]Department of Physical Medicine and Rehabilitation, Dağkapi State Hospital, Diyarbakir, Turkey
[2]Psychiatry Unit, Psychology Department, Artuklu University, Mardin, Turkey

Abstract. – OBJECTIVE: This study aims at examining the possibility of anxiety and depression in physicians preparing for the specialty exam and the back pain caused by continuous working with these depressive symptoms.

PATIENTS AND METHODS: The research was started by getting approval from the local Ethics Committee of Gazi Yaşargil Training and Research Hospital. Socio-demographic data form, EQ-5D general quality of life scale, Oswestry low back pain disability scale, and Hospital anxiety and depression scale (HADS) were applied to volunteers.

RESULTS: Among the physicians participating in our study, both anxiety and depression scores from the HADS scale scores applied to the exam preparation group were statistically significantly higher than those of students who did not prepare for the exam.

CONCLUSIONS: In our study, the highness of the scale scores in the exam preparation group was statistically high. It should not be ignored that there may be complaints of anxiety, depression, and low back pain during the preparation period for the specialty examination in physicians. During the exams' periods, psychosocial support mechanisms should be activated, and active exercise activities should be recommended. For more detailed data, large-scale participatory studies are needed.

Key Words:
EQ-5D, HADS, Anxiety, TUS.

Introduction

Exam anxiety is a condition that can negatively affect social life and compliance in individuals preparing for the exam from all age groups[1]. The severity of anxiety is often associated to the importance of the exam[2]. Many studies show the presence of exam anxiety in medical students who have entered many exams during their university life[3]. This anxiety will also likely be seen in the specialty exam, significantly affecting their professional lives.

The medical specialty examination (TUS), entered after the completion of the medical faculty in our country, is one of the most challenging exams in terms of the pace and duration of the study[4]. The exam is conducted twice a year by a central examination institution (Centre for Measurement, Selection, and Placement – OSYM) on a multicenter basis. The exam is administered in the spring and fall semesters, on average every six months[5].

Although studies have been conducted on anxiety in students preparing for the American Board exams, no research that has been conducted on the physical symptoms associated with the exam has been decisive in our choice of the research topic.

Studying and listening to lectures by sitting in the same position for a long time can also signify pain symptoms in the back and different regions.

Patients and Methods

The research was started getting approval from the local Ethics Committee of Gazi Yaşargil Training and Research Hospital. The first group was created among the physicians preparing for TUS and actively practicing the medical profession. The second group was created from the physicians who work as physicians but are not preparing for the specialty exam. Sociodemographic data form, EQ 5D general quality of life scale, Oswestry low back pain disability scale, and Hospital anxiety and depression scale (HADS) were applied to volunteers.

EQ 5D General Quality of Life Scale

The EQ-5D scale is a general health scale used to measure the quality of life. It is a scale developed in 1987 by the EuroQol group, a Western European

Corresponding Author: Özkan Yükselmiş, MD; e-mail: ozkanyukselmis@gmail.com

Quality of Life Research Community. The EQ-5D general health scale has been translated into more than 60 languages by the EuroQol group, one of which is Turkish. The EuroQol Group released the 3-level version of the EQ-5D in 1990. In our study, this 3-level version was also used[6].

Oswestry Disability Index

The Oswestry scale evaluates daily life activities from 10 different angles and determines the level of functional disability. The score scale is between 0 and 50 range, and an increase in the score indicates an increase in disability. A total score of 0-4 indicates no disability, 5-14 indicates mild disability, 15-24 indicates moderate disability, 25-34 indicates severe functional disability, and 35-50 indicates total functional disability[7].

Hospital Anxiety Depression Scale

The Hospital Anxiety and Depression Scale, or HADS, was designed to provide a simple yet reliable tool for use in medical practice. The HADS was designed to provide a simple yet reliable tool for use in medical practice. HADS is a scale filled in by the patient and consists of 14 items. Items contain 4 properties. Depression and anxiety are tried to be evaluated with the help of two subscales. The 7-item depression subscale has a scoring system between 0-21. As threshold value, 0-7 indicates "Normal", 8-10 indicates "Mild", 11-14 indicates "Moderate", 15-21 indicates "Severe" mood disorder[8].

Statistical Analysis

Data were statistically evaluated in SPSS 18 (SPSS, Chicago, IL, USA). Parametric tests were applied to the data showing a normal distribution. The Chi-square test was applied to categorical data, and the Student's *t*-test was applied to numerical data. *p*-values below 0.05 were considered statistically significant.

Results

There was no statistically significant difference between the exam study group and the control groups included in the study regarding socio-demographic data (Table I).

A statistically significant increase was found in the *t*-test results for the FSS score, EQ 5D Index, Oswestry score, HADS Anxiety score, and HADS depression scores in the physicians who participated in the research studied for the exam. Although EQ 5D VAS scores were high in the exam preparation group, this high score was not statistically significant. Particularly, the significance of the FSS score, HADS anxiety, and depression scores were very high. ($p<0.001$) (Table II).

In the exam preparation group, statistically significant differences were found in the HADS results. The Chi-Square test results were applied for HADS depression compared to the control group ($p<0.001$). No significant difference was found in Oswestry results.

Table I. Comparison of socio-demographic data between groups.

	Physicians Studying for the Exam (N=66)	Control Group (N=60)	*p*-value
	Mean±SD	Mean±SD	
Age	36.35±5.90	37.11±6.74	.558
	N (%)	**N (%)**	
Gender			
Female	37 (56.1)	28 (46.7)	.292
Male	29 (43.9)	32 (53.3)	
Marital status			
Single	36 (54.5)	39 (65.0)	.232
Married	30 (45.5)	21 (35.0)	
Living			
With family	51 (77.3)	47 (78.3)	.886
Alone	15 (22.7)	13 (21.7)	
History of psychiatric illness			
Yes	4 (6.1)	5 (8.3)	.621
No	62 (93.9)	55 (91.7)	
Child status			
Childless	54 (81.8)	44 (73.3)	
Only child	10 (15.2)	12 (20.0)	.452
Two or more children	2 (3.0)	4 (6.7)	

Table II. The results of the statistical analysis of the scale scores between the groups.

	Physicians Studying for the Exam (N=66)	Control Group (N=60)	*p*-value
	Mean±SD	Mean±SD	
EQ 5D Index	0.70±0.13	0.78±0.17	**.008**
EQ 5D VAS	82.90±12.62	82.86±9.72	.983
Oswestry Score	10.36±8.15	6,73±8.12	**b**
HADS Anxiety Score	11.56±4.33	6.96±3.42	**< .001**
HADS Depression Score	12.21±5.91	4.16±3.05	**< .001**
	N (%)	**N (%)**	
Oswestry Result			
Minimal disability	59 (89.4)	56 (93.3)	.434
Moderate disability	7 (10.6)	4 (6.7)	
HADS Anxiety Result			
Normal	11 (16.7)	37 (61.7)	
Borderline Anxiety	18 (27.3)	15 (25.0)	**< 0.001**
Intense Anxiety	37 (56.1)	8 (13.3)	
HADS depression result			
Normal	13 (19.7)	51 (85.0)	
Borderline Depression	12 (18.2)	7 (11.7)	**< 0.001**
Severe Depression	41 (62.1)	2 (3.3)	

FSS: Fatigue Severity Scale, EQ 5D: Quality of Life Scale, Oswestry: Oswestry Disability Index, HADS: Hospital Anxiety Depression Scale.

Although there was a significant difference in index scores in EQ 5D quality of life scores, there was no statistically significant difference in VAS sub-scores.

When the HADS depression results were examined, it was seen that the number of participants who scored above the severe depression limit was significantly higher in the exam group than in the control group (Table II).

Similarly, in the analysis of HADS Anxiety results, the number of participants who scored above the intense anxiety limit value was higher than the control group (Table II).

There was a statistically significant difference in Oswestry scores, but there was no significant difference in disability severity between the groups in the analysis at sub-categories.

As a result of multivariate logistic regression analysis applied to the variables, it was found that the Oswestry scale score had a positive relationship with the Depression scores and a negative relationship with the EQ-5D VAS score.

Discussion

Exam anxiety is one of the situational anxieties, and it is a common situation before exams, especially during and after university education throughout life[9]. The severity of exam anxiety may prevent the effective use of cognitive functions necessary for success[10]. In addition, the focus required for the study is also negatively affected according to the level of anxiety[10,11].

Medical education is planned to cover an intensive and challenging period. A student studying at a medical school will have to deal with both exam anxiety and the human burden that medicine will bring. This condition can cause high depression and anxiety in medical students[12].

At the end of this period, which is also known to be mentally tiring, physicians must take a specialty exam to receive specialized education. This exam can cause many psychiatric findings in physicians who are in an intense working tempo and come out of exhausting student life[13].

Among the physicians participating in our study, both anxiety and depression scores from the HADS scale scores applied to the exam preparation group were statistically significantly higher than those of students who did not prepare for the exam (Table II). This situation can be explained by the fact that a stressor that occurs during the performance of a profession involving intense anxiety triggers more severe anxiety and depression accompanies this situation.

In a study[14] on 909 German medical students, test anxiety was observed in 29.9% of the participants during their student life. This rate was considered relatively high compared to the average population. In the same way, in a study[15] on 85 medical students who would take the specialty

Table III. Multivariate logistic regression analysis results.

	β	Odds Ratio	*p*-value
Gender	-0.019	1.408	0.989
Age	0.465	0.307	0.133
Marital Status	0.528	1.665	0.752
Lifestyle	1.135	1.658	0.495
Presence of Children	-1.305	1.634	0.495
HADS-Depression	0.584	3.504	**0.001**
HADS-Anxiety	0.465	1.832	0.069
EQ-5D-Index	-1.527	-0.268	0.789
EQ-5D-VAS	-0.262	-3.846	**<0.001**

HADS = Hospital Anxiety and Depression Scale; EQ-5D General Quality of Life Scale.

exam, it was found that exam anxiety was higher than in normal society. Data obtained during our research show compatibility with the literature.

Studying while constantly maintaining the same position during exam preparation can cause severe back pain problems. A study[16] conducted on 459 medical students found that the 12-month prevalence of back pain is higher than the community average of 59.5%. Our study evaluated the statistically significant highness in the Oswestry scores of the exam preparation group compared to the control group to comply with the literature.

Many studies examining the low quality of life in pain and psychiatric disorders are available in the literature[17-20]. In the exam preparation group of volunteers in our research group, EQ 5D general quality of life scale scores were evaluated as complying with the literature (Table III).

It has been reported[21] that similar complaints have arisen in office employees who require long-term work in a sitting position. The literature has reported that doing work or activity while maintaining the same position for a long time increases neck and back diseases. A doctor studying for an exam may also reveal neck and back pain complaints similar to office workers sitting for a long time and studying. Our research is in line with the general medical information on this subject.

The significant difference in the Oswestry disability scores related to low back pain shows us that back pain problems caused by maintaining a sitting position for a long time are compatible with the literature in the study group[21,22].

It was found that the height of the Oswestry score increased the risk of depression score by 0.584 times. It has been shown in many studies[23,24] that there are common pain symptoms during depression, and this is compatible with the literature.

A high EQ-5D VAS score indicates a high quality of life. Since the high Oswestry score will cause a decrease in the quality of life, it is expected that there will be a negative relationship between them. In the multi-variant logistic regression analysis in the study, a -0.268-fold relationship between scale scores met this expectation (Table III). Logically, considering that a high Oswestry score is considered a health problem, it is negatively expected to correlate with a high quality of life scale. The statistical result in the literature is in parallel with this situation.

One of the questions that should be asked when interpreting the research results is the effect of disorders that can cause psychosomatic symptoms on the increase in complaints of back pain with the position. After all, many studies[25,26] in the literature show that disorders can cause psychosomatic symptoms in various organs and systems, such as depression and anxiety. Considering that both pains can accompany psychiatric diseases as a result and that positional pain may increase depressive complaints, early recognition of the symptoms related to pain and psychiatric symptoms in the group preparing for the exam and taking steps to resolve the problem will prevent the problem from growing.

Limitations

The limitation of the study is that the sample group included in the study was not large enough to evaluate a large population. On the other hand, to ensure the homogeneity of the research, only the volunteers who practice their profession, that is actively medicine practice, were included in both groups. So that the anxiety level resulting from the practice of the profession does not affect the scale scores. This probably eliminated the disturbing situation.

Conclusions

In our study, the highness of the scale scores in the exam preparation group was statistically

high. This highness was more significant in the hospital anxiety depression scale scores. The fact that physicians have a difficult educational process is one of the situations that can cause them to experience exam anxiety throughout their lives. A physician who experiences this anxiety during her/his student life will inevitably experience the same difficulties during the preparation period for the exam that will shape the rest of her/his life. Considering that preparing for such a challenging exam requires long hours of work, it should be remembered that symptoms such as back pain may affect the quality of life. This idea supports the statistical difference in the EQ 5D quality of life scale from the applied scale scores. Complaints of anxiety, depression, and low back pain during the preparation period for the specialty examination in physicians should not be ignored. During the exams' periods, psychosocial support mechanisms should be activated, and active exercise activities should be recommended. For more detailed data, large-scale participatory studies are needed.

Conflict of Interest

The authors declare that they have no conflict of interest.

Acknowledgments

We thank the physicians who supported us as participants in our study and physicians who practice medicine in Turkey.

Informed Consent

Informed consent was obtained prior to every surgical procedure from all individual participants included in the study.

Ethics Approval

The research was started getting approval from the local Ethics Committee of Gazi Yaşargil Training and Research Hospital.

Authors' Contribution

Dr. Ozkan Yukselmis and Dr. Suleyman Dönmezdil carried out the literature survey and poll, analyzed the data and wrote the manuscript. Conveniently, by having only one author, there were no decisions to make regarding author order or corresponding authorship.

Funding

This research received no specific grant from any funding agency in the public, commercial, or non-profit sectors.

ORCID ID

Özkan Yükselmiş: 0000-0002-1996-7030
Süleyman Dönmezdil: 0000-0002-7171-1374

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