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# LEVELS OF DEPRESSION, ANXIETY AND QUALITY OF LIFE OF MEDICAL STUDENTS

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## SUMMARY

***Background:*** *Medical education is amongst the educational processes with the highest stress load. This study was conducted to determine levels of depression, anxiety and quality of life of medical students in a university hospital.*

***Subjects and methods:*** *Third year and sixth year medical students which accepted to be participate to the study and sign informed consent form are included in the study. Data was evaluated by descriptive statistics.*

***Results:*** *Totally 81 students of which 41 are third year, and 40 are sixth year students are included to the study. 79% of participants are women and 100% are unmarried. Accordingly, Beck Depression Inventory, ratio of those who have (any level of) depression are 58.5% in third year students and 55% in sixth year students. Ratio of those who have moderate to severe anxiety is 34.1% in third year students and 25% in sixth year students. Differences between them are not statistically significant. Regarding subscales of life quality; sixth year students have higher scores on general health perception then third year students. Medical students have lower scores in; difficulty in physical role, difficulty in emotional role, energy, mental health, social functioning and perception on general health when compared to the average scores of general public.*

***Conclusions:*** *In this study medical students are having a lower quality of life regarding most of the subscales when compared to normal population and both third year and sixth year students are found to be having high depression and anxiety levels. As medical training is a hard and long road to go, it is important to encourage medical students to get Psychiatric support when needed. This is important for them to maintain their mental health.*

***Key words:*** *students - medical - behavioral symptoms - depression - anxiety*

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## INTRODUCTION

Medical education is amongst the educational processes with the highest stress load. Amongst the factors challenging the medical students in psychiatric terms are the necessity to work intensively for long periods, the insufficient and poor quality of sleep, the difficulty in getting social support and taking time for themselves, being on a compelling and long path academically and financially, the inconsiderate lecturers and such factors as violence in health care settings, etc. (Rodrigues et al. 2002, Bayram et al. 2017, BMJ 2015).

Also, among the studies conducted all over the world, there are many that report high levels of depression and anxiety in medical students (Kumar et al. 2012, Güleç et al. 2005, Karaoğu &Şeker 2010, Puthran et al. 2016) when compared to general population.

The depression and anxiety in medical students may also lead to undesirable consequences such as subsequent decline in academic performance, substance use, alcohol use disorder, suicide, etc. (Tyssen et al. 2001, Midtgaard et al. 2008).

### Depression and Anxiety Disorders

The prevalence of depression and anxiety disorders is increasing globally. According to the 2017 report published by the World Health Organization, more than 300 million people in the world suffer from depression, which corresponds to 4.4% of the world's population then. In 2015, WHO ranked the depression as the "single largest contributor" globally (7.5%) to “years lived with disability” (WHO 2017).

Again, in 2015, the number of people with anxiety disorders worldwide was estimated at 264 million, which corresponds to 3.4% of the world's population then. According to the WHO's 2015 data, there were 3.26 million patients with depression (4.4% of the population) and 3 million patients with anxiety disorders (4% of the population) in Turkey (WHO 2017). Hence, both psychiatric disorders contribute greatly to unhealthy life years both in Turkey and the world in general and come to the forefront in this regard.

### Quality of Life

The definition proposed by the Centers for Disease Control (CDC) for quality of life embraces specific measurable concepts such as mental well-being, physical functioning and holistic health status, and those concepts are affected by many factors such as culture, values, beliefs, life events, etc.

The depression and anxiety are the states that negatively affect one's mental and physical health, impair one's productivity, and prevent one from establishing healthy relationships. Therefore, a healthy public in the future, somehow depends on the healthy state of medical students. Accordingly, identifying the levels of anxiety, depression and quality of life of medical students is of fundamental importance in this regard.

## SUBJECTS AND METHODS

The total number of participants included in this study is 81, including 41 third year students and 40 sixth year students in Baskent University Faculty of Medicine. Those who accepted to be interviewed were interviewed face to face.

***Study inclusion criteria:***

Being between the ages of 18 and 65;

Being a third year or sixth year student in the Faculty of Medicine and continuing the education;

Accepting, of his/her own free will, to participate in the study.

***Study exclusion criteria:***

Refusing to participate in the study;

Suffering from a severe medical condition.

***Scales used:***

Sociodemographic Questionnaire is composed of 23 items.

*Beck Depression Inventory,* was developed by Beck et al. in 1961 and consists of 21 items (Beck et al. 1961). The increase in total score shows how high the level or severity of the depression is. The cut-points suggested by Beck are as follows:

0-9 points > no or minimum depression;

10-16 points > mild depression;

17-29 points > moderate depression;

30-63 points > severe depression.

*SF-36 Quality of Life Scale,* was developed by Ware and Sherbourne in 1992, and consists of 36 items (Ware & Sherbourne 1992). The scale evaluates the quality of life, especially in individuals with physical disorders. For each subscale, a score of "100 points" indicates good health, whereas a score of "0 point" indicates poor health state.

*Beck Anxiety Inventory,* was developed by Beck et al. in 1988 is used to identify the incidence of anxiety symptoms (Beck et al. 1988) A high total score indicates a high level and severity of anxiety.

The research data were transferred to and analyzed by the statistical software IBM, SBSS version 22.0. Categorical variables were presented in numbers and percentages whereas continuous variables were pre sented in mean ± SD and median (min-max) values. In comparison of the scores from Beck Depression Inventory, Beck Anxiety Inventory and Short Form-36 Quality of life scale by groups, Mann-Whithney U Test was used to compare two groups where Kruskal Wallis was used to compare more than two groups. The correlation of scale scores with each other was evaluated using Spearman correlation test. In all analyzes, the level of statistical significance was adopted as "$p<0.05$".

Once the study was approved by the research ethics committee and the other necessary permits from the institution where this study would be conducted were obtained, the participants were called and informed about the study. The participants were given an appointment and were invited to the Psychiatry outpatient clinic on a certain day. Once the consents of the participants were received, they were administered the questionnaires and scales through one-on-one interview method. The study was performed in accordance with the World Health Organization Declaration of Helsinki ("World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects" 2013).

## RESULTS

Of the participating students, 74.5% of the third year students and 75% of the sixth year students were female, and all of the participating students were single (Table 1). Of the third year students who participated in the study, 24.4% stated that there was someone who received psychiatric drug treatment in their families, whereas this rate was 45% in sixth year students. The difference in-between was statistically significant ($p=0.03$). Rate of using a psychiatric medication in third year and sixth year students were 34.1% and 32.5% respectively (Table 2).

No statistically significant difference was found between the levels of anxiety and depression of the third year and sixth year students who participated in the study. When compared to the third year students, the sixth year students group got a statistically significantly higher score only in the "general health perception" among the quality of life subscales. There was no statistically significant difference between other quality of life subscales (Table 3).

**Table 1.** The gender and marital status distribution of the participating students

| Characteristics | Third year Students (n=51) | | Sixth year Students (n=51) | |
|---|---|---|---|---|
| | Number | % | Number | % |
| Gender | | | | |
| Male | 7 | 25.5 | 10 | 25 |
| Female | 34 | 74.5 | 30 | 75 |
| Marital Status | | | | |
| Married | 0 | 0.0 | 0 | 0 |
| Single | 41 | 100.0 | 40 | 100 |

**Table 2.** Distribution of participating students & their families by psychiatric drug use

| | Third year Students (n=51) | | Sixth year Students (n=51) | |
|---|---|---|---|---|
| | Number | % | Number | % |
| Is there anyone who receive psychiatric drug treatment in the family? | | | | |
| Yes | 10 | 24.4 | 18 | 45.0 |
| No | 31 | 75.6 | 22 | 55.0 |
| Does the participant himself/herself receive psychiatric drug treatment? | | | | |
| Yes | 14 | 34.1 | 13 | 32.5 |
| No | 27 | 65.9 | 27 | 67.5 |

**Table 3.** Distribution of third year and sixth year students by their total mean scores from the Beck Anxiety & Beck Depression Inventory and their mean scores from the SF-36 Subscale

| | Third year Students (n=41) Mean±SD | Sixth year Students (n=40) Mean±SD | p |
|---|---|---|---|
| Beck Anxiety Scores | 14.83±7.9 | 10.43±10.2 | 0.081 |
| Beck Depression Scores | 12.07±8.27 | 11.40±7.56 | 0.070 |
| Physical function | 89.87±14.59 | 90.37± 17.51 | 0.890 |
| Difficulty in physical role | 82.31±31.74 | 78.95±34.38 | 0.649 |
| Difficulty in emotional role | 50.0±45.29 | 45.82±43.15 | 0.674 |
| Energy-liveliness-vitality | 50.24±20.88 | 51.25±19.07 | 0.822 |
| Mental health | 65.56±17.27 | 68.90±11.99 | 0.316 |
| Social Functioning average | 71.64±24.53 | 72.5±20.05 | 0.864 |
| Pain | 83.41±19.61 | 80.0±20.52 | 0.446 |
| General health perception | 52.92±14.7 | 64.87±17.41 | *0.001* |

**Table 4.** The total Beck Depression & Beck Anxiety Inventory score distributions of third year (n=51) and sixth year (n=51) students

| | | Third year Students | | Sixth year Students | | p |
|---|---|---|---|---|---|---|
| | | Number | % | Number | % | |
| Total score from Beck Depression Inventory | 0 to 9 (no or minimum depression) | 17 | 41.5 | 18 | 45.0 | 0.811 |
| | 10 to 63 (depression) | 24 | 58.5 | 22 | 55.0 | 0.072 |
| Total score from Beck Anxiety Inventory | 0 to 15 (no or minimum anxiety) | 27 | 65.9 | 30 | 75.0 | 0.063 |
| | 8 to 63 (moderate to severe anxiety) | 14 | 34.1 | 10 | 25.0 | 0.056 |

**Table 5.** Comparison of the medical students' mean scores from quality of life subscales with those of the Turkish society

| Subscales of the SF-36 Quality of Life Scale | Third year and Sixth year Students (n=81) Mean±SD | Standards of Turkish General Population Mean±SD | p |
|---|---|---|---|
| Physical function | 90.12±16.00 | 86.6±25.2 | 0.051 |
| Difficulty in physical role | 80.65±32.91 | 89.5±29.6 | *0.018* |
| Difficulty in emotional role | 47.91±44.00 | 94.7±20.9 | *<0.001* |
| Energy-liveliness | 50.74±19.89 | 67.0±13.8 | *<0.001* |
| Mental health | 67.20±14.90 | 73.5±11.6 | *<0.001* |
| Social Functioning | 72.06±22.29 | 94.8±14.2 | *<0.001* |
| Pain | 81.72±20.02 | 86.1±20.6 | 0.053 |
| General health perception | 58.82±17.08 | 73.9±17.5 | *<0.001* |

Of the third year students, 58.5% were found to have depression, whereas this rate was 55% in sixth year students. While the rate of those who suffer from moderate to severe anxiety in third year students was 34.1%, this rate was 25% in the sixth year students. No statistically significant difference was found between the third and sixth year students' depression and anxiety levels (Table 4).

When compared to the Turkish general population, the medical students had statistically significantly lower scores in the subscales of difficulty in physical role, difficulty in emotional role, energy-liveliness, mental health, social functioning and general health perception. However, no significant difference was found between the two groups in regarding physical function and pain (Demiral et al. 2004) (Table 4).

## DISCUSSION

Even though this subject should be verified by more in-depth studies, this study reached similar conclusions with many studies which found higher levels of depression and anxiety among medical students when compared to the public (Mehanna & Richa 2004, Goebert et al. 2009, Khan et al. 2006). Regardless of the changes that occur over time in the medical education, the depression and anxiety seem to be one of the major problems of medical students.

The causes of the high depression & anxiety and low quality of life in medical students can be explained by such factors as the need to allocate most of their time for studying during their academical life, having no time for leisure activities, hobbies or sports, having no time for private life and being unable to receive adequate social support, the high expectations of lecturers and families, etc. (Brambahtt et al. 2013). The fear of stigmatization that always surrounds the psychiatric disorders may also constitute an important obstacle that medical students face while seeking for psychiatric help (Menon et al. 2015).

When we take a closer look at the depression rates in medical students over the world; the rate of depression in the medical students in "eastern" countries like Lebanon, Iran, India, Pakistan, Egypt often tend to be higher (Mehanna & Richa 2004, Khan et al. 2006, Brambahtt et al. 2013, Menon et al. 2015, Aghakhani et al. 2011, El-Gendawy et al. 2005). Although this is not a fixed rule, whereas the rate of depression in those in the "western" countries like USA, Sweden, Germany, Portugal are lower (Seweryn et al. 2015, Goebert et al. 2009, Dahlin et al. 2007). The depression rate that that we found in our study is similar to the higher rates of depression in medical students in the "eastern" countries.

The facts that individuals in Western countries are more autonomous in many areas of their lives and in their choices of profession, and that the families have more control over the choice of profession in our country as well as in various eastern countries and cultures may be one of the causes of higher rates of anxiety and depression in medical students (Sarkar et al. 2017).

Another cause may be the higher marks required for admission to the "less punishing" residencies, for which we have observed an increase in the demand in the recent years. Most of the medical students who have already set off along a challenging path may be targeting highly requested residencies in order not to get burnt out in their future life. And this may be an important reason why almost the whole of medical students' student life is academic success-oriented.

Likewise, while students are admitted to medical schools through a single and central examination in our country and in many eastern countries, there are certain procedural differences in Western countries, such as submission of a "personal declaration" which explains in detail why the individual intends to study in the medical school, face-to-face interviews with medical schools' officials, consideration of extracurricular activities (e.g. history of participating in volunteering activities) depending on the candidate's preferred department, etc. As emphasized by certain authors, this difference may be explained by cultural or religious differences among the countries (Ediz et al. 2017), or by the level & quantity of the country-specific material and nonmaterial challenges awaiting the medical students as future medical doctors.

Among the researches previously carried out in Turkey; the depression rate that we found in our study is similar to the medical students' depression incidence of 41% found by Öncu et al. (2013), the university students' depression incidence of 49% found by Özdemir et al. (2007) and the medical students' depression incidence of 39% found by Ediz et al. (2017). Also, the total mean BDI score of medical students in this study is similar to the total score found in a larger-scale research conducted previously by Bostanci et al. on the university students in our country (Bostancı et al. 2005).

In the majority of studies investigating the prevalence of depression among medical students in various countries around the world, it was found that either the prevalence of depression did not differ between the sexes (Arslan et al. 2009, Zong et al. 2010, Kaya et al. 2007) or it was more common in female medical students than in male medical students (Schwenk et al. 2010, Dahlin et al. 2005). Our study found no statistically significant difference between third year and sixth year male and female students in terms of the prevalence of depression.

Our study's limitations include the study's cross-sectional nature and its inadequacy in representing the whole population. Therefore, it is hard to clarify the direction of effects and to reach a cause and effect relation depending on the study findings.

## CONCLUSIONS

Creating spaces that allow one to have enough time for himself/herself in "curriculum of medical education" may perhaps be the first step in protecting the mental health of medical students. There are various studies showing that senior student or peer mentoring programs may be helpful in this regard.

Psychiatric placement and education has also positive effects on medical students regarding to breaking the barriers of stigmatization and having a more positive view about psychiatry, hence facilitating individuals to seek psychiatric help when they have mental health complaints and normalizing this, would perhaps be the most important step in this respect (Flajsman et al. 2017, Kuzman et al. 2013).

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