

## Investigating the Anxiety Level in Iranian Medical Residents in 2010-2011

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### ABSTRACT

**Background:** University entrance is accompanied by major changes in social relationship, rules, and expectations that lead to psychological disorders in susceptible students. The goal of this research is to study the anxiety rate in Iranian medical residents in 2010-2011.

**Methods:** This study is a cross-sectional, descriptive study. It contains 370 medical residents from the 1<sup>st</sup> year to the 4<sup>th</sup> year of medical universities in Isfahan, Gilan, Zahedan, Sanandaj, and Kashan. The stratified sampling method proportionate to volume of participants is used in this study. The information is collected based on researchers' questioners and Zung self-rating anxiety scale and analyzed with the use of spss software version 16, addition to descriptive and analytic tests (Pearson, one-way analysis of variance, *t*-test). Meaningful level is regarded as  $P \leq 0.05$ .

**Results:** The study showed that more than 92% of residents participated in the study did not demonstrate anxiety. Among 370 subjects 5.5% presented with mild symptoms of anxiety and no one had symptom of severe anxiety. A meaningful statistical relationship was observed between anxiety and sex, major of study and the city of study ( $P < 0.05$ ). The results showed a positive meaningful relationship between the number of visits and the score of anxiety. On average the number of night floats were two in 1 week and the number of patient visit was 19 in the past 24 h. A meaningful statistical relationship between anxiety score and number of patient visits was observed.

**Conclusions:** The anxiety rate in medical students in this study compared to the findings of previous studies revealed very low anxiety in medical residents. The low rate of anxiety could be attributed to the sense of job security and the hope for a better future among residents. The high percentage of anxiolytics abuse and absence of anxiety producing factors among residents in addition to inaccurate response to the questionnaire may all contribute to the low rate of anxiety in this study.

**Keywords:** Anxiety, medical residents, depression

## INTRODUCTION

According to the previous studies done in regard to the psychological health of the residents, anxiety is one of the most prevalent psychological problems among students.<sup>[1]</sup> Tomas, a researcher at the famous Johns Hopkins University, designed and performed a research 40 years ago. It was called "what is happening to the medical residents?" Tomas found out that the role of psychological and emotional issues is significant in educational as well as job failure and consequently suicide among residents.<sup>[2]</sup> In fact, being a physician is one of the most stressful professions out there. However, physicians are sometimes careless with their own health. It is sarcastically said that physicians are sometimes sicker than their own patients. Physicians sometimes neglect their own medical symptoms. This denial is more severe in psychiatric disorders. The danger of drug abuse, suicide, anxiety, and depression are distinctively higher in physicians.<sup>[3,4]</sup>

The low volume of studies regarding negligence of physicians toward their health is an indication that physicians indeed do not pay much attention to their own well being. There is not much domestic or international studies performed in order to quantify anxiety among residents specifically. In addition, limited studies performed either in terms of research or thesis is not widely available or not easily accessible over the internet.

This cross-sectional study measures the level of anxiety among residents of all specialty groups in 2010-2011. The goal is to have a better understanding of the residents' psychological and emotional situations, in order to effectively reduce the level of anxiety and simultaneously improve the educational performance in this group.

## METHODS

This cross-sectional and descriptive study at the Isfahan University of Medical Sciences is done in 2010-2011. The population in the study consists of the 1<sup>st</sup> to the 4<sup>th</sup> year medical residents from five different universities throughout the country. They were chosen with the category sampling method and all 3 ranks of universities participated in the study. The tools used in this study composed of a questionnaire and divided into two sections: Demographic information/Zung anxiety self-rating

anxiety scale. The Zung anxiety scale is used as a prevalent method to evaluate anxiety disorders among different nationalities. According to the findings, Tozandehjony, the scale of Zung anxiety self-rating anxiety scale is a suitable tool for assessing anxiety. It contains adequate diagnostic criteria for an anxiety disorder. This test has been used to evaluate anxiety in different groups. Ojha *et al.* used it in medical students.<sup>[5]</sup>

William Zung (1970)<sup>[5]</sup> created this test which is composed of 20 multiple choice questions with four options. The worst psychological condition is defined to have the highest score of 80 and the best condition is interpreted as the lowest score of 20.

The Zung scale is categorized as following ranges:

- 20-44: Normal range
- 45-59: Mild to moderate anxiety levels
- 60-74: Marked to severe anxiety levels
- 75-80: Extreme anxiety levels.

A representative from each university was determined and each of them received adequate training regarding asking the questionnaires from the subjects. Then questionnaires were forwarded to each of the representatives at the universities. The extracted information was analyzed by the spss software version 16. *t*-Test, one-way analysis of variance, and Pearson were used to evaluate the relationship between anxiety and demographic variables.

## RESULTS

Three hundred and seventy residents out of the total of 400 filled out the distributed questionnaires (response rate: 92.3%). One hundred fifty-seven of the participants were males (42.4%), and 213 out of the 370 of them were females (57.6%). The age variation in the study ranged from 25 to 47, which was distributed as following: 163 subjects (44.1%) were younger than 30, 191 (51.6%) between the age of 30 and 40 and 28 participants were older than 40 years old. The residents' specialty is shown in Table 1. The results collected in the questionnaires demonstrated that the residents' response to the number of night floats differed from 0 to 14 during the last week of study. Furthermore, the median of two night floats were calculated for each resident. The residents' replay

to the number of patients visited during this period differed from 0 to 70 patients, and a median of 19 visit for each resident were obtained.

The result of Zung anxiety scale analysis from residents is shown in Table 2. The relationship between the personal and educational factors with anxiety is shown as follows.

#### Personal factors

- The average anxiety score in females is greater than males. Based on variance analysis the difference in the average is meaningful ( $P \leq 0.05$ ).
- There is an increase in the average of anxiety score as the residents become older; however, this increase is not meaningful.
- The average of anxiety score of residents who live in dormitory is higher than anxiety score of residents who live in personal houses, but the difference is not meaningful.

#### Educational factors

- The average of anxiety score is inversely related to the educational level of the residents. In fact, the higher the educational level of the resident is the lower the anxiety score becomes. However, the result is not statistically meaningful.
- No relation between any of the 19 specialty fields and the average of anxiety score observed. The specialties categorized into internal, surgical and paraclinical groups. However, the average of residents anxiety score in these three groups did not show any meaningful difference.

**Table 1:** The residents' specialty

Specialty	Frequency	Percent
Internal groups	184	49.7
Surgical groups	151	40.8
Paraclinical groups	35	9.5
Total	370	100.0

**Table 2:** The result of Zung anxiety scale analysis from residents

Anxiety level	Frequency	Percent
Normal range	341	92.2
Mild to moderate anxiety level	20	5.4
Marked to severe anxiety level	2	0.05
Extreme anxiety level	0	0
Total	370	100.0

- There is an inverse relationship between the average of anxiety score in residents and the number of attempts at university entrance exam. In fact as the average of the attempts increases the anxiety score, but the difference is not meaningful.

#### The relationship of disturbing variables with anxiety

- There has been a linear relationship between the increase in the average of anxiety score in the residents and the average of night floats during the last week of study, but the result is not meaningful.
- The average anxiety score in the residents has a positive meaningful relation with the average of the number of visit in the past 24 h ( $P = 0.025$ ).

## DISCUSSION

According to the findings in this research more than 92% of the residents did not present with any symptoms of anxiety. In other words no psychological or mood disorders were observed in more than 92% of the participants in this study. The finding shows that no specific research that studies the anxiety among residents is conducted and the comparison of the results between this study and previous studies is not feasible. In various researches studying the psychological health of medical students different results were obtained. In India, Inam *et al.* showed that the prevalence of depression and anxiety among medical students is determined to be 60%.<sup>[7]</sup> Ahmad *et al.* at Medical College of Dubai, found out that 28.7% of the medical residents presented with anxiety.<sup>[8]</sup> Zolfaghari's study shows that in total 21.17% of participants in the study suffered from some degree of anxiety. He also claimed that 11.69% of them presented with mild form of anxiety, 5.23% had medium level of anxiety and 7% of the participants presented with severe form of anxiety. From the level of anxiety in medical students have been different reports.<sup>[9-11]</sup> The low rate of anxiety among medical residents in the study compared to the report of high prevalence of anxiety among medical students might be related to the fact that the medical students are among the elite students throughout the country. Although, it is important to note that there has been a significant increase in the number of applicants taking the residency

examination during the recent years. As a result, according to the collected data, only less than 10% of them are able to continue their education in desired specialties.<sup>[10]</sup> Some researchers also believe that the increase in anxiety and depression observed in some of the medical science fields is due to uncertainty in the future job security from one hand and sense of hopelessness from inability to pass the residency examination on the other hand.<sup>[12,13]</sup> The difference in the subjects and tools of study might have contributed to the variation in the outcome.

The researchers in the present study determined the cause of low anxiety among residents as the following:

- In the present study, as one of the disturbing variables, the question “do you use any anxiolytics?” was asked. However, a significant number of participants, unfortunately, chose not to answer this question. The anxiolytic use is considered to be an important variable in this study and because of loss of residents to follow up (questionnaires were anonymous), some of the residents were randomly asked if they use any anxiolytics. The result showed that 44% of them use these medications, which significantly decreases the anxiety. Palizan *et al.* studies showed that the use of measurable medications in the blood (including psychiatric medications) in general physicians and specialists compared to nonmedical students at the universities is significantly higher. They attribute their findings to “medical students’ frequent encounter with medications, decrease in fear threshold and ease of medication use, stressful nature of the job, better knowledge of disease and easier accessibility to medication among physicians.”<sup>[14]</sup> Hosseini *et al.* in their studies revealed that the abuse of psychiatric medications among medical students is statistically higher than other fields of studies at the universities. The high prevalence of medication abuse is also due to the longer duration of medical studies and enhanced knowledge of physicians of various medications including psychiatric medications.<sup>[15]</sup>
- Lack of principal factors that lead to anxiety among residents such as a big gap between ego and self-consciousness, unemployment, imaginary or unconscious negative thinking,

interpersonal relationship difficulties, weakness and physical illnesses.<sup>[5]</sup>

- There is a probability that the residents have not answered the questions accurately.
- In this study to determine the effect of disturbing variables on anxiety a questionnaire was prepared. The residents were asked to provide information regarding the number of night floats during the last week, patients’ visits during the past 24 h, and encountered difficulties throughout the last month of study. There is a meaningful relationship between the average anxiety score in residents and the number of patient visit during the past 24 h ( $P = 0.025$ ).

In the recent years, industrialized nations devoted a special attention to number of patients’ visits, night floats, fatigue, and sleep deprivation during residency. As a result of this important changes came into effect in their residency training programs. It seems it is important to adopt some of these changes into our residency teaching programs.<sup>[16]</sup> The findings in this study show a correlation between anxiety and with personal and educational factors. The average anxiety scores revealed meaningful higher anxiety prevalence among females compared to males. The result is consistent with similar studies in the past.<sup>[1,6,17,18]</sup>

Maleky demonstrated as the academic educational level of medical residents increases the level of anxiety decreases among them. The result of Maleky’s study is consistent with the results obtained in this study.<sup>[18]</sup> In this research project there is no relation between anxiety level and the specialty field. However, in this study the relationship was analyzed in 20 specialty groups, and then three groups of internal medicine, surgery and para clinicals were analyzed. However, no meaningful difference was observed between the methods of study. In the present study the number of residents from different specialties is not evenly distributed. As a result solid opinion regarding the variation in average of anxiety score cannot be obtained and more research with widely distributed specialty groups is needed.

## CONCLUSIONS

This study showed that greater than 92% of residents under the study did not have anxiety

and were placed in normal group. In other words no mood disorders were observed in significant number of the medical residents. Medical profession is a sensitive practice, therefore, factors that might contribute to stress and anxiety in physicians should be evaluated carefully. This study shows that there are varieties of factors that increase the anxiety score in residents. The reliable statistical methods ( $P < 0.05$ ) used to evaluate the effect of these factors on the residents.

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