

# The Prevalence of Depression and its Associated Factors among Resident Doctors Working in a Training Hospital in Istanbul

Figen DEMİR, Pınar AY, Melek ERBAŞ, Mine ÖZDİL, Esra YAŞAR

## Abstract

**Objectives:** The objectives of this study were to determine the prevalence of depression and to evaluate the association of sociodemographic factors, as well as aspects of the work environment, with depression among resident doctors working in a training hospital in Istanbul.

**Methods:** This cross-sectional study was conducted in a teaching hospital which has 332 residents in Istanbul. The required sample size was determined to be 207. The study population was stratified proportionally according to hospital departments and a random sampling method was used. Data were collected with a questionnaire consisting of sociodemographic variables, the Beck Depression Inventory (BDI), and the Minnesota Job Satisfaction Questionnaire (MJSQ). The associations were studied through univariate and multivariate analyses.

**Findings:** The study included 156 residents who agreed to participate (response rate: 75.3%). The prevalence rate of probable depression was 16.0% (95% CI: 10.7-22.7). In the multivariate analysis, the rate of depression was significantly higher among women compared to men (OR: 5.16, 95% CI: 1.51-17.68,  $p < 0.01$ ). Age, marital status, hospital department, duration of residency, number of night shifts, and duration of exposure to daylight in the work environment were not associated with depression. Among the participants, 90.4% did not want to get a feedback concerning their BDI scores. A negative correlation was determined between depression and job satisfaction scores.

**Conclusion:** Among resident doctors, women in particular should be evaluated as an important at-risk group for depression. Prevention and control programs that also include components for reducing stigma should be implemented.

**Key Words:** Depression, job satisfaction, residents, doctors

## INTRODUCTION

Studies conducted in different countries demonstrated that depression is an important health problem among physicians and medical faculty students (Firth-Cozens, 2001; Caplan, 1994; Firth-Cozens, 1987; Thommasen, 2001; Hsu and Marshall, 1987; Khuwaja et al., 2004; Akvardar et al., 2004; Givens and Tjia, 2002). Depression among physicians is especially striking with a prevalence that rises up to 30% in the first year following graduation from the medical school (Firth-Cozens, 2001; Reuben, 1985). In a study conducted in Ontario, it was determined that the high rate of depression in the first year of specialty training decreased in the later years of the training (Hsu and Marshall, 1987). The reported prevalence rates being higher in comparison to commu-

nity-based studies indicate that physicians constitute a professional group at high-risk for depression (Hsu and Marshall, 1987; Graske, 2003).

The high rate of psychosocial problems and depression among doctors is related to numerous factors. In the accumulation of such problems, factors related to educational and professional life stand out, as do personal characteristics (Firth-Cozens, 2001; Graske, 2003; Newbury-Birch and Kamali, 2001; Center et al., 2003). A variety of reasons, which include excessive working hours, sleep deprivation, insufficient social support, taking the responsibility of patients, death of a patient, and negative professional relationships result in problems as excess alcohol consumption or depression among doctors (Firth-Cozens 2001, Graske 2003). In addition, the

general assumption among doctors and medical faculty students that they do not need help and can manage their problems on their own results in decreased utilization of health care services when they are needed (Graske, 2003; Givens and Tjia, 2002; Center et al., 2003). It was determined that only a very small proportion of doctors with depression receives medical treatment and instead use self-prescribed medications (Firth-Cozens, 2001).

However due to the nature of their professions, the mental health of doctors is not only of concern to them, but also is of concern to the greater society. Depression in doctors negatively affects the quality of the service they provide and causes problems in their work environment. (Firth-Cozens, 2001) In addition, psychiatric problems have negative affects on learning and academic success in a profession where postgraduate education is highly important (Tyssen and Vaglum, 2002).

The small number of studies conducted in Turkey concerning the burden of depression in doctors and their methods of coping have indicated that depression among doctors is a serious health problem (Bugdayci et al., 2004; Kocabaşoğlu et al., 2001; Akvardar et al., 2004). The objective of the present study was to determine the prevalence of depression and to evaluate the association of sociodemographic factors, as well as aspects of the work environment, with depression among resident doctors working in a training hospital in Istanbul. Resident doctors were defined as the study population because residency is a high-risk period for developing psychiatric problems due to work-related stress. This study also evaluated the relationship between depression and job satisfaction.

### **Method and Materials**

This cross-sectional study was carried out in a training hospital with 332 residents in Istanbul in December 2004. As the probable prevalence of depression was accepted as 10% with a margin of error of 0.025, it was calculated that a sample size of 207 would be necessary for a 95% confidence interval.

Data were collected with a questionnaire, which included three parts. The first section of the questionnaire included sociodemographic characteristics and basic characteristics of the work environment, such as the department, existence of night shifts, the duration of the residency and the amount of daylight in the workplace. Other sections included the Beck Depression Inventory (BDI) and Minnesota Job Satisfaction Questionnaires (MJSQ).

BDI is a depression-screening test, which is composed of 21 questions that are scored between 0 and 3. The reliability and validity of the Turkish version of BDI had been established. The highest possible score on BDI is 63 and the lowest possible score is 0. Patients scoring  $\geq 17$  points are classified as probable depression. MJSQ is a questionnaire that was developed in order to determine the level of job satisfaction; it includes 20 questions and it is evaluated on a 5-point scale by calculating the average score. Each question determines the satisfaction level between the range of 1 and 5. Scores that are close to 1 indicate that the level of job satisfaction is low and scores that are close to 5 represent a high level of job satisfaction.

The aim of the study was explained to the participants and their informed consents were requested. The participants were informed that their BDI scores would be returned to them in a sealed envelope and were asked whether they required feedback after the study. Each participant was assigned a code number in order to receive feedback after the completion of the study and they were told that only the researchers would keep these codes. When the study was completed, feedback regarding the depression scores was returned in a sealed envelope to the participants who had requested it.

Data were analyzed using the SPSS 12.0 program. Confidence intervals of the depression prevalence were calculated on the basis of binomial distribution. Chi-square and Fisher's exact tests were used in the univariate analysis. Logistic regression was used with the enter method. The relationship between depression and job satisfaction was evaluated with Spearman's correlation. Odds ratio (OR) was used as the risk estimate and  $p < 0.05$  was accepted as the level of significance.

### **FINDINGS**

The study included 156 residents (participation rate 75%) with a mean age of 28.2 years (SD: 3.2 years) and the male-female ratio was 1.5. The sociodemographic characteristics of the participants are presented on Table 1.

Participants' BDI scores ranged from 0-53. The mean BDI score was 9.56 (SD: 8.8) and the median (25. and 75. percentile) was 8 (3-11). Patients with BDI scores  $\geq 17$  were classified as having probable depression. According to this classification, the prevalence of probable depression among the residents was 16.0% (95%CI: 10.7-22.7). The prevalence of depression among the first year residents was higher (22.2%) compared to the older

**Table I.** Sociodemographic and Work-Life Characteristics of the Participants.

Characteristics	n =156	(%)
Age		
29 and below	122	(78.2)
30 and above	34	(21.8)
Sex		
Men	63	(40.4)
Women	93	(59.6)
Marital Status		
Married	53	(34.0)
Single	101	(64.7)
Divorced	2	(1.3)
Presence of children		
Yes	137	(87.8)
No	19	(12.2)
Department		
Basic Sciences	24	(15.4)
Internal Sciences	84	(53.8)
Surgical Sciences	48	(30.8)
Duration of the residency		
0-12 months	54	(34.6)
> 12 months	102	(76.3)
Working environment		
Mostly sunless	102	(65.4)
Sunny and sunless periods are equal	39	(25.0)
Mostly sunny	15	(9.6)
Night shifts		
Yes	24	(15.4)
No	132	(84.6)

residents (12.7%), but the difference was not statistically significant ( $p > 0.05$ ). When the relationships between depression, and sociodemographic and job-related variables were considered, the only significant variable was gender (Table II). In the multivariate analyses, when male gender was taken as the reference category, the OR for women was 5.16 (95% CI: 1.51-17.68,  $p < 0.01$ ).

Of the 156 participants, 90.4% did not request to get a feedback concerning their BDI scores.

The mean job satisfaction score was 3.13 (SD: 0.56) and the median was 3.15 (minimum: 1.0; maximum: 4.4).

A negative linear correlation between depression and job satisfaction scores was determined ( $r = -0.36$ ,  $p < 0.001$ ). This correlation was separately evaluated in the first year residents and older residents. It was found

that the correlation of job satisfaction and depression was stronger among the first year residents ( $r = -0.50$ ,  $p < 0.001$ ) when compared to their elder peers ( $r = -0.21$ ,  $p = 0.03$ ) (Figures I and II).

In the later analyses, the relationship between each item of the MJSQ were separately evaluated with the BDI for both the first year residents and the residents who were working for a longer time. The following two items of the MJSQ “gives me the freedom to apply my own decisions” and “gives me the opportunity to apply my own methods” had the highest correlation scores with the BDI ( $r = -0.65$ ,  $p < 0.001$  and  $r = -0.45$ ,  $p = 0.001$ ). A third MJSQ item that was found to have a significant correlation with the BDI among the first year residents was “the opportunity to work alone”.

Among the older residents, the two MJSQ items which had the highest correlations with the BDI were “the chance to be a respectable person in the society” ( $r = -0.28$ ,  $p = 0.004$ ) and “the feeling of success” ( $r = -0.25$ ,  $p = 0.01$ ).

## DISCUSSION

In this study, the prevalence of probable depression among residents was determined as 16.0%. This prevalence rate is relatively low when compared with other prevalence studies conducted among doctors (Firth-Cozens, 2001; Caplan, 1994; Firth-Cozens, 1987; Thommasen, 2001; Reuben, 1985); however, it is difficult to make a comparison among studies as each study included different proportions of at-risk groups (according to working year, gender, and specialty) and used different depression screening tests. Our study is similar to a study conducted in Mersin, Turkey which used the same screening instrument. In the mentioned study by Buğdaycı et. al (Buğdaycı, 2004), the prevalence of depression was determined as 10.3%. One of the reasons Buğdaycı et al determined a lower prevalence compared to our study could be the predominance of male subjects in their study group (75%).

Although the prevalence rate in our study was lower than in most West European and North American studies, our finding of probable depression in approximately one in six residents is significant. Depression could contribute to diminishing a resident’s quality of work during his/her specialty training when stress and workload are intense and could also complicate acquiring new knowledge and skills.

Research conducted among doctors indicate that female gender and being in the first year of residency

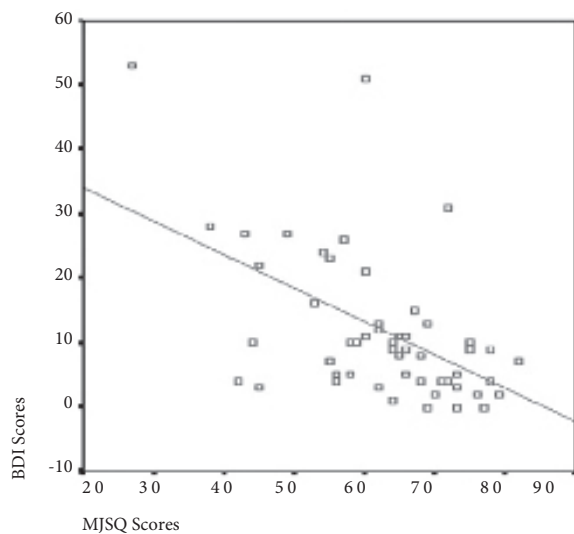
**Table II.** The Relationship Between Possible Depression, and Sociodemographic and Work-Life Characteristics of the Participants: Results of Univariate and Multivariate Analyses.

	%	Univariate analysis		Multivariate analysis	
		OR	95% CI	OR	95% CI
<b>Age</b>					
29 and below	15.6	0.86	0.31-2.38	0.89	0.24-3.37
30 and above	17.6	1.00		1.00	
<b>Sex</b>					
Men	22.6	4.3*	1.4-13.2	5.16*	1.51-17.68
Women	6.3	1.00		1.00	
<b>Marital Status</b>					
Married	15.5			0.67	0.19-2.36
Single	17.0	1.00		1.00	
<b>Children</b>					
Yes	21.0	1.47	0.44-4.87	1.27	0.23-7.03
No	15.3	1.00		1.00	
<b>Duration of the residency</b>					
0-12 months	22.2	1.87	0.21-1.22	1.78	0.56-5.50
> 12 months	12.7	1.00		1.00	
<b>Department</b>					
Basic Sciences	25.0	2.33	0.66-8.22	1.59	0.26-9.57
Internal Sciences	15.5	1.28	0.45-3.63	1.06	0.31-3.67
Surgical Sciences	12.5	1.00		1.00	
<b>Working environment</b>					
Mostly sunless	19.6	0.98	0.25-3.79	1.59	0.33-7.68
Sunny and sunless periods are equal	5.1	0.21	0.03-3.79	0.27	0.04-2.12
Mostly sunny	20.0	1.00		1.00	
<b>Number of monthly duties</b>					
11 and above	25.0	1.00	0.25-3.94	0.99	0.15-6.74
6-10	14.3	0.50	0.16-1.60	0.93	0.21-4.19
1-5	10.2	0.34	0.09-1.26	0.32	0.67-1.61
None	25.0	1.00		1.00	

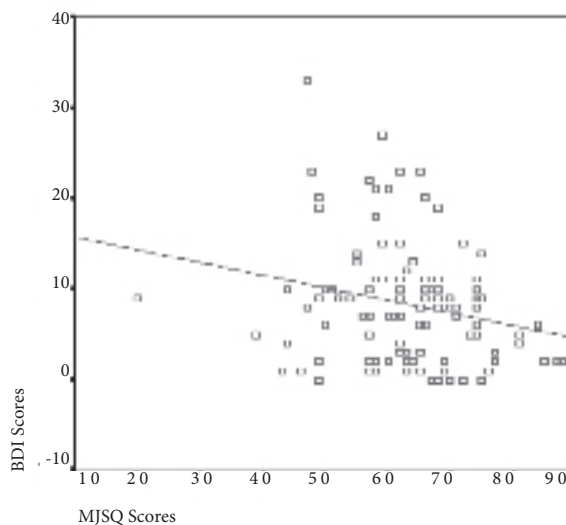
\*p<0.01

are two important factors that increase the risk of depression (Hsu and Marshall, 1987; Khuwaja et al., 200; Reuben, 1985; Newbury-Birch and Kamali, 2001). In a study conducted in England between 1979 and 1995, it was shown that the risk of suicide was two times higher among female doctors when compared to women in the general population (Hawton et al., 2001). The prevalence of probable depression was also determined to be higher among women than in men in our study. There

are numerous reasons for the higher rates of depression in women. At this point, personality characteristics are stressed. Women being more sensitive to emotional demands of the patients and being more empathetic increases their depression risk (Theorell, 2000; Firth-Cozens, 2001). In addition, a number of factors, such as lack of role models, roles attributed to gender in society, the necessity of women to handle both a professional and domestic role, and voluntary or involuntary marginali-



**Figure I.** The Correlation of BDI and MJSQ Scores.



**Figure II.** The Correlation of BDI and Among First Year Residents ( $r=-0.50$ ,  $p<0.001$ ) MJSQ Among Residents Who are Working More Than a Year ( $r=-0.21$ ,  $p:0.03$ ).

zation by male colleagues also places women at an increased risk for psychiatric disorders (Robinson, 2003; Theorell, 2000).

Although the depression rate among first year residences was higher compared to other residents, the difference was not significant. This non-significant finding might be due to the small sample size.

Another striking finding of this study was that doctors did not request feedback on their depression scores. We did not require doctors to write their names on the questionnaire; however, in order to give feedback after the study, each participant was assigned a code number and notified that these codes would be kept in confidence by the researchers. Although they had been informed that feedback would given in a sealed envelope, it is surprising that only 10% of the doctors requested to learn their BDI scores. This finding might be related to the high level of stigmatization of depression among doctors. There are other studies indicating high levels of stigmatization of psychiatric problems among doctors and that generally, doctors do not think they need mental health services and, therefore, do not present to mental health services (Firth-Cozens, 2001; Ay et al., 2005; Givens and Tjia, 2002). This situation decreases the probability of doctors getting mental health services , which impedes or delays the treatment of depression.

In this study a negative correlation between depression and job satisfaction scores was determined. Since this is not a longitudinal study the relationship between BDI scores and MJSQ scores is not sufficient to point

out a cause-and-effect relationship. However, as this relationship was much stronger among the first year residents, it suggests that expectations and satisfaction related with work have greater effects on mental health during the first year of residency. The correlation of the BDI with the two items on job satisfaction scale, “gives me the freedom to apply my own decisions” and “gives me the opportunity to apply my own methods” in the first year residents is higher compared to the other items. These two items of the MJSQ, in fact, suggest that first year residents experience problems in decision making and getting into action during their clinical practice. Although our study was cross sectional, these two conditions seem to be among the causes of depression, rather than results of depression. The relationship between work satisfaction and depression being weaker in later years may be evaluated as a partial desensitization. In addition, in another study conducted with 309 doctors in Israel it was reported that training activities that aim to increase personal knowledge and skills decrease stress and burn out levels. (Kushnir et al., 2000). This supports our finding that the relationship between depression and job satisfaction is stronger among first year residences in comparison to older residents.

In a study conducted in Istanbul, job satisfaction scores of residents were found to be lower than specialist doctors (Kocabaşoğlu et al., 2001). Researchers highlight a variety of factors that may effect the job satisfaction of residents, such as organizational structure, functional dependency, communication problems, negative financial

conditions, workload, and uncertain future of their careers. (Kocabaşoğlu et al., 2001).

The limited sample size of our study might have resulted in a failure to demonstrate the relationship between certain variables and depression. One of these variables was previously mentioned, the duration of the residency. Again, the relationship between depression and number of duties, or workload, was non-significant.

In this study, variables that might be related to depression, such as physical activity, duration of sleep, functional dependency, personal efficacy, existence of social support, conflict between career life and private life, fear of making a mistake, workplace phobia (intimidation), and the level of desire to become a doctor were not analyzed. Again, personality characteristics that may be predictive of depression were not examined. It is known that neuroticism, in particular, may predispose doctors to depression, stress, and anxiety (Newbury-Birch and Kamali, 2001).

For the benefit of the mental health of doctors, attitudes that favor the extreme working conditions and self-sacrifice that are predominant in the current medical

education must be changed (Myers, 2003). The importance of approval and supervision in professional life is stressed, and it is important to develop support mechanisms and risk management, increase the personal and psychological skills of doctors, and organizations should take the necessary precautions to improve the mental health of their doctors (Myers, 2003). Studies on lowering stress levels through cognitive behavioral techniques are promising (Gardiner et al., 2004).

## CONCLUSION

In particular, female residents should be evaluated as a high-risk group for depression. Because of the nature of their profession, depression in doctors is also related to the patients they diagnose and treat. The relationship between depression and job satisfaction, especially in the first year of residency signals a necessity for preventive and control policies in work-life. In this regard, an opportunity to share problems should be provided, and programs regarding help-seeking behavior should be developed. Prevention strategies should also include components for decreasing behaviors and attitudes related to the stigmatization of depression.

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