Depression among medical students in Medical University-Sofia

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Abstract

Aim: To assess the prevalence of depression among medical students in Bulgaria. Gender and other associated factors were taken into account.
Methods: A cross-sectional study was carried out in 2013 at Medical University-Sofia. A specially designed questionnaire was administered. The Beck Depression Inventory was used to study depression. The study was carried out at the Department of Social Medicine, Faculty of Public Health-Sofia. One hundred and fifty medical students in the second course and 128 students in the sixth course took part in the study. Descriptive analysis was performed. Relation between variables was assessed with chi-square test with a significance level $P \leq 0.05$.
Results: Symptoms of depression were found in 54.7% of all medical students (mild depression in 41.7%, moderate in 11.5%, severe in 1.4%). There was no significant difference in depression rates for second and sixth course students (P=0.1613) and for males and females (P=0.85). The analysis showed that possible risk factors for developing depressive symptoms are not having a parent physician and the lack of an intimate partner.
Conclusion: There was a high prevalence of depressive symptoms among medical students, with no significant difference by sex and course of education. It is important to identify students suffering from depression and to develop programs for addressing mental health problems.

Keywords: Beck Depression Inventory, Bulgaria, depression, medical students, Sofia.

Introduction

Medical education is stressful and this is established in many studies (1-3). The distress among medical students manifests in a variety of ways, including burnout, anxiety and depression (4-8).

A broad study of the prevalence of stress and associated depression during medical education was performed by Compton et al. (1). This study of students from a wide range of medical institutions provides an alarming picture of the mental status of medical students. In recent years Dyrbye and his colleagues reviewed the literature about depression among U.S. and Canadian medical students (5). The authors concluded that psychological distress among medical students is high and recommended further studies to identify features that influence depression and anxiety. Numerous studies abroad have found a high prevalence of depression among medical students, with mental health deteriorating over the course of training (9-12).

The prevalence of depression in medical students is higher than in the age-comparable individuals from the general population (4,8,13-15). According to Rosal, the rise in depression scores and their persistence over time suggests that emotional distress during medical education is rather chronic than episodic (12).

Zoccolillo states that the development of depression in medical students is associated not only with factors from the medical school environment, but also with personality factors and heredity (15).

The impaired mental health can have profound personal consequences for the students. Depression can result in substance abuse, suicidal ideation and completed suicide, development of cynicism, affected patient care, decreased quality of life and life satisfaction (1,16-23). Medical students with depression are more likely to consider dropping out of medical university (11,24).

We conducted this study because the information about depression and its associated factors among Bulgarian medical students is scant. It is important to identify early the impaired students and to address the signs of depressive symptoms. Students with psychological problems should be supported to seek help and to have access to proper services.

Methods

This study was conducted to determine the prevalence of depression among medical students in Medical University-Sofia. Students were asked to complete a specially designed anonymous self-administered questionnaire. The questionnaire covered a range of issues, including mental health, stress, alcohol consumption, attitudes to mental health services. The Beck Depression Inventory (BDI) was used to study depression. This is a widely used instrument for determining the severity of depression. The BDI is designed to assess various affective, behavioral and cognitive symptoms of depression. It is a reliable and valid instrument for detecting depressive disorders in non-clinical populations (25,26).

The BDI includes 21 items and uses four-point scale ranging from 0 (symptom not present) to 3 (symptom very intense). When the test is scored, a value of 0 to 3 is assigned to each answer. The cut-off points for the BDI were as follows:

- 0–9: indicates none or minimal depression
- 10–18: indicates mild depression
- 19–29: indicates moderate depression
- 30–63: indicates severe depression.

In our cross-sectional study took part students in their second and sixth year of medical education. The same questionnaire was used for both groups. The questionnaire was distributed in April 2013 during practical exercises in social medicine (for second course students). Medical students in sixth course completed the questionnaire during governmental practice lectures in Social medicine in 2013. The study was conducted in the Department of Social medicine, Faculty of Public Health, Sofia. 150 medical students in second course (78 women and 72 men) and 128 students in sixth course (76 women and 52 men) took part in the study. Response rate was 90.9% for students in

second course (150/165) and 75.3% for students in sixth course (128/170).

Statistical analysis includes descriptive statistics (mean value and standard deviation), Chi-square test to assess association/correlation between depression level and demographic data (Pearson's product moment correlation coefficient and Kendall's tau) and t-test (Welch Two Sample t-test) for assessment of differences between mean values. It is accepted that p-value is significant at level <0.05.

Results

Of the 278 students participating in the study, 55.4% were females, 31% had a parent physician and 62.6 % had an intimate partner.

Depression mean value according BDI for the medical students was 10.8 (depression standard deviation: 7.1). Considering the BDI cut-off points (BDI > 9), 54.7% of all medical students (61.3% of second course and 46.8 % of six course students) showed symptoms of depression.

Most of the students had mild depressive symptoms, severe depression was observed only in 1.4% (Table1). There was no statistically significant difference in depression by year of medical study (p-value = 0.1613). 53.6% of females and 56.3% of males (Table 1) showed symptoms of depression. We did not find a statistically significant difference in depression by sex (p-value= 0.85). The data analysis showed a distinctive correlation between stress and depression (r= 0. 46; p-value < 0.001). This association was observed between depression and all domains of stress, especially with academic related stressors.

Table 1. Depressed students by year of education and by sex

Depression level	No	Mild	Moderate	Severe	Total
Total	126 (45.3%)	116 (41.7%)	32 (11.5%)	4 (1.4 %)	278
Sixth course	68 (53.1 %)	46 (35.9 %)	14 (10.9 %)	0	128
Second course	58 (38.7 %)	70 (46.6 %)	18 (12.0 %)	4 (2.7 %)	150
Females	78 (46.4 %)	72 (42.9 %)	18 (10.7 %)	0 (0.0 %)	168
Males	48 (43.6 %)	44 (40.0 %)	14 (12.7 %)	4 (3.6 %)	110

We analyzed the association between depression and the presence of an intimate partner (Table 2). 62.6% of all students had an intimate partner and 37.4% were without a partner (of which 41% second course students and 33% sixth course ones). There was a significant correlation between not having a partner and depression in sixth course students (r=0.37, p=0.003), but such an association was not observed in second course (r=0.04, p=0.71). 30.9% of students declared feeling lonely, in correlation with depression (r=0.45, p<0.05).

Table 2. Partner and depression

	Second course students		Sixth course students	
Intimate partner	**Without depression**	**With depression**	**Without depression**	**With depression**
Yes	34 (39 %)	54 (61%)	60 (70%)	26 (30%)
No	24 (39 %)	38 (61%)	8 (19%)	34 (81%)

We analyzed the correlation between different variables and the development of depressive symptoms in medical students (Table 3).

In our study, 31% of the students had a parent physician. There was a significant correlation between depression and not having a parent physician for second year students (p-value < 0.05), but such an association was not observed in sixth year medical students (p-value = 0.83).

24.1% of medical students had considered dropping out of the medical university. There was statistically significant link between depression and the wish to quit studying medicine (r=0.24, p=0.004).

Table 3. Association between depression and different variables

Variable	P	Significance	Correlation (r)
Sex	0.84	No	-
Course of education	0.16	No	-
Stress	<0.001	Yes	0.462
Parent physician in second course students	<0.05	Yes	0.41
Parent physician in sixth course students	0.8	No	-
Intimate partner in second course	0.71	No	-
Intimate partner in sixth course	<0.001	Yes	0.37
Considering quitting studying medicine	0.004	Yes	0.24
Fear of failure	<0.001	Yes	0.47
Feeling lonely	<0.001	Yes	0.45
Need of educational mental health courses	<0.001	Yes	0.36
Need of a mentor	0.001	Yes	0.27
Alcohol use	0.18	No	-

In our study, 64.8% of all medical students declared fear of failure in the study of medicine. There was a significant correlation between depression and fear of failure ($r=0.47$, $p<0.05$). We did not find statistically significant link between depression and alcohol consumption ($p= 0.1845$).

We asked students about their need of educational courses in mental health. 43.9% of all medical students wish to take part in such courses, without a difference for second and six course ones (p-value = 0.89). There was a statistically significant link between depression and the need for educational courses ($r=0.36$, $p<0.05$).

Another significant correlation we observed in this study was between depression and the need for a mentor ($r=0.27$, $p=0.0013$). 62.5% of sixth course students and 65.3% of second course students expressed the need for a mentor.

Discussion

Medical education in Medical University-Sofia is a six-year program, divided into preclinical years (1st and 2nd years), transition year (3rd) and clinical years (4th, 5th and 6th years). The sixth year is the internship period, during which students work under supervision at the hospitals.

According to our knowledge, there were no other studies of depression among medical students in Medical University-Sofia. One study conducted in Sofia University found that 39% of students were with depressive symptoms. Authors of this study concluded that depression levels were higher among Central-Eastern than Western European samples (27-29).

In our study, 54.7% of medical students showed symptoms of depression. This result is consistent with the findings of previous studies abroad. The review of the existing data showed that the prevalence of depression among medical students ranged from 12% to 71%.

A study by Chan with BDI among Chinese medical students found that half of them were depressed and 2% showed signs of severe depression (30). In a study from the United Kingdom more than one third of first-year students had poor mental health measured with the General Health Questionnaire 12 (6).

A Pakistan study found that the depression rate among medical students varied from 49% to 66% (31). In Brazilian study with BDI there were 38.2% students with depressive symptoms (32). In an Indian study with BDI the overall prevalence of depression was found to be 71.25% and the majority of students (80%) had mild and moderate degree of depression (33). In another Indian study done with the Hospital Anxiety and Depression Scale, 60.3% of students reported depression (34). In a Swedish study, the prevalence of depressive symptoms among students was 12.9% (4). In a

study among Iranian medical students mild, moderate and severe depression showed 38.3%, 10.2% and 4.5% respectively (35).

In a 2002 survey of US medical students, 24% of students were depressed according to the Beck Depression Inventory (36).

From this review of previous studies, we can conclude that the difference in depression level among medical students depends to great extent on the severity of depression, the course of education and the specific screening instruments used (4,11,14,15,30,33,36-40).

Although in the general population depression is much more common among women than men, the results from studies about the gender differences in the prevalence of depression among medical students are contradictory (41).

Our study did not find significant difference in depression between males and females, which was consistent with the conclusions of several other studies (8,11,30,34,35,42,43). However, according to some studies the prevalence of depressive symptoms in female medical students was higher than in male ones (4,5,12,14,32,37,40). In an Indian and in Turkish study, even more males than females were depressed (33,44). We recommend further investigation in the gender difference of depression among medical students and the development of gender-oriented programs for prevention of stress and depression.

Consistent with other studies, our study found that perceived stress was strongly associated with higher depression scores (28,29,32,45). But while females had higher perceived stress, the impact of perceived stress on depressive symptoms was the same for males and females. Male and female medical students differ in their pattern of stress experience and response and that is an area which needs further investigation (43). The association between perceived stress and depressive symptoms in our study highlights the importance of introduction of stress management interventions.

In the analysis of protective and risk factors for developing depressive symptoms we found an interesting result. The lack of a parent physician seems to be a risk factor for developing depressive symptoms for medical students in second course. We assume that children of physicians are more prepared for the academic challenges of studying medicine. We find significantly lower depression scores among six-year students with an intimate partner as compared to those who did not have a partner. Similar result was observed in other study (28). We recommend further studies addressing the aspects of family and social support. In such a way will be get more clarity about the protective and risk factors of depression in medical students.

Medical schools abroad have initiated mental health promotion programs for reducing stress with positive results for medical student's health (21,46,47).

The current system of the medical education in our country does not recognize the problems of students in the area of mental health and stress. Thus, the education does not support the strengthening of the available resources of students. The respondents in our study expressed a positive attitude and a need for courses in mental health and mentoring. Their correlation with depression highlights the importance of the introduction of such services in the Bulgarian medical universities. Mentoring corresponds with improved student's well-being, so we recommend the training of competent mentors, who can provide students with effective counseling.

This study had several limitations. First, a self-report instrument for detecting depression was used. In BDI like in any other self-report inventory, scores can be influenced (exaggerated or minimized) by the person completing them. Second, the sample in this study was restricted only to students in second and sixth course from one medical university in the country. Hence, we cannot generalize the results to all medical students. In this study we measured only depressive symptoms in the past two weeks. We did not collect information about depressive episodes in the past or family history of depression. An influence on depressive symptoms could have and events outside the

university (illness, death of family members, marriage, birth, etc.), which were not studied.
The strengths of this study were that we used validated instruments for assessment, allowing comparison to other samples of medical students. By performing this study we partially filled the existing gap in knowledge about mental health in medical students in our country. We recommend future studies in the area of medical stress and depression in medical students in Bulgaria.

Conflicts of interest: None declared.

Conclusion

Our study presents important evidence about the psychological health of Bulgarian medical students. The results highlight the need for introduction of programs for prevention of mental health in Bulgarian medical education. Students should be educated how to detect the early signs of stress and depression. An access to support groups, counseling and stress management programs is recommended.

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