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Original study  
*Originalni naučni rad*  
 UDK 616.89-008.454-057.875  
 DOI: 10.2298/MPNS1508234J

## DEPRESSIVE DISORDERS IN STUDENT POPULATION – COMPARATIVE STUDY CONDUCTED IN 2007 AND 2014

*DEPRESIVNI POREMEĆAJ U STUDENTSKOJ POPULACIJI - KOMPARATIVNA STUDIJA 2007/2014*

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### Summary

**Introduction.** The aim of this study was to determine the frequency of depressive symptomatology and its distinctive manifestations in student population in the interval of 7 years. **Material and Methods.** A sample of 790 students from the University of Novi Sad was asked questions about depression by means of the Patient Health Questionnaire 9 in 2007 and 2014. **Results.** The results show that the frequency of depression in student population ranges from 12.4% to 16.5%. Comparing the samples, in 2014 there were more mildly and severely depressed students, while the number of moderately depressed students was significantly lower. Suicidal thoughts were present in about 32% to 45% of depressive students and in about 7% of the total sample. The higher presence of depression was confirmed among female students in both study samples. **Conclusion.** The percentage of depressed students is stable over time. Symptomatology is very specific and suicidal thoughts are present in a great number of depressed students. Therefore, early diagnosis is essential.

**Key words:** Depressive Disorder; Students; Suicidal Ideation; Mental Health; Young Adults; Questionnaires; Signs and Symptoms; Risk Factors; Sex Factors

### Introduction

Studying usually lasts from 18 to 26 years of age, that being the period of late adolescence and the beginning of early adulthood from the aspect of development. The particularity of students' psychopathology is conditioned by the dynamics of developmental factors that are related to the age, as well as by specific social demands related to the very process of studying. In addition to familiar etiological factors, a number of specific factors resulting from the demands of academic life (change of the life style and the rhythm of life, personal planning of study time, inadequate communication with the faculty, moving to a new environment, separation from the family, high personal and family expectations related to success). Therefore, studying can become a burden for a vulnerable adolescent ego and consequently has a negative effect on the quality of life, general working abilities of a student and the development of depression. Studies have also

### Sažetak

**Uvod.** Cilj ove komparativne studije je utvrđivanje učestalosti depresivne simptomatologije i njenih karakterističnih manifestacija u studentskoj populaciji u razmaku od sedam godina. **Materijal i metode.** Ispitivanje depresije sprovedeno je instrumentom *Patient Health Questionnaire 9* na uzorku studenata 2007. godine i na uzorku studenata 2014. godine. Ukupan uzorak činilo je 790 studenata Univerziteta u Novom Sadu. **Rezultati.** Utvrđena je učestalost depresije kod 12,4% do 16,5% studenata. Komparacija dve grupe studenata pokazuje da je u uzorku iz 2014. godine više blago i teško depresivnih, dok je umereno depresivnih statistički značajno manje. Suicidne misli prisutne su kod oko 32% do 45% depresivnih studenata i kod oko 7% ukupnog uzorka. U oba istraživačka uzorka potvrđena je veća prisutnost depresije kod studentkinja. **Zaključak.** Procenat depresivnih studenata stabilan je u vremenu. Simptomatologija je specifična a suicidalne misli prisutne su kod velikog broja depresivnih studenata. Rana dijagnostika je neophodna. **Gljučne reči:** Depresivni poremećaj; Studenti; Suicidne misli; Mentalno zdravlje; Mladi ljudi; Upitnici; Znaci i simptomi; Faktori rizika; Polne karakteristike

shown that even the slightest degree of depressive symptoms can be significant for the occurrence of problems in the domain of academic achievements [1]. Unrecognized, undiagnosed, and untreated depression extends to further developmental phases and derange the complete further psychosocial functioning. With regard to the serious consequences to which the inadequate treatment of a student with symptoms of depression leads, the aim of this research was to determine the frequency of depressive symptoms in the student population at the University of Novi Sad, to recognize the specific symptoms of depression in students, to assess the frequency of suicidal thoughts and typical characteristics of depression in this population in relation with the gender.

### Depression in Student Population

According to the data of the World Health Organization, the probability of experiencing episodes of

**Abbreviations**

- PHQ9 – The Patient Health Questionnaire 9  
 BDI – Beck Depression Inventory  
 ICD-10 – International Statistical Classification of Disease and Related Health Problems  
 DSM-IV – Diagnostic and Statistical Manual of Mental Disorders

depression in the course of life ranges from 8% to 20% in the total population. The data of the studies on the frequency of depression in the population of adults state the percentage span to be from 6% to 35% [2]. The presence of depression in the adolescence period goes from 5% to 9%, and as for the gender, it occurs twice more often in young women than in young men [3]. The frequency of depression in student population has been studied in numerous studies, and the results have shown that it goes up to even 50% [4].

Concerning the degree of severity of clinical picture, a depressive disorder can be mild, moderate and severe. According to the polarity of depression, it can be classified as unipolar and bipolar. Because of its heterogenic nature and layered structure, varieties of the depressive disorder forms (according to the *International Classification of Diseases* (ICD-10) and the *Diagnostic and Statistical Manual* (DSM-IV) and comorbidity of other mental disorders, it is crucial to identify the severity and the type of depression in time in order to administer adequate treatment [5]. Risk factors crucial for the prevalence, discovery and treatment of depressive disorders in adolescents are: 1. Biological factors (family history of depression and bipolar affective disorder (BAP), gender, the history of depression and chronic body diseases); 2. Psychological factors (comorbidity of psychiatric disorders, neurotic personal structure, negative cognitive style, low self esteem, and a traumatic event); 3. Familial factors (parents' mental illnesses, abuse of alcohol and psychoactive substances (PAS) by the parents, conflicting relationships in the family); 4. Social factors (bullying among peers, growing up in institutions, in exile, etc) [5]. In addition, academic achievements, social stressors, finance and separation from the family are specific for student population [6].

The comparison of studies performed since 1970s until today shows an increase in the number of depressed students when compared with other age groups. The frequency ranged between 12% and 53% in the 1990s [7–11]. Studies from the beginning of the twenty first century showed similar results, yet differences can be ascribed to the *type of studies* and the *chosen sample* (medical student population is described as

particularly vulnerable, and the existence of depressive symptoms is three times more frequent than in other study groups) [12], to the country in which the research was done, or to the applied measuring instrument (Beck's Depression Inventory - BDI, Zung's Self Rating Depression Scale, Hospital Anxiety and Depressive Scale - HADS, Major Depression Inventory - MDI, Center for Epidemiology Studies Depression Scale - CES-D, Patient Health Questionnaire 9 - PHQ9 and others). In Slovenia, depression is present in 9.7% of students (according to Zung's Self Rating Depression Scale), in 10.4% of students (according to BDI scale) in Macedonia and in 20% of students (BDI) in Serbia [12]. In the ten-year study in which the frequency of depression was followed among students in our country [13] by the application of BDI scale, it was shown that around 22.7% of students manifested symptoms of depression, and that higher values in all measuring dimensions of the applied scale were observed among young women. One of the relevant studies which used the PHQ9 showed that the prevalence of depression and anxiety disorders in undergraduate students was 15.6%, and in recently graduated students it was somewhat lower, being around 13% [14].

In the National Study of Health in the United States of America [15], it was stated that 1 of 3 students had at least one depressive episode with difficulty in functioning, and that one out of 10 was seriously thinking about committing suicide. The frequency of suicidal ideation, the number of attempted suicides and the number of suicides among young people, especially among students, have been rarely studied in our country. It has been stated that the suicide rate among young people from 15 to 24 years of age is 6.9 in absolute figures in Serbia, that being 66 deaths per year [16]. According to some data, suicidal thoughts are present in 14.9% of non-clinical adolescent population (in 10.5% of boys and 17.5% of girls) [17]. Recent studies have found that between 20% and 43% of students had suicidal thoughts at some point [18], while there are some data on 60% of depressed young people who have thought of suicide, and about 30% of them have even attempted suicide [5].

**Material and Methods**

The applied PHQ9 makes it possible to get data on the existence of depression symptoms and their severity (mild, moderate and severe episode). This instrument matches the criteria for major depression in Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and International Statistical Cla-

**Table 1.** Descriptive statistical indicators for the total sample regarding the presence of depression

**Tabela 1.** Deskriptivni statistički pokazatelji za celokupan uzorak u odnosu na prisustvo depresivne simptomatologije

Year Godina	No symptoms/Bez simptoma		Subsyndromal/Supsindromalni		Depressed/Depresivni		Total/Ukupno	
	N	%	N	%	N	%	N	%
2007	219	55,4	111	28,1	65	16,5	395	100
2014	227	57,5	119	30,1	49	12,4	395	100

**Table 2.** Severity of the episode of depression in the subsample of depressed students  
**Tabela 2.** Težina depresivne epizode u poduzorku depresivnih

Severity of depression/Težina depresivne epizode	2007 (N)	valid/ispravna %	2014 (N)	valid/ispravna %
Mild/Blaga	40	61,5	36	73,5
Moderate/Umerena	22	33,8	7	14,3
Severe/Teška	3	4,6	6	12,2
Total/Ukupno	65	16,5	49	12,4

ssification of Diseases and Related Health Problems (ICD-10). The instrument is highly sensitive (88%) and has a high specificity (88.2%) [2]. The respondents themselves estimate the occurrence of the mentioned problems in the last two weeks (without problem/sometimes, in more than seven days, almost every day). The total score is provided by adding the answers, and it indicates the category to which the respondent belongs. The scores of 10 and 14 refer to a mild episode of depression, from 15 to 19 to a moderate episode, and from 20 and upwards to a severe depressive episode. The scores from 5 to 9 indicate the subsyndromal form of depression. It takes only several minutes to fill in the questionnaire, and as much to process the results. Due to these characteristics, the instrument is very useful to the doctors in primary health care and therefore it is recommended to be used in the National guides for good practice for diagnosis and treatment of depression [19].

This study sample included 790 students from the University of Novi Sad, 267 male students (33.8%) and 523 female students (66.2%). All respondents were examined during their visit to the Institute for the Health Care of Students in Novi Sad. The anonymous questionnaire was filled in by the patients who visited the general practitioner for various reasons. The same number (395) of respondents was examined in 2007 and in 2014. Approximately the same number of male and female students were included in both samples (122 male students (30.9%) in 2007 and 145 (36.7%) in 2014 and 273 (69.1%) female students in 2007, and 250 (63.3%) in 2014. The sample included students from all years of study, as well as final year students. The students attending the first four years of study were evenly represented in the study sample (over 80% of respondents), and the rest were students attending

the fifth and sixth year of study, final year students and post-graduate students or residents. The respondents were from 19 and 26 years of age, their average being 21.5 years and they attended 19 faculties or high schools of the University of Novi Sad.

The obtained data were processed with the statistical package SPSS Statistics 20.0. Descriptive statistical measures (frequencies and percentages) were calculated and the chi square ( $\chi^2$ ) test was used to check the statistical significance of the differences among subsamples regarding the severity of the episode of depression and gender.

## Results

The descriptive statistical indicators obtained within the study performed in 2007 and in 2014 will be shown in order to assess the frequency of depression in student population. The respondents were categorized according to the criteria for assessing the severity of depression that was provided by the application of the PHQ9 questionnaire.

It can be concluded that over half of the respondents in both study years did not show any symptoms of depression (55.4% in 2007 and 57.5% in 2014).

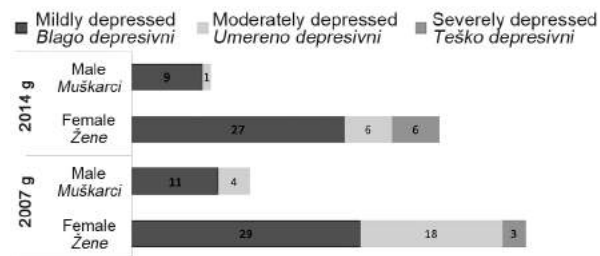
The respondents with subsyndromal score (5 to 9) according to the applied instrument PHQ9 followed in number those without symptoms of depression. Such symptomatology, which does not meet the criteria for depression according to ICD 10 and DSM-IV criteria, seems to be wide spread among student population, and needs to be analyzed separately, therefore, it has not been the subject of this study.

The group of depressed students having the score over 10 in 2007 included 65 students, that being 16.5% of the total sample. There were 49 students in the group of depressed students in 2014, that being 12.4% of the total sample.

There was no statistically significant difference concerning the presence of depression obtained in the study performed in 2007 and 2014. The value of Pearson's chi-square coefficient was 9,391, df (4),  $p > 0.05$  and the value of the coefficient of contingency was 0.108.

**Table 2** shows the distribution of respondents only from the group of depressed students with regard to the severity of depressive symptomatology.

With regard to the severity of clinical picture, the mild form of depression was observed in the highest number of respondents in both study years, it was followed by the moderate form of depression



**Graph 1.** Gender and severity of depressive symptomatology

**Grafikon 1.** Pol i težina depresivne simptomatologije

and the number of severely depressed students was the lowest.

By checking the statistical significance of differences between the number of depressed respondents in the 2007 and 2014 study sample with regard to the severity of manifested symptoms of depression according to Pearson's chi-square test, the obtained value was 4.684,  $df(1)$ ,  $p < 0.05$ . The value of the coefficient of contingency was 0.207. The difference was statistically significant at the level of 0.05.

By observing the number of respondents with different severity of depressive symptomatology in percentages, it is clear that the obtained difference resulted from the significantly lower percentage of moderately depressed and a slightly higher percentage of mildly and severely depressed students in 2014.

The presence of depressive clinical symptomatology in female and male respondents is given in the following graph:

It can be seen that 50 young women were depressed in 2007: mild form of depression was observed in 29 of them, moderate in 18 and severe in 3 female respondents. In the same year, out of 122 (30.9%) male respondents, 11 were mildly and 4 were moderately depressed. In 2014, out of 250 female students in the total sample (63.3%), 39 were depressed: 27 mildly, 6 moderately and 6 severely. In the same year, out of 145 (26.7%) male respondents, 9 met the criteria for the group of mildly depressed, while only one respondent was moderately depressed. None of the young men met the criteria for the category of severely depressed in either study year. All respondents in the group of severely depressed were females. Gender differences between the group of depressed and the group of those who were not depressed in both study years were statistically significant. The value of Pearson's chi-square was 6.398,  $df(1)$ ,  $p < 0.05$ . Depression was much more frequent in female students than in males, with the statistical significance of the difference at the level of 0.05.

In order to describe the characteristic symptoms of manifested episode of depression, the answers of the respondents given to the individual items of the applied questionnaire were analyzed.

In the group of depressed respondents from the 2007 sample, 38.5% claimed to have problems with sleeping *almost every day in the last two weeks*, 33.8% had negative self-perception, and 22.7% had trouble with appetite. The option *more than 7 days in the last two weeks* was chosen by 33.8% of depressed students who complained to have the feeling of emptiness, bad mood and hopelessness; 32% complained of fatigue, weakness and lack of energy, while 24% suffered from poor appetite. *Several days in the last two weeks* was chosen by 52.3% of the depressed students who complained of being less interested and satisfied when performing daily activities; 46.2% complained to have the feeling of emptiness and 44.6% had difficulties with concentration.

Data obtained in the 2014 study showed that 32% of respondents from the group of the depressed got

tired very fast, felt tiredness and lack of energy *almost every day in the last two weeks*, 36% suffered from poor appetite and 26.5% were less interested or satisfied when performing daily routine activities. The option *more than seven days* was chosen by 42.9% who had the feeling of emptiness, 40.8% who felt fatigued, got tired quickly and 38.8% who had problems with sleeping, whereas 59.2% complained of being less interested and satisfied *several days in the last two weeks*, 44.9% were too slow and uneasy, and 42.9% had negative self-perception. Difficulties with concentration *during several days* were reported by 40.8% of depressed students.

A great number of depressed students from both study samples denied having suicidal thoughts (55.4% of the 2007 sample and 59.2% of the 2014 said *never in the last two weeks*). However, about 40% of the depressed students had suicidal thoughts with different frequency (8-9% of the 2007 sample and 9% of the 2014 sample said they thought of suicide every day, 7-12% of the 2007 sample and 12% of the 2014 sample thought of committing suicide more than seven days and 20% of the 2007 sample and 27% of the 2014 sample said to have thought of suicide *sometimes in the last two weeks*). Thinking of committing suicide should be additionally studied because it can suggest a depressive clinical picture, but not thinking does not exclude it completely.

## Discussion

Student population manifests some specific characteristics in the type and frequency of psychopathological problems. Difficulties in learning, concentration, fear of exam, lack of motivation and similar difficulties which can be described as academic difficulties are among the most frequent students' problems according to some studies [20]. In some students, these problems might go much deeper to the level of mental disorder, which demands early detection and treatment. Consequently, the complete life quality of students is seriously endangered due to the presence of either chronic somatic diseases and pains or mental disorders [21]. The study aimed at detecting emotional disorders in their early stage in the students of the first and third year at the University of Novi Sad showed that out of 3500 students of both genders, 16% were at risk of developing some emotional disorders [22]. Depressive symptomatology and anxiety were the reasons for asking the professional help in 13% and 20% of cases, respectively [20]. A study performed in the United States of America (American College Health Association, 2005) [23] showed that from 12% to 18% of students had undergone treatment because of some mental disorder during their studies. These data are identical with the findings that the prevalence of psychiatric disorders in adolescent population goes between 10% and 20% depending on diagnostic criteria, age group and the choice of population [24]. Studies on the frequency of depression and other

mental disorders in student population are scarce in our country. The result of this research stating that depression occurs with frequency of about 12% to 17% confirms the results of similar studies [12, 13]. The finding that a lower percentage of students had depression in 2014 than in 2007 was unexpected to a certain degree. However, we cannot make conclusions with certainty about the reasons of this mild decrease due to the lack of information about numerous factors that could have caused these results. We can only conclude that the obtained difference in the results is not statistically significant. In that sense we can say that the frequency of depression among students is relatively stable in the observed interval of 7 years. More detailed studies should be done, which would include correlation with other variables such as the type of study course, place of residence, former history of mental disorder problems, comorbidity, current stressors, academic achievements and other elements that can be related to the occurrence of depressive symptomatology. What we consider encouraging for further monitoring the frequency of depression among students is the practice of introducing the compulsory screening on depression for people over 19 years of age. It has been introduced within the measures regulated by the law regarding the content and scope of the measures for prevention in the domain of health protection [25]. In this way those who are interested are enabled to widen their knowledge in this area and, what is more important, to protect mental health of the young people preventively.

This study was aimed at finding the answer to the question of the frequency of individual symptoms in the group of depressed students having different forms of depression and the frequency of thinking of suicide. First, we will discuss the results related to the frequency of symptoms with regard to the severity of clinical picture of depression.

The most striking difference between depressed students in two study years is very low number of mildly depressed in 2014. In addition, there were more mildly depressed (73% of all depressed students) as well as severely depressed students in the 2014 sample (their total number, although very low being only 6, was twice higher than in the 2007 sample). It might be concluded that students are either mildly depressed or severely depressed, without the moderate form of depression. As for the profile of depressive symptomatology between the sample from 2007 and 2014, there is a noticeable difference in the presence of somatic symptoms and disturbed voluntary instinctive dynamism. Namely, the most common symptoms in depressed students from the 2014 sample are fatigue, tiredness, lack of energy, problems with appetite and generally lesser interest and satisfaction in doing everyday activities. In depressed students from the 2007 sample, these symptoms were most common in the group of mildly depressed, while the symptoms suggestive of disturbed voluntary instinctive dynamisms (dream, sleep) as well as the existence of somatic symptoms occurred

in more severe forms of depression as it could be expected. It seems that the depressed students from the 2014 sample were prone to one general anhedonia, that is apathy, they did not have adequate mechanisms to fight stress. Their tolerance to stress was very low and they were more vulnerable to depressive symptoms. Cognitive affective symptoms were dominant, while the loss of voluntary instinctive dynamisms was not so strongly manifested. Thus, the obtained profile of depressive symptomatology in the students from the 2014 sample shows same particularities and differences in comparison with the 2007 sample. In their book, the authors Howe and Strauss [26] say that today's generations are not concerned about global problems but are occupied with their own achievements. Experts working with students agree with the claim that the pressure of parents often contributes to stress, anxiety and depression in students. It is believed that the pressure on a child to fulfill certain expectations is even stronger in small, nuclear families, thus adding to the tension. The authors conclude that new generations grow up under higher pressure of expected success, without being taught how to cope with failure as the integral part of growing up. Because of such undeveloped mechanisms for fighting stress the young can have more depressive symptoms that do not encroach voluntary instinctive mechanisms but can reduce the quality of life in the long run, particularly by impoverishing social contacts. These assumptions should be checked in future studies of student population in our country.

The issue of depressive contemplation must by all means be an integral part of every protocol when treating adolescents. However, the presence of suicidal thoughts should be analyzed and it is necessary to assess to which extent they are related to the clinical picture. Each suicidal thought must be seriously discussed with the young person. Data obtained in this research show that 31.8% and 45.6% of depressed students from the 2014 and 2007 sample, respectively, had suicidal thoughts with different frequency in the last two weeks. At the same time, only 7.6% of all respondents said in 2014 that they had had suicidal thoughts.

## Conclusion

According to this study, which used the Patient Health Questionnaire 9 on the sample of students attending 19 faculties of the University of Novi Sad, the frequency of depression is between 12.4% and 16.5%. A lower number of depressed students was recorded in 2014, yet this decrease is not statistically significant. We can, therefore, conclude that the percentage of occurrence of depression in student population is relatively stable and ranges within the obtained results. Regarding the severity of clinical picture of depression there is a statistically significant difference in the presence of moderately depressed students, who are less numerous in 2014, while there is a recorded increase in the number of mildly and

severely depressed ones. As for the quality of symptoms which characterize the general clinical picture of depression in students, voluntary instinctive dynamics were found to be slightly decreased (which was present in respondents in 2007) with the dominant lack of interest and satisfaction, feeling of emptiness and hopelessness, negative self-perception, difficulties

with concentration. Suicidal thoughts occurred in 32-45% of the depressed students and in 7.6% of the total study sample. There was a difference between the genders regarding depressive symptoms. Female students with depression were found to outnumber male students regardless of the severity of clinical picture.

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Rad je primljen 7. IV 2015.

Recenziran 2. V 2015.

Prihvaćen za štampu 12. V 2015.

BIBLID.0025-8105:(2015):LXVIII:7-8:234-239.