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Correlation of Levels of Depressiveness and Choice of Elective Subjects in Medical Students

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A B S T R A C T

The aim of this research was to establish if a correlation exists between the choice of an elective subject, namely subjects »Depression« and »Diabetes«, and levels of depressiveness in medical students. Three groups of third year medical students attending School of medicine, Rijeka University, were tested for the level of depression using Beck's self-evaluation scale. The groups consisted of 30 non-randomly selected students that had enrolled elective subject »Depression« and 29 non-randomly selected students that had enrolled elective subject »Diabetes«, and the third group of 30 randomly selected third year medical students that had enrolled none of the previously mentioned elective subjects. Median age of participants in this research was 25.24. The results showed no statistically significant difference in overall level of depressiveness among the groups. By testing for the difference between group pairs, there was a statistically significant difference between depressiveness in students attending »Depression« and »Diabetes«, the latter being significantly more depressed (M=8.30 in »Depression« group; M=11.41 in »Diabetes« group; p=0.04). In total there were 33 males and 56 females that participated in this research. Gender difference was also tested, and there was no statistically significant difference between sexes among groups. The difference was found only within the group of students attending »Depression« elective subject, where females scored significantly higher on Beck's questionnaire (z=2.26; p=0.03). The analysis of difference between items of the Beck's questionnaire showed statistically significant difference in the item »Feeling of rejection«, where students attending elective subjects other then »Depression« scored significantly higher; differences in the items »Urge for punishment« and »Suicidal tendencies« were also found between »Diabetes« and »other elective subjects« group, in favor of »Diabetes« group; in the item »Weight loss« students attending »Diabetes« elective subject scored significantly higher then their peers in both other groups. The results indicate the possibility of a protective role of psycho-educative component provided to the students attending elective subject on depression within medical school environment, that has repeatedly been shown to be stressful and demanding and is beneficial for the onset of depressive disorders.

Key words: *depression, medical students, elective subject*

Introduction

Depression is generally recognized as one of the most common medical diseases worldwide[1], with a lifetime prevalence of 16% and a female-to-male ratio of approximately 5:2. It causes significant psychological and physical impairment, and represents a substantial economic burden for a society[2].

Medical school is widely considered a stressful environment[3]. It has been shown that medical students have higher prevalence of depression than the general population[4,5]. Diverse varieties of depressive disorders are likely to persist after the graduation, and higher rate of suicide in physicians than in general population may represent the effect of unrecognized and untreated depression[6]. Studies in clinical population repeatedly show underdiagnosis and undertreatment of major depression, regardless of the severity of the illness[8,9]. There are few

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studies performed specifically on medical students, but one previous study at a US medical school suggested similar trend for medical students[6].

The Chair of psychiatry, School of medicine, Rijeka University, offers a number of elective subjects, one of them being the subjects titled »Depression«, to the third year medical students. It caused remarkable interest among students, with number of applicants exceeding more than twice the number of available posts. Especially if we take into consideration that during the 2005/2006 academic year Rijeka School of medicine had 103 third year medical students.

With the awareness of the facts about the incidence and undertreatment of depressive disorders we have hypothesized that the overwhelming interest might reflect applicant's personal agenda, possible mean of self-help within the given options.

With that perspective, we decided to determine the level of depressiveness in students attending elective subject »Depression« and compare it to the level of depressiveness in their peers who have enrolled elective subject »Diabetes« at the Chair of internal medicine, as well as to the third group of students that attended none of the two elective subjects.

Subjects and Methods

Our subjects were third year medical students enrolled in the MD degree program during 2005–2006 academic year. In total, there were 103 third year medical students attending the MD degree program during that academic year. Those 103 students were given the possibility of choosing an elective subject from 6 available: »Depression«, »Diabetes«, »How to communicate with a deaf patient«, »Family in sickness and in health«, »Congenital viral infections« and »Poisonous plants and animals of our region«. Curriculum of each of this six elective subjects was based on epidemiology, etiology, diagnostics and therapy of specific issues the subject covered, except the subject »How to communicate with a deaf patient« which curriculum was based on learning the sign language.

The target group was comprised of 30 students (18 females and 12 males) attending elective subject »Depression«. The second group was comprised of 29 students attending elective subject »Diabetes« (21 females and 8 males), and the third group was comprised of 30 third year students (17 females and 13 males) attending none of the previous elective subjects.

Average age of the research groups was 25.24 years. For the »Depression« group average age was 23.63 years, »Diabetes« 25.48 years and for the third research group average age was 26.60 years of age.

The level of depressiveness was measured using 21-item Beck's self-evaluation depression questionnaire, which is basically Beck's Depression Inventory, translated and validated in Croatian language, at a single time point in the second half of the elective subject program[7].

This study was reviewed and approved by the Ethical committee of the School of Medicine, Rijeka University. Participation was optional. The questionnaire was anonymous, and the participants were explained the purpose of the study.

For analysis, we classified students as mildly depressed if their cumulative score was 12–19, moderately depressed if the cumulative score was 20–26, and severely depressed if their cumulative score was over 26. These cut-off values were used as specified in the validated Croatian version of Beck's self-evaluation depression questionnaire[7].

To test the gender differences, T-test for independent samples and non-parametric Mann-Whitney test were applied. The differences in the level of depressiveness among the three groups were tested by one-way variance analysis, while the differences between group pairs were calculated by post-hoc LSD test. The differences among the three groups were also tested by clustering the subjects according to the level of depressiveness. Due to relatively small number of subjects, they were clustered in two categories – no depressiveness and mild and moderate depressiveness, and the results were analyzed by χ^2-test. Finally, the differences in each item of the questionnaire among the groups were tested by one-way variance analysis and post-hoc LSD test.

Results

Gender differences

There were no statistically significant gender differences regarding the level of depressiveness in all three groups between female (M=10.25) and male (M=8.21) subjects calculated by T-test for independent samples (t=1.61; p=0.11).

Gender differences were further tested within each group. No statistically significant differences were found in any of the groups (Table 1), but gender difference was close to statistical significance in the »Depression« group. Indeed, when non-parametric Mann-Whitney test was applied, there was a statistically significant difference between females and males in that group (z=2.26; p=0.03).

Differences in the level of depressiveness

Differences in the level of depressiveness were further tested by one-way variance analysis, and again, there were no statistically significant differences between the three groups (F=2.47; p=0.09). However, post-hoc comparison between each group pair (LSD test) showed one statistically significant difference in the level of depressiveness between students attending elective subjects »Depression« and elective subject »Diabetes«, the latter scoring significantly higher (M=8.30 in »Depression« group; M=11.41 in »Diabetes« group; p=0.04). The results are presented in Table 2.

Due to a relatively small number of participants (5 in total, 4 in the »Diabetes« group and 1 in the group that hasn't enrolled any of the two researched subjects) fall-

ing into the »moderately depressed« group, differences among the three groups were studied by comparing results clustered in two levels of depressiveness – no depressiveness and mild to moderate depressiveness and calculated by χ^2-test. The results are presented in Table 3. Again, there were no statistically significant differences in the number of subjects within the two clusters of depressiveness for three groups of students (χ^2=0.18; ss=2; p=0.91).

The differences between three groups for each item of Beck's self-evaluation depression questionnaire were also analyzed by one-way variance analysis and post-hoc LSD test. The results revealed statistically significant difference among all three groups for item »Feeling of rejection«. Post-hoc analysis showed that students attending »Diabetes« elective subject scored highest (M=0.62; SD=0.73; p=0.02), followed by students attending none of the two elective subjects (M=0.53; SD=0.78; p=0.02) and students attending »Depression« elective subject (M=0.17; SD=0.38; p=0.02). Post-hoc analyses showed other differences as well between some group pairs: in item »Urge for punishment« and item »Suicidal tendencies«, students attending elective subject »Diabetes« scored higher than students attending neither of the two elective subjects (for item »Urge for punishment« M=0.59; SD=0.82; p=0.09 *vs*. M=0.23; SD=0.63; p=0.09; for item »Suicidal tendencies« M=0.38; SD=0.73; p=0.12 *vs*. M=0.10; SD= 0.31; p=0.12). Again, students attending elective subject »Diabetes« score highest in the item »Weight loss« (M=0.48; SD=0.74; p=0.06), followed by students attending elective subject »Depression« (M=0.20; SD=0.41; p=0.06), with students attending none of the two elective subjects scoring lowest in this item (M=0.17; SD=0.46; p=0.06). The results are presented in Figure 1.

Discussion

There is a significant number of studies demonstrating elevated level of mood and anxiety disorders in medical students[10,11]. Levels of depressiveness were assessed by different rating scales, Beck's depression inventory and General health questionnaire being most widely used. We chose to use Beck's self-evaluation depression questionnaire, which is basically Beck's Depression Inventory translated and validated in Croatian language, as it is reliable and easily used in a self-evaluative and anonymous manner.

In majority of published studies incidence of depression was shown to be higher in medical students than in general population[16,17]. There was no consistency in reported gender differences, but in most instances gender ratio in medical students reflects the ratio in general population[10,11,17]. In our subjects there were no statistically significant differences between the sexes, except within the group of students attending elective subject »Depression«, where female subjects scored significantly higher on the Beck's self-evaluation depression questionnaire. Still, the observed difference is not outside the ratio established for general population[1]. Some of the identified risk factors were financial worries[13], relationship with parents, siblings and lecturers, level of pressure prior to exams and other academic concerns[16].

To our knowledge, so far there are no published data correlating choice of subject and level of depressiveness in medical students. With due consideration for the well established fact regarding higher than average level of depressiveness in medical students, combined with exceptionally large number of applications for our elective subject on depression, we hypothesized that personal mood-related problems may represent motivation for this particular choice of elective subject. Similarly to our idea, Finkelstein and associates established that anxiety levels decreased among medical students that enrolled the subject »Mind-Body Medicine« as it proved successful in attracting students that were more anxious than their peers[18].

The level of depressiveness of students attending elective subject »Depression« were compared with the results scored by their peers attending more familiar elective subject »Diabetes«, since Internal medicine is a part of the third year curriculum and Psychiatry is a part of the fourth year curriculum for graduate students at School of medicine, University of Rijeka. Further comparison was performed with a matching group of students attending none of the two elective subjects.

No statistically significant differences were found among the groups regarding the levels of depressiveness, as shown in Table 3. Surprisingly, in the detected differences in certain items of Beck's self-evaluation depression questionnaire, namely item »Feeling of rejection«, item »Urge for punishment«, item »Suicidal tendencies« and item »Weight loss«, students attending elective subject »Diabetes« scored higher than either both or at least one other group of students, indicated more mood-related problems. The highest score in the Weight loss item is probably due to the learned nutritional facts that are certainly important in elective subject on diabetes.

Although this research was not designed to evaluate possible psycho-educative effects of elective subject dealing with the facts regarding depressive disorder, the results showed beneficial effects of specific body of knowledge on potentially affected aspect of mental health. Therefore, curriculum of elective subjects can at least partially explain higher scores that medical students attending elective subject »Diabetes achieved. Curriculum of »Diabetes« elective subject did not deal with the issues of psychiatric illnesses and due to that fact it could not provide beneficial information regarding depression as the elective subject of »Depression« did. To support the assumption that knowledge about a specific mental health issue can prove beneficial, there is a report about randomized controlled trial on the effects of a skill-based workshop on management of problem drinking and alcohol dependence in medical students by Kahan et al. that showed good efficiency in reduced drinking strategies[19]. Furthermore, Finkelstein and associates were successful in attracting students that were more anxious than their peers and were able to decrease anxiety levels in medical

students that enrolled their specifically designed subject called »Mind-Body Medicine«[18].

Also, students that chose to enroll elective subject »Diabetes« may have done so in order to avoid certain issues that the elective subject »Depression« could have raised for them, especially if they had problems or symptoms of depression and did not want to face them.

One of the limitations of this research is its relatively small sample size, but if we take into consideration that 89 out of 103 third year medical students participated in this research, the sample is quite representable for the population of third year graduate students at School of Medicine, Rijeka University. Also, none of the medical students that participated in this research were diagnosed with a psychiatric disorder or illness, especially depression. Furthermore, because Beck's self-evaluation depression questionnaire was used only at a single time point, in the second half of the elective subject program, we cannot properly determine the full impact that the curriculum of »Depression« elective subject had on reducing levels of depressiveness.

Conclusion

Given the high incidence of depressive disorder in medical students, as well as chronic course of this debilitating illness, it would be worth every effort to design appropriate screening procedure and establish available and acceptable treatment facilities for medical students. In order to more precisely measure the impact of preventive strategies further research is warranted, on a bigger sample of medical students and with multiple evaluation points. Elective subjects, like one presented in this research, could definitely become a very valuable tool for diagnosis and therapy of depression and its symptoms in the population of medical students.

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POVEZANOST RAZINE DEPRESIVNOSTI U ODNOSU NA ODABIR ELEKTIVNIH PREDMETA KOD STUDENATA MEDICINE

SAŽETAK

Cilj ovog istraživanja je bilo ustanoviti ako postoji povezanost između izbora izabranih tema, nazvanih »Depresija« i »Dijabetes«, i nivoa depresivnosti kod studenata medicine. Tri grupe studenata treće godine medicinskog fakulteta u Rijeci, su testirani da se ustanovi razina depresije koristeći Beckovu samo-evaluacijsku skalu. Grupe su se sastojale od 30 ne-nasumično izabranih studenata koji su upisali izabranu temu »Depresija« i 29 ne-nasumično izabranih studenata koji su upisali izbornu temu »Dijabetes«, i treća grupa od 30 nasumično izabranih studenata medicine koji nisu upisali niti jednu od prethodno spomenutih izbornih tema. Prosjek starosti sudionika u ovom istraživanju je 25.24 godine. Rezultati istraživanja pokazali su statistički ne značajnu razliku u ukupnom nivou depresivnosti među grupama. Testirajući različitost među grupama, ukazana je statistički značajna različitost u depresivnosti između studenata koji pohađaju »Depresiju« i »Dijabetes«, koji su kasnije bili značajno depresivniji (M=8,30 u grupi »Depresija«; M=11,41 u grupi »Dijabetes«; p=0,04). Ukupno u istraživanju je sudjelovalo 33 muškarca i 56 žena, utjecaj spola na rezultate istraživanja je također ispitano, i nije bilo statistički značajne razlike između spolova u grupama. Različitost je pronađena samo u grupi koja je pohađala izbornu temu »Depresija«, gdje su žene imale značajnije više bodova u Beckovom upitniku (z=2,26; p=0,03). Analiza razlika u Beckovom upitniku pokazala je statistički značajnu razliku u stavki

»Osjećaj odbijenosti«, gdje su studenti koji ne pohađaju izbornu temu »Depresija« pokazali značajno više bodova u ovoj stavci od onih koji pohađaju izbornu temu »Depresija«; u ispitivanju razlike u stavkama »Nagon za kaznu« i, »Suicidalne tendencije« između grupe »Dijabetes« i »ostalih izabranih tema« razlike su pronađene u korist grupe koja pohađa izbornu temu »Dijabetes«. U stavki o »Gubitku težine« studenti koji pohađaju temu »Dijabetes« imali su značajnije više bodova od njihovih vršnjaka iz ostale dvije grupe. Rezultati indiciraju mogućnost zaštitničke uloge psiho-edukativne stavke dane studentima, koji pohađaju izabran predmet o depresiji na medicinskom fakultetu; to je opetovano pokazivalo da je stresno i zahtjevno te ide u korist nastajanju depresivnih poremećaja.