

Prevalence and factors associated with depressive symptoms among Polish dentistry students

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Abstract

Introduction and objective. Depression is a disease that affects over 264 million people worldwide. According to research, the problem of depression concerns dentistry students. The aim of the research was to investigate the prevalence and severity of depressive symptoms among Polish dental students, determine factors associated with this phenomenon and examine the relationship between these factors and depressive symptoms. **Material and method.** The participants of the study were dental students enrolled in each of the 10 Polish universities that offer dental education. The research tool was an author's questionnaire and a Polish-language version of 9-Item-Patient Health Questionnaire (PHQ-9). **Results.** A total of 247 dental students took part in the study. The statistical analysis showed that 53.85% of the respondents were provisionally diagnosed with major depression. 8.91% of the participants had symptoms of severe depression. The research suggests that not doing sports regularly and not getting enough sleep are factors associated with depression among Polish dental students. **Conclusions.** Depressive symptoms among Polish dental students are common. Results suggest that it is important for students to maintain physical activity and take care of proper sleep hygiene. Further research needs to be done in order to explore more factors associated with depressive symptoms in the above-mentioned group.

Key words: depression; dental students

Introduction

According to World Health Organization, depression is a mental disorder that results in lowering of mood, anhedonia, psychomotor retardation, poor concentration and sleep or appetite disturbances. Depression is a widely-spread disorder and over 264 million people of all ages worldwide suffer from it. [1] Depressive disturbances are a significant problem among dental medicine students. Research carried out among 1186 students show that prevalence of depressive symptoms is higher among dentistry students than among medical, AMS and nursing students. [2] Similar results were obtained by Patrick et al. who showed that dental students more often suffer from depression, anxiety, burnout and depersonalization than medical students. [3] Research carried out on a group of 258 dental students by Manish Bathla et al. revealed that most students through all the years of their studies graded themselves to be mildly anxious and depressed. [4] Many risk factors contributing do occurrence of depressive symptoms among dental students can be distinguished, among others: female gender, problems with class friends, relationship problems, anticipation of family, peer pressure, lack of interest in profession, low satisfaction of relations with peers or academic teachers. [2,4,5,6] Whereas it was concluded that high or medium level of satisfaction from dentistry and close friends protects from emergence of depressive symptoms. [5] Additional factors that can influence the emergence of depression among dental students are internet addiction and lack of musical activity. [7,8] Untreated depression can lead to serious consequences. Fernando Galán et al. showed a significant link between emergence of depressive symptoms and presence of suicidal thoughts among dental students. [9] Despite it all, a significant part of those who suffer from depression, doesn't look for help. According to a research carried out by Duleeka Knipe et al. among dentistry, medicine and veterinary students, only 21% of those with symptoms of severe depression searched for professional help. The main reason of not looking for help reported by dental students was lack of time. As reasons students also listed the fear of documentation in scientific files and unwanted intervention. [10]

Objective

The aim of the research was to investigate the prevalence and severity of depressive symptoms among Polish dental students, determine factors associated with this phenomenon and examine relationship between those factors and depressive symptoms.

Material and method

The participants of the study were dental students enrolled in each of the 10 Polish universities that offer dental education. The research tool (an online survey) was placed on groups dedicated to dental students from different Polish universities on Facebook social networking site. Answers were collected in April of 2020. The participation was non-compulsory. The questionnaire was anonymous.

A Polish-language version of 9-Item-Patient Health Questionnaire (PHQ-9) was used to assess severity of depressive symptoms among participants of the study. A PHQ-9 score of ≥ 10 has a sensitivity of 88% and a specificity of 88% for major depression.

Participants with a PHQ-9 score of 10 or more were (provisionally) classified as having major depressive disorder. A PHQ-9 scores ranging from 0 to 4 are considered as none-minimal depression severity, scores from 5 to 9 represent mild depression, scores from 10 to 14 represent moderate depression, scores from 15 to 19 represent moderately severe depression and scores from 20 to 27 represent severe depression. [11] Author's questionnaire containing closed one-choice questions with Likert scale was used to collect information about sociodemographic characteristics and investigated factors.

Collected data was analyzed statistically. To assess the relationship between the variables, the Chi-square test of independence was used. Students with none-minimal and mild depression severity were compared against those with moderate depression severity and against those with moderately severe and severe depression severity. The level of significance was set at $p < 0.05$.

Results

A total of 247 dental students took part in the study. The respondents' ages ranged from 19 to 34 years with a mean age of 22.32 years. Women constituted of 80.97% (n=200) of the participants and men constituted of 19.03% (n=47) of the participants. 26.72% (n=66) of the respondents studied in the 1st year of dental university education, 26.32% (n=65) – in the 2nd year, 14.57% (n=36) – in the 3rd year, 14.57% (n=36) – in the 4th year and 17.81% (n=44) – in the 5th year.

The PHQ-9 score of the participants ranged from 1 to 27 with a mean score of 10.70 and median score of 10. 53.85% (n=133) of the respondents were provisionally diagnosed with major depression (a PHQ-9 score of ≥ 10). Overall, 13.36% (n=33) of the participants were found to have none-minimal depression severity; 32.79% (n=81) – mild depression severity; 28.34% (n=70) – moderate depression severity; 16.60% (n=41) – moderately severe depression severity and 8.91% (n=22) – severe depression severity. [Table 1.]

Table 1. Depression severity

Depression severity	PHQ-9 score	n	%
None-minimal	0-4	33	13.36%
Mild	5-9	81	32.79%
Moderate	10-14	70	28.34%
Moderately severe	15-19	41	16.60%
Severe	20-27	22	8.91%
Total		247	100.00%

Women (44.50%) less often than men (53.19%) were classified as having none-minimal or mild severity of depressive symptoms. More women (55.50%) than men (46.81%) were found to have major depressive disorder (a PHQ-9 score of ≥ 10). Moderate depression was present among 28.00% of women and 29.79% of men. Moderately severe and severe depression occurred in higher percentage of women (27.50%) than men (17.02%). However, the established differences weren't statistically significant ($\text{Chi}^2 = 2.30$; $p = 0.32$). [Table 2.]

Table 2. Depression severity and gender.

Statistical analysis: Chi² = 2.30; df = 2; p = 0.32		Gender			
		Female		Male	
		n	%	n	%
Depression severity	None - mild/ mild	89	44.50%	25	53.19%
	Moderate	56	28.00%	14	29.79%
	Moderately severe/ severe	55	27.50%	8	17.02%
	Total	200	100.00%	47	100.00%

The research didn't find a link between severity of depression and the year of university education. The highest percentage of respondents with none-minimal or mild depressive symptoms was found among 3rd-year dental students (59.38%), whereas the lowest – among 4th-year dental students (36.11%). The above-mentioned percentage equaled 51.52% among 1st-year dental students, 42.42% - among 2nd-year dental students and 42.55% among 5th-year dental students. Major depressive disorder (a PHQ-9 score of ≥ 10) was found among 48.48% of 1st-year dental students, 57.58% of 2nd-year dental students, 40.63% of 3rd-year dental students (the lowest percentage), 63.89% of 4th-year dental students (the highest percentage) and 57.54% of 5th-year dental students. Moderate depression occurred in 28.79% of 1st-year dental students, 28.79% of the 2nd-year dental students, 21.88% of the 3rd-year dental students (the lowest prevalence), 30.56% of the 4th-year dental students (the highest prevalence) and 29.79% of the 5th-year dental students. Moderately severe and severe depression was present the most frequently among 4th-year dental students (33.33%) and the least frequently among 3rd-year dental students (18.75%). Whereas such percentage equaled 19.70% among 1st-year dental students, 28.79% among 2nd-year dental students and 27.66% among 5th-year dental students. The established differences weren't statistically significant (Chi² = 5.99; p = 0.65). [Table 3.]

Table 3. Depression severity and year of university education.

Statistical analysis: $\text{Chi}^2 = 4.99$; $\text{df} = 8$; $p = 0.65$		Year of university education									
		1		2		3		4		5	
		n	%	n	%	n	%	n	%	n	%
Depression severity	None - mild/ mild	34	51,52%	28	42,42%	19	59,38%	13	36,11%	20	42,55%
	Moderate	19	28,79%	19	28,79%	7	21,88%	11	30,56%	14	29,79%
	Moderately severe/ severe	13	19,70%	19	28,79%	6	18,75%	12	33,33%	13	27,66%
	Total	66	100.00%	66	100.00%	32	100.00%	36	100.00%	47	100.00%

The research showed a link between doing sports regularly and lower severity of depression. According to analysis, a none-minimal and mild severity of depressive symptoms was present the most often among participants, who claimed that they definitely or rather did sports regularly (53.26%), whereas the least often among those, who indicated that they definitely or rather didn't do sports regularly (39.32%). Among respondents who provided their answer to this question as hard to tell whether they did sports regularly, such percentage had a medium value and equaled 50.00%. The lowest prevalence of major depressive disorder (a PHQ-9 score of ≥ 10) was found among those, who declared that they definitely or rather did sports regularly (46.74%), whereas the highest among those, who indicated that they definitely or rather didn't do sports regularly (60.68%). Among respondents who provided their answer to this question as hard to tell whether they did sports regularly, such percentage had a medium value and equaled 50.00%. Moderate depression was found among 32.61% of respondents who definitely or rather did sports regularly (the highest percentage), 23.68% of respondents for whom it was hard to tell whether they did sports regularly (the lowest percentage) and 26.50% of respondents who definitely or rather didn't do sports regularly. Moderately severe and severe depression was present the most often among participants, who claimed that they definitely or rather didn't do sports regularly (34.19%), whereas the least often among those, who indicated that they definitely or rather did sports regularly (14.13%). Among respondents who provided their answer to this question as hard to tell whether they did sports regularly, such percentage had a medium value and equaled 26.32%. The established differences were statistically significant ($\text{Chi}^2 = 11.47$; $p = 0.02$). [Table 4.]

Table 4. Depression severity and subjective feeling of doing sports regularly.

Statistical analysis: Chi² = 11.47; df = 4; p = 0.02		Do you do sports regularly?					
		Definitely yes/ Rather yes		Hard to tell		Definitely no/ Rather no	
		n	%	n	%	n	%
Depression severity	None - mild/ mild	49	53,26%	19	50,00%	46	39,32%
	Moderate	30	32,61%	9	23,68%	31	26,50%
	Moderately severe/ severe	13	14,13%	10	26,32%	40	34,19%
	Total	92	100.00%	38	100.00%	117	100.00%

There was no association between severity of depression and participating in social gatherings often enough. According to analysis, a none-minimal and mild severity of depressive symptoms was present the most often among participants, who claimed that they definitely or rather participated in social gatherings often enough (54.62%), whereas the least often among those, who indicated that they definitely or rather didn't participate in social gatherings often enough (36.25%). Among respondents who provided their answer to this question as hard to tell whether they participated in social gatherings often enough, such percentage had a medium value and equaled 41.67%. The lowest prevalence of major depressive disorder (a PHQ-9 score of ≥ 10) was found among those, who declared that they definitely or rather participated in social gatherings often enough (45.38%), whereas the highest among those, who indicated that they definitely or rather didn't participate in social gatherings often enough (63.75%). Among respondents who provided their answer to this question as hard to tell whether they participated in social gatherings often enough, such percentage had a medium value and equaled 58.33%. Moderate depression was found among 22.69% of respondents who definitely or rather participated in social gatherings often enough (the lowest percentage), 35.42% of respondents for whom it was hard to tell whether they participated in social gatherings often enough (the highest percentage) and 32.50% of respondents who definitely or rather didn't participate in social gatherings often enough. Moderately severe and severe depression was present the most often among participants, who claimed that they definitely or rather didn't participate in social gatherings often enough (31.25%), whereas the least often among those, who indicated that they definitely or rather participated in such gatherings often enough (22.69%). Among respondents who provided their answer to this question as hard to tell whether they participated in social gatherings often enough, such percentage had a medium value and equaled 22.92%. The established differences weren't statistically significant ($\text{Chi}^2 = 7.97$; $p = 0.09$). [Table 5.]

Table 5. Depression severity and subjective feeling of participation in social gatherings often enough.

Statistical analysis: Chi² = 7.97; df = 4; p = 0.09		Do you participate in social gatherings often enough?					
		Definitely yes/ Rather yes		Hard to tell		Definitely not/ Rather not	
		n	%	n	%	n	%
Depression severity	None - mild/ mild	65	54.62%	20	41,67%	29	36,25%
	Moderate	27	22.69%	17	35,42%	26	32,50%
	Moderately severe/ severe	27	22.69%	11	22,92%	25	31,25%
	Total	119	100.00%	48	100.00%	80	100.00%

The research showed a very statistically significant link between severity of depressive symptoms and sleeping habits. The highest percentage (62.50%) of respondents with non-minimal and mild depressive symptoms was found among those, who declared that they were getting enough sleep. Whereas such percentage had a medium value (52.38%) among those, for whom it was hard to tell if they slept enough and the lowest (29.36%) among those, who indicated that they weren't getting enough sleep. The lowest prevalence of major depressive disorder (a PHQ-9 score of ≥ 10) was found among those, who declared that they definitely or rather slept enough (37.50%) , whereas the highest among those, who indicated that they definitely or rather didn't sleep enough (47.62%). Among respondents who provided their answer to this question as hard to tell whether they slept enough, such percentage had a medium value and equaled 47.62%. Moderate depression was present in 18.75% of respondents who were getting enough sleep, 19.05% of respondents for whom it was hard to tell whether they slept enough and 40.37% of respondents who didn't sleep enough. The highest incidence (30.28%) of moderately severe and severe depressive symptoms was present in a group of students who declared that they weren't getting enough sleep, whereas the lowest (18.75%) was found among participants who were sleeping enough. In case of respondents for whom it was hard to tell if they were sleeping enough, the percentage mentioned above had a medium value and equaled 28.57%. The established differences were statistically significant ($\text{Chi}^2 = 25.38$; $p = 0.00004$). [Table 6.]

Table 6. Depression severity and subjective feeling of sleeping enough.

Statistical analysis: Chi² = 25.38; df = 4; p = 0.00004		Do you sleep enough?					
		Definitely yes/ Rather yes		Hard to tell		Definitely not/ Rather not	
		n	%	n	%	n	%
Depression severity	None - mild/ mild	60	62,50%	22	52,38%	32	29,36%
	Moderate	18	18,75%	8	19,05%	44	40,36%
	Moderately severe/ severe	18	18,75%	12	28,57%	33	30,28%
	Total	96	100.00%	42	100.00%	109	100.00%

Discussion

In our study, major depressive disorder was more often recognized among female (55.50%) than male (46.81%) dental students and the difference wasn't statistically significant. Similarly, in a research carried out by Raghunathan et al. among 364 Indian dental students, more female (28.4%) than male (20.8%) were screened positive for depression and the difference wasn't statistically significant. [12] In a study conducted by Galan et al. among dental students enrolled at School of Dentistry of Seville, Spain gender was found to have no significant influence on the prevalence of depression. [9]

Our research didn't find a link between the year of dental university education and depressive symptoms. Overall, major depressive disorder was recognized among 48.48% of 1st-year dental students, 57.58% of 2nd-year dental students, 40.63% of 3rd-year dental students (the lowest percentage), 63.89% of 4th-year dental students (the highest percentage) and 57.54% of 5th-year dental students. In a research by Galan et al., carried out among Spanish dental students, 12% of 2nd year dental students, 14.5% of 4th year dental students and 3.8% of 5th year dental students were screened positive for depression, but close-to-significance levels were only found in 4th year students relative to the 5th year respondents. [9]

In our analysis there exists a statistically significant link between doing sports regularly and lower prevalence of depressive symptoms during the course of dental studies. According to a research carried out on a population of college students in Split, Croatia by Uglesić et al., doing sports had a significant influence in reducing depressive symptoms among females, whereas among males such influence wasn't significant. [13] A research by Sarac et al. conducted among American college athletes showed that the lifetime occurrence of mental health conditions in this population (14.0%) is far less lower than estimates in the general population. [14]

In the analysis, the lowest percentage of dental students with major depressive disorder was found among those, who declared that they participated in social gatherings often enough. According to Elmer and Stadtfeld, individuals with symptoms of depression are more likely to be isolated in their social networks, which can lead to worsening of their symptoms. [15]

The research showed a statistically significant link between severity of depressive symptoms and sleeping habits. Similarly, a systematic review concerning quality of sleep and depression among college students carried out by Dinis and Braganca showed a similar result and supports a concept that there exists a strong association between sleep hygiene or sleep quality and depression or depressive symptoms. [16]

Conclusion

1. Depressive symptoms among Polish dental students are common. Every second Polish dental student shows symptoms of major depressive disorder. Nearly 9% of Polish dental students has symptoms of severe depression.

2. The research suggests that not doing sports regularly and not getting enough sleep are factors associated with depression among Polish dental students. Therefore, it is important for students to maintain physical activity and take care of proper sleep hygiene. Further research is needed to identify more factors associated with depression in this population in order to develop strategies for prevention and treatment of this disorder.

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