
Prevalence of depression among medical students in a private medical school: A cross-sectional study

Paulina Nicole G. Vitocruz; Ann Pauline G. Vivar, RN; Georgene Danielle R. Whang; Namfon M. Wonglue, RMT; Ynh-Chun Wu, RMT; Larimel Jean P. Yadao; Ann Melody Y. Yao; Jacob C. Ybanez; Adrian B. Yu, RPh.; Jose Luisito A. Zulueta, MD;¹ Jose Ronilo G. Juangco, MD, MPH;¹ and Maria Paz S. Garcia, MD²

Abstract

Introduction Medical students are susceptible to depression due to the constant exposure to stressful situations and almost 30% of medical students suffer from depression. This study aimed to determine the prevalence of depression among first- to third-year medical students in a private medical institution.

Methods A descriptive, cross-sectional study design was employed on first- to third-year medical students selected through simple random sampling. They were asked to answer the Patient Health Questionnaire-9 for the assessment of depression.

Results The prevalence of moderate to severe depression was 19.1%. Almost 15% of the first-year medical students, 23.7% of the second-year medical students and 18.3% of the third-year students were found to have a risk of having depression. Twenty-one percent of the male students and 18.4% of the females were classified to have depression.

Conclusion Almost one-fifth of the first- to third-year medical students in the private medical institution have depression. The highest prevalence of having depression was among second-year medical students, males, 20 to 22 years old.

Keywords: Depression, medical student, patient health questionnaire

According to the World Health Organization (WHO), mental health and well-being are essential

elements of human thought, emotion and interaction, both collectively and individually.¹ Depression is one of the many global health problems which reflects the mental health of the population. Depression is a common illness worldwide, with more than 300 million people affected, and one of the main causes of disability.² More women are affected than men.²

According to the American Medical Students Association, almost 30% of medical students suffer from depression or symptoms of depression and one out of 10 medical students reported experiencing suicidal thoughts. Medical students, as compared to the general population, are five times more susceptible to being depressed.³ There have been few studies on the prevalence of depression among medical students in the Philippines.

Correspondence:

Jose Ronilo G. Juangco, M.D., M.P.H., Department of Preventive and Community Medicine, College of Medicine, University of the East Ramon Magsaysay Memorial Medical Center Inc., 64 Aurora Boulevard, Barangay Doña Imelda, Quezon City, PH 1113; e-mail: jjuangco@uerm.edu.ph

¹ Department of Preventive and Community Medicine, College of Medicine, University of the East Ramon Magsaysay Memorial Medical Center, Inc.

² Department of Pharmacology, College of Medicine, University of the East Ramon Magsaysay Memorial Medical Center, Inc.

This study aimed to determine the prevalence of depression among medical students in a private medical institution in the Philippines. Specifically, the researchers sought to determine the extent of depression in terms of age, sex and year level.

Methods

The study employed a descriptive cross-sectional study design. Medical students from a private university in Metro Manila were asked to answer the Patient Health Questionnaire-9. The study was approved by the Ethics Review Committee of the institution.

The target population of the study consisted of 1,325 first- to third year medical students currently enrolled at a private medical institution. From the target population, a minimum sample size of 472 was computed using the population proportion sampling formula, utilizing the results obtained from a cross-sectional study on depression and suicidal ideation in medical students in China.⁴ Simple random sampling was used to select the students for each year level using the online Research Randomizer, www.randomizer.org. Those who agreed to join and gave their informed consent were included in the study.

The Patient Health Questionnaire-9 (PHQ-9) was used to measure depression for the study. The PHQ-9 has become the gold standard measurement tool for depression, which helps clinicians in making a criterion-based diagnosis.⁵ It is a nine-item self-administered questionnaire consisting of four-point Likert-type closed-ended questions regarding frequency of symptoms of depression patterned after the Diagnostic and Statistical Manual V and ICD-10 diagnostic criteria.⁶ A cut off score of ≥ 10 (specificity 95%, sensitivity 77%) indicates presence of depression.⁷ Each item can be scored 0 to 3, with 0 = not at all; 1 = several days; 2 = more than half the days; and 3 = nearly every day. The total score can range from 0 to 27, with 0 labeled as no depression; 1 to 4 as minimal depression; 5 to 9 as mild depression; 10 to 14 as moderate depression; 15 to 19 as moderately severe depression; and 20 to 27 as severe depression.

The researchers talked to each prospective participant individually and explained the informed consent form. A hard copy of the questionnaire was given to those who gave their informed consent. The researchers then explained what the questionnaire entailed. Ample time was given to the participants for

them to read through and answer the questionnaire on their own. The researchers answered any questions from the participants.

The accomplished questionnaire was checked for completeness of the answers; forms that were incomplete were not included in the data analysis. Data were encoded and tabulated using Microsoft Excel. Quantitative classification of data as either with the absence or presence of depression as well as the classification of its severity were done through the PHQ-9 score classification. The data were analyzed using SPSS version 16.

The study was implemented in accordance with the protocol and ethical guidelines set by the Ethics Review Committee. The researchers ensured that proper ethical principles were observed in, while and after conducting the study. Free and informed consent was obtained from each of the respondents. The identity of the participants was kept private and confidential. Participants who were screened to have depression were referred to the mental health unit of the university for further evaluation and management upon their consent.

Results

From the target randomly selected sample of 519 respondents, 423 (81%) medical students completed the PHQ-9 questionnaire, while the 53 refused to give their consent, 37 were absent during the time of distribution and 6 of them left more than three questions unanswered. The baseline characteristics of 423 participants are shown in Table 1. The mean age of the respondents was 23 years and there were more females (66%) than males. The 20 to 22-year-old respondents (56%) and second-year medical students (37%) comprised the biggest groups.

Among the 423 participants, 19.1% were found to suffer from moderate to severe depression based on the PHQ-9 as seen in Table 1. Among the different levels, the second-year medical students were found to have the highest prevalence of depression (23.7%) as shown in Table 2. Depression was found in one of two students in the age group 19 years old and below, and in one of five students in the other age groups, as seen in Table 3. More female medical students had depression (278 vs 30), but the proportion was higher in the males (20.7 vs 18.4%) as shown in Table 4.

Prevalence of depression among medical students

Table 1. Demographic characteristics of the participants (n = 423)

Characteristics	n (%)
Sex	
Male	145 (34.3)
Female	278 (65.7)
Age (yr)	
≤ 19	2 (0.5)
20-22	236 (55.8)
≥ 23	185 (43.7)
Year level	
1st	136 (32.1)
2nd	156 (36.9)
3rd	131 (31.0)
Overall prevalence	
None	31 (7.3)
Minimal	171 (40.4)
Mild	140 (33.1)
With depression	81 (19.1)
Moderate	62 (14.6)
Moderately severe	13 (3.1)
Severe	6 (1.4)

Discussion

Almost similar to the previous studies, prevalence of various levels of depression was highest among sophomore medical students and lowest among the juniors, different from the trend in some of the previous studies that had seen freshmen students with the highest prevalence, followed by the second year and then the third year medical students.^{8,9} The results suggest that adopting to the stressful environment with each succeeding year may be a factor for the lower prevalence among the third-year medical students.¹⁰

Measuring moderate to severe prevalence of depression by year level does not reveal an increasing or decreasing trend in the prevalence per year. In the study by Puthran, the meta-analysis of depression studies in medical students showed a decreasing trend of depression in the higher year levels.¹⁰ Inam found that the prevalence of depression is significantly higher in first- and second-year students compared to the upperclassmen, findings supported by results of the present study.⁹ In Vankar's study, mild to severe depression also showed a decreasing trend in the cases of depression as one went through medical school.⁸ Differences in results could possibly be multi-factorial. Cuttilan found that depression could be attributed

Table 2. Prevalence of depression by year level

Year level \ Frequency (%)	None	Minimal	Mild	With depression			Total with depression	Total per year level
				Moderate	Moderately severe	Severe		
1st	6 (4.4)	62 (45.6)	48 (35.3)	18 (13.2)	2 (1.5)	0 (0.0)	20 (14.7)	136
2nd	12 (7.7)	66 (42.3)	41 (26.3)	24 (15.4)	9 (5.8)	4 (2.6)	37 (23.7)	156
3rd	13 (9.9)	43 (32.8)	51 (38.9)	20 (15.3)	2 (1.5)	2 (1.5)	24 (18.3)	131
Total	31	171	140	62	13	6	81 (19.1)	423

Table 3. Prevalence of depression according to age range

Age range \ Frequency (%)	None	Minimal	Mild	With depression			Total	Total
				Moderate	Moderately severe	Severe		
≤ 19	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	2
20-22	14 (6.1)	93 (40.3)	79 (34.2)	34 (14.7)	7 (3.0)	4 (1.7)	45 (19.5)	231
≥ 23	17 (9.2)	74 (40.0)	59 (31.9)	27 (14.6)	6 (3.2)	2 (1.1)	35 (18.9)	185
Total	31	171	140	62	13	6	81 (19.14%)	423

Table 4. Prevalence of depression among male and female students

Sex/ Frequency (%)	None	Minimal	Mild	Moderate	With depression		Total	Total
					Moderately severe	Severe		
Male	16 (11.0)	49 (33.8)	50 (34.5)	24 (16.5)	2 (1.4)	4 (2.8)	30 (20.7)	145
Female	15 (5.4)	122 (43.9)	90 (32.4)	38 (13.7)	11 (4.0)	2 (0.7)	51 (18.4)	278
Total	31	171	140	62	13	6	81 (19.1)	423

to both social and cultural reasons.¹¹ Some studies were cited as having a low pooled prevalence from underreporting due to mental health issues being seen in a negative light. Another reason for the reported low prevalence is the understanding of medical students in psychiatry. Another factor is the support system provided by the medical schools.¹¹ The difference in the prevalence of depression per year level could be attributed to a difference in culture compared to other countries or studies. However, this cannot be supported by current findings.

In a cross-sectional survey among 279 medical students in Wah Medical College, depression was present in 35.1% of students.¹² Sex, examination criteria dissatisfaction, overburden of test schedule, and age were found to be associated with depression. Results of this study showed that most medical students with possible moderate, moderately severe, and severe depression were 20-22 years old. These results were similar with the study done among medical students in Karachi.¹³ That study showed that most depressed medical students were 20 to 22 years old. Another study by Wahed and Hassan showed a similar age distribution pattern.¹⁴ An Indian study showed that depression was comparatively more prevalent among younger medical students (aged 17-18 year) The results indicate that higher depression rates are seen among older medical students.¹⁵

Current findings show that males had a higher prevalence of depression as compared to females, similar to the results of Karaoglu.¹⁶ Conversely, majority of the other studies showed higher prevalence of depression among female medical students than their male counterparts. According to Amr, the proportion of women entering medical school has been increasing worldwide, thus sex is one of the significant factors in a medical student's well-being.¹⁷ The trend that females experience more anxiety and depression

than males may suggest that female medical students are more competitive and concerned about their performance especially in securing higher marks in exams.^{9,18} Hope and Henderson found that academic underachievement combined with low satisfaction with life is a predictor of symptoms of depression among female medical students.¹⁹

In line with this, the effects of one's sex on a medical student's anxiety and self-confidence are particularly consistent.²⁰ A study found that despite female medical students' performance being comparable with their male counterparts, female medical students were noted to consistently report more stress and anxiety and have less confidence in their own abilities. These behaviors can have a significant and often detrimental impact on both internal and external perceptions of ability and can undermine ability and performance which greatly affect satisfaction and sense of achievement among female medical students.

In general, literature shows that female medical students tend to underestimate their abilities, while males tend to overestimate theirs.²¹⁻²³ Furthermore, Blanch stated that female medical students may just be more open and willing to admit their feelings of anxiety, stress and lack of confidence in their abilities while male medical students are more reticent to admit these negative feelings.²⁰ Several other reasons that could explain the higher prevalence rates of depression and anxiety in women compared to men includes greater social freedom for expression of feelings, greater exposure to situations of risk for depression, and physiological and hormonal factors.^{24,25}

Almost one-fifth of the first- to third-year medical students in the private medical institution have depression. Among those with depression, the most prevalent was moderate depression, followed by

moderately severe depression. The highest prevalence of depression was among second-year medical students, in males 20 to 22 years old.

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