

Prevalence and predictors of depression among medical students in Jeddah, Saudi Arabia

Yousria Badawy (1)
Areej Alsaggaf (2)
Amani Bardi (2)
Omnia Alganmi (2)
Turki Alshehri (2)

(1) Professor of Family Medicine, College of Medicine, Ibn Sina National College for Medical studies

(2) Medical intern, Ibn Sina, National College for Medical studies

Corresponding author:

Areej Alsaggaf
 Jeddah, Saudi Arabia
 Mobile:00966532684559
 Email: Areej.hs@outlook.com

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Abstract

Background: Estimates of the prevalence of depression or depressive symptoms among medical students varies across studies from 1.4% to 73.5%. Studies also report conflicting findings about if student depression vary by undergraduate year, sex, or other characteristics.

Objective: to assess the prevalence and factors associated with depression among medical students in Jeddah, Saudi Arabia.

Methods: Institutional based cross-sectional study was conducted among medical students at Ibn Sina National College of Medical Science of Jeddah, Saudi Arabia. The presence of depression and its severity was based on PHQ depression scale (PHQ-9) 19, using Google form link. Data was collected using data on the outcome of interest (depression), socio-demographic characteristics (age, sex, source of income and marital status), academic-related factors (academic year of study).

Results: Depression was detected in 75.31% of the studied population, considering 10 score as a cut off point for depression. Among those depressed groups 23.44% were scored as having moderate depression (10-14) while those who had moderately severe (15-19) and severe (20 or more) were 28.93% and 22.94% respectively. The present study showed that depression was significantly more prevalent among female medical students compared to male medical students. The prevalence of depression was more in the second year medical students followed by the sixth year and the difference found between the severity of depression and year of studying was statistically significant.

Conclusion: Depression is highly prevalent among medical student populations. Implications of depression are of serious concern that could result in loss of potential to handle various stressors at college, impairment of functioning in classroom performance and later in clinical practice.

Key words: Saudi. Depression, medical students, prevalence & severity

Introduction

The WHO considers mental health as a fundamental aspect of human health and published an action plan for 2013–2020 to promote the prevention, treatment, and overcoming of mental health disorders(1). Depression is considered an important indicator for mental health, and the inability to detect and address this psychological disorder negatively affects individuals(2,3).

University students face various stressors such as academic requirements, time pressure and social adjustments, and medical students in particular, may face additional challenges such as the large workload, the time commitment and the number of assessments, as well as the pressures of a clinical environment(4). Studies have suggested that medical students experience high rates of depression(5). However, estimates of the prevalence of depression or depressive symptoms among medical students vary across studies from 1.4% to 73.5%(6,7). Studies also report conflicting findings about if student depression vary by undergraduate year, sex, or other characteristics(8-11).

A recent meta-analysis showed that depression affects approximately one third of medical students worldwide, (12). It is also likely that the overall prevalence of depressive symptoms among medical students is higher than that reported in the general population(13). As most of the studies revealed that depression is common in university students especially high among medical students they also found no preponderance between males and females and is higher in single students than married ones(14,15). It may be a significant hidden problem in medical students and mechanisms to identify and help students with mental health problems should be seriously considered(16).

Depression has a huge effect on society and individuals, which can lead to suicidal tendency, relationship problems, medical dropouts, and impaired work ability. Therefore, proper counseling services are required for the psychological well-being of medical students to improve their quality of life(17).

Even though depression is found to be remarkably high among medical students coupled with its impacts in causing poor academic performance, disability and poor quality of life, to our knowledge only a few studies are available in the study area (Saudi Arabia). A better understanding of the magnitude and correlates of depression is essential for planning appropriate intervention for those population groups.

Therefore, this study aimed to assess the prevalence and factors associated with depression among medical students in Jeddah, Saudi Arabia.

This study aimed to determine the prevalence and associated factors of depression among undergraduate medical students at Ibn Sini National Medical college, Jeddah, Saudi Arabia.

Methodology

Study design and setting:

Institutional based cross-sectional study was conducted among medical students at Ibn Sina National College of Medical Science of Jeddah, Saudi Arabia. The study was conducted between October to December 2019.

Sample population:

The Sample size was determined based on a single population formula using Epi-info version 7 with a 95% confidence interval and 5% margin of error taking the prevalence of depression as 27.7% . By considering a 10% non-response rate and applying sample correction formula a total sample size of 400 undergraduate medical students were involved in the study. The study population consisted of male and female medical students, attending the medicine program of all academic stages (from year one till year six). Students with known depression or under anti-depressive medications were included. Students with other known psychiatric illnesses other than depression, and chronic medical conditions known to be associated with depression (diabetes, rheumatoid, etc) were excluded.

Data collection:

The presence of depression and its severity was based on PHQ depression scale (PHQ-9) (18), using Google form link developed by Kroenke et al to measure depression. It was self-administered, and facilitated diagnosis of major depression and also provided assessment of symptom severity. The PHQ-9 is the depression module, which scores each of the nine criteria as "0" (not at all) and "3" (nearly everyday). Validity of this test has been assessed against an independent structured mental health professional (MHP) interview. PHQ-9 score of ten or more had a sensitivity of 88% and a specificity of 88% for major depression. It has been validated for use in primary care. Data was collected using data on the outcome of interest (depression), socio-demographic characteristics (age, sex, source of income and marital status), academic-related factors (academic year of study). The screening instrument assesses depressive symptoms based on nine questions for screening, diagnosing, monitoring and measuring the severity of depression level using the cutoff values of 10 to 14 dysthymia (minor depression) and 15 or above were considered to define major depression among medical students. According to the cutoff scores, students were classified as normal(0-4), mild (5-9), moderate (10-14), severely moderate (15-19) and severe (20 or more) depression

Ethical consideration:

Approval for this study was obtained from the ethics committee of Ibn Sini National College of Medical Science. All information obtained was kept confidential. Data collection sheet also included a consent to participation.

Data analysis:

The data was analyzed by using Statistical Package for Social Sciences (SPSS-22). The frequency and percentages for qualitative variables were calculated. The

association of depression with age, gender, marital status, having income and level of education were calculated by using Chi-square test. The P value less than 0.05 was considered as statistically significant.

Results

Table 1 revealed the distribution of the studied medical students who shared in the study. A total of 401 medical students participated in the study with a response rate of 85%. Among the respondents the majority 186 (46.4%) were in the age range of 18-21 years, 134 (33.4%) were males and 267 (66.6%) were females. Most of the students (96%) in the sample were single and 314 (78.3%) had no additional source of income. Students from all the years participated in this study, however, the majority were from second year (30.9%) and the sixth year (29.9%).

Figure 1 shows the distribution of depression severity among undergraduate medical students at Ibn Sini National College, Jeddah, Saudi Arabia. The study revealed that a minority (6.98%) were normal (0-4) whereas the distribution of mild depression (4-9) was 17.71%. However, depression was detected in 75.31% of the studied population, considering 10 score as a cut off point for depression. Among those depressed groups 23.44% were scored as having moderate depression (10-

14) while those who had moderately severe (15-19) and severe depression (20 or more) were 28.93% and 22.94% respectively.

Table 2 reveals that moderate to severe depression was more common in the youngest group. The majority (84.98%, 158/186) of those aged 18 – 21 were depressed followed by 21 – 24 years (67.74%, 65/155) and those of age 25 years or more (65%, 39/60). The association between the severity of depression and age was statistically significant ($P = .002$).

The present study showed that depression was more prevalent among female medical students (79.4%, 212/276) compared to male medical students (67.16%, 90/134). The association between the severity of depression and gender was statistically significant ($P = .033$).

Depression symptoms were found to be not associated with marital status and presence or absence of a source of income.

The prevalence of depression was more in the second year medical students (85.48%, 106/124) followed by the sixth year (65.55%, 78/119) and the difference found between the severity of depression and year of studying was statistically significant ($P = .010$).

Table 1: Sociodemographic characteristics of undergraduate medical students at Ibn Sini National College, Jeddah, Saudi Arabia

Value	Number	Percentage %
Age		
18-21 years old	186	46.4%
22-24 years old	155	38.7%
25 and above	60	15%
Sex		
Male	134	33.4%
Female	267	66.6%
Marital status		
Married	16	4%
Non-married	385	96%
Source of income		
Yes	87	21.7%
No	314	78.3%
Level of education		
First year	55	13.7%
Second year	124	30.9%
Third year	33	8%
Fourth year	25	6.3%
Fifth year	45	11.2%
Sixth year	119	29.9%

Figure 1: Distribution of depression severity among undergraduate medical students at Ibn Sini National College, Jeddah, Saudi Arabia

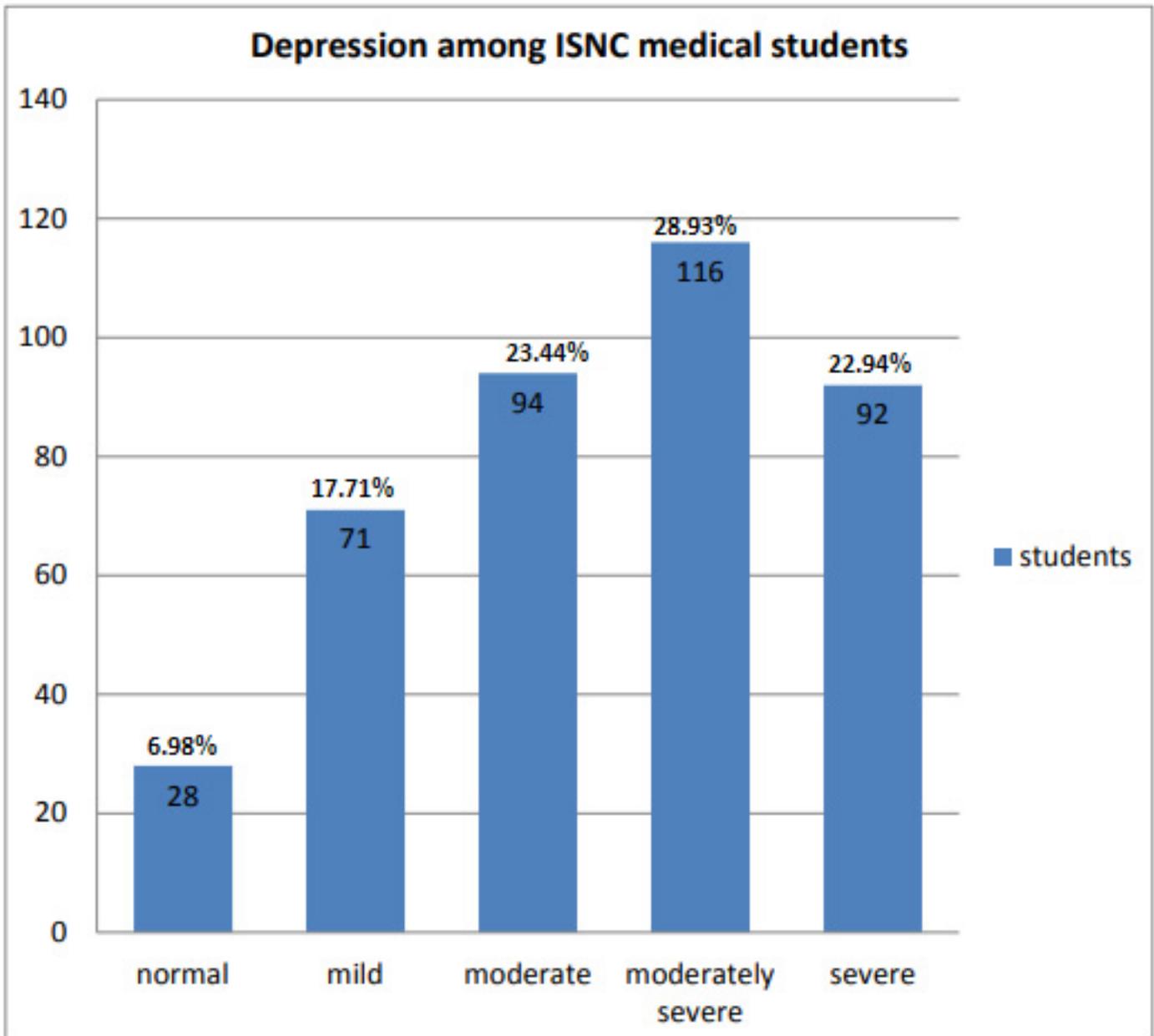


Table 2: Severity of depression according to sociodemographic factors and level of education among undergraduate medical students at Ibn Sini National College, Jeddah, Saudi Arabia

	Normal (0 – 4)	Mild (5 – 9)	Moderate (10 – 14)	Moderately severe (15 - 19)	Severe (20 – 27)	Total	<i>P</i> - <i>value</i> ^a
Age							
18 - 21	8 (4.30%)	20 (10.75%)	47 (25.27%)	56 (30.11%)	55 (29.57%)	186 (100%)	.002*
22 – 25	14 (9.03%)	36 (23.23%)	35 (22.58%)	48 (30.97%)	22 (14.19%)	155 (100%)	
25 and above	6 (10.00%)	15 (25.00%)	12 (20.00%)	12 (20.00%)	15 (25.00%)	60 (100%)	
Gender							
Male	16 (11.94%)	28 (20.9%)	27 (20.15%)	33 (24.63%)	30 (22.38%)	134 (100%)	.033*
Female	12 (4.49%)	43 (16.1%)	67 (25.09%)	83 (31.09%)	62 (23.22%)	276 (100%)	
Marital state							
Single	25 (6.78%)	68 (17.66%)	88 (22.85%)	110 (28.87%)	90 (23.84%)	385 (100%)	.511
Married	2 (12.5%)	3 (18.75%)	4 (25.00%)	5 (31.25%)	2 (12.5%)	16 (100%)	
Source of income							
Have source of income	6 (6.90%)	20 (22.99%)	18 (20.69%)	27 (31.03%)	16 (18.39%)	87 (100%)	.813
No source of income	22 (7.01%)	51 (16.25%)	76 (24.20%)	89 (28.34%)	76 (24.20%)	314 (100%)	
Education level							
First year	4 (7.27%)	9 (16.36%)	15 (27.27%)	17 (30.91%)	10 (18.19%)	55 (100%)	.010*
Second year	7 (5.65%)	11 (8.87%)	26 (20.96%)	36 (29.03%)	44 (35.48%)	124 (100%)	
Third year	1 (3.04%)	7 (21.21%)	8 (24.24%)	9 (27.27%)	8 (24.24%)	33 (100%)	
Fourth year	0 (00%)	2 (8.00%)	10 (40.00%)	6 (24.00%)	7 (28.00%)	25 (100%)	
Fifth year	4 (8.89%)	13 (28.89%)	7 (15.56%)	15 (33.33%)	6 (13.33%)	45 (100%)	
Sixth year	12 (10.00%)	29 (24.17%)	28 (23.33%)	33 (27.50%)	17 (15.00%)	119 (100%)	

Discussion

Prevalence of depression among medical students is a matter of great concern as it may impair behavior of students, affect academic performance, lead to diminished learning and therefore affect patient healthcare upon employment of these students.

In this study, the prevalence of depression among medical students and their possible association with various variables were assessed using patient health questionnaire (PHQ-9) which measure the severity of depression level using the cutoff values of 10 to 14 dysthymia (minor depression) and 15 or above were considered to define major depression. The results from the current survey revealed that a remarkable proportion of medical students (75.31%) had depression (taking all levels of depression together). Three out of four students were found to have depression. A recent study of the prevalence of overall depression rate was found to be higher than the present study for the medical students of Karachi which was 92% (19), whereas it was previously recorded at 70% in a study of the same country several years ago (20). Regarding the prevalence, the current finding was similar to other studies carried out at Taif University, Saudi Arabia using the patient health questionnaire (PHQ-9) scoring. The overall percentage of depression in that study was seen in 75.7% of the students (21). However, the current study result is higher than the studies conducted in Madinah (Saudi Arabia) which was 28.3% (22), in Egypt which was 63.6% (23), in Tabriz (Iran) which was 62.7% (24), in Malaysia which was 64.4% (25). The variation might be due to the difference in sample size and data collection tool which was PQ-2 with 60 participant in Madinah, Saudi Arabia (22), DASS-21 with 412 participant in Egypt (23) (12), BDI with 175 participant in Tabriz (Iran) (24), DASS-21 with 194 participants in Malaysia (25), and AKUADS in Karachi (Pakistan) (20).

The present study showed that students who were in the age interval of 18-21 years were significantly more likely to have depression as compared to other age groups. This result is similar to a study conducted in the International Islamic University of Malaysia (25).

The present study showed significant differences in depression scores between males and females. Similar to our results, some previous studies showed higher levels of depression among female

students. Some western studies (26,27) have also shown female gender to be significantly correlated with depression. However, findings of some studies (28) are contrary to our results and found no differences in depression among male and female students.

Regarding educational level, those who are in the second and sixth year were more likely to have depression compared to those in the other educational levels. The current findings are similar partially with the Indian study (29) which revealed that depression was more (66.3%)

among second year medical students. This observation of the current study may be because of difference in the number of respondents as the highest response was from second and sixth year. This might be due to other factors such lack of social interaction; unfamiliar types of exam schedule; lower grades than anticipated; lack of vacation or break (30) or language problem (31).

Conclusion

Depression is highly prevalent among medical student populations. Implication of depression is of serious concern as it could result in loss of potential to handle various stressors at college, impairment of functioning in classroom performance and later in clinical practice. In the light of the high percentage of depression seen in this study, actions must be taken to figure out the causes and solutions to these problems. It is very important to address the issue through effective counseling and instituting appropriate measures. Future recommendation is to conduct a larger scale study across Saudi Arabia to highlight the prevalence and causes of depression among medical students.

The strength and limitation of the study:

The Current study had several strengths: Firstly using adequate sample size from a well-defined catchment area and secondly using a standard and valid instrument. However the present study also had some limitations such as not measuring the effects of other morbid psychiatric disorders.

References

1. World Health Organization. Mental Health Action Plan 2013–2020. Geneva: World Health Organization; 2013. Available from: http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf. Accessed October 11, 2018.
2. Al-Naggar RA, Al-Naggar DH. Prevalence and associated factors of emotional disorder among Malaysian University students. *Int J Collab Res Intern Med Public Heal*. 2012;4(7):1401–1411.
3. Teh CK, Ngo CW, Aniyah R, Vellasamy R, Suresh K. Depression, anxiety and stress among undergraduate students: a cross sectional study. *Open J Epidemiol*. 2015;5(4):260–268.
4. Sreeramareddy CT, Shankar PR, Binu VS, Mukhopadhyay C, Ray B, Menezes RG. Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. *BMC Med Educ*. 2007;7:26. [PMC free article] [PubMed] [Google Scholar]
5. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. *Acad Med*. 2006;81(4):354-373. PubMedGoogle ScholarCrossref.
6. Prinz P, Hertrich K, Hirschfelder U, de Zwaan M. Burnout, depression and depersonalisation—psychological factors and coping strategies in dental and medical students. *GMS Z Med Ausbildung*. 2012;29(1): Doc10. PubMedGoogle Scholar

7. Yang F, Meng H, Chen H, et al. Influencing factors of mental health of medical students in China. *J Huazhong Univ Sci Technolog Med Sci.* 2014;34(3):443-449. PubMedGoogle ScholarCrossref.
8. Guerrero López JB, Heinze Martin G, Ortiz de León S, Cortés Morelos J, Barragán Pérez V, Flores-Ramos M. Factors that predict depression in medical students [in Spanish]. *Gac Med Mex.* 2013;149(6):598-604. PubMedGoogle Scholar.
9. Al-Faris EA, Irfan F, Van der Vleuten CP, et al. The prevalence and correlates of depressive symptoms from an Arabian setting: a wake up call. *Med Teach.* 2012;34(suppl 1):S32-S36. PubMedGoogle ScholarCrossref
10. Bayati A, Beigi M, Salehi M. Depression prevalence and related factors in Iranian students. *Pak J Biol Sci.* 2009;12(20):1371-1375. PubMedGoogle ScholarCrossref
11. Khan MS, Mahmood S, Badshah A, Ali SU, Jamal Y. Prevalence of depression, anxiety and their associated factors among medical students in Karachi, Pakistan. *J Pak Med Assoc.* 2006;56(12):583-586. PubMedGoogle Scholar
12. Puthran R, Zhang MW, Tam WW, Ho RC. Prevalence of depression amongst medical students: a meta-analysis. *Med Educ.* 2016;50(4):456-468. [PubMed] [Google Scholar]
13. Rothenstein LS, Ramos MA, Torre M, et al. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. *JAMA.* 2016;316(21):2214-2236. [PMC free article] [PubMed] [Google Scholar]
14. RanuRawat SK, Manju L. Prevalence of depression and its associated factors among medical students of a private medical college in south India. *Int J Commun Med Public Health.* 2016;3(6):1393-8.
15. Diana Sarokhani AD, Yousef V, et al. Prevalence of depression among university students: a systematic review and meta-analysis study. London: Hindawi Publishing Corporation; 2013. p. 7.
16. Singh A, Shekhar L. Prevalence of depression among medical students of a private medical college in India. *Online J Health Allied Sci.* 2010;9(4):8.
17. Suresh C. Prevalence and associated factors of depression, anxiety and stress among undergraduate medical students. *Int J Indian Psychol.* 2016;3(4):2348-5396.
18. Kroenke K, Spitzer RL, Williams JB (2001) The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med* 16: 606-613.
19. Ujall Kumari, Nakeeta Dawani, Joti Devnani, Muhammad Qureshi, Fahad Soleja (2019). Depression among medical students of Karachi . a cross sectional study. *MedEdPublish* 1: <https://doi.org/10.15694/mep.2019.000181.1>.
20. Khan MS, Mahmood S, Badshah A, Ali SU, Jamal Y. Prevalence of depression, anxiety and their associated factors among medical students in Karachi, Pakistan. *J Pak Med Assoc* 2006;56:583-6.
21. Rana Zaini, Farah Anjum and Haytham Dahlawi (2018). Assessment of Depression among Applied Medical Science College Students at Taif University: A Questionnaire Survey. *J Psychiatry*, 21:1 DOI: 10.4172/2378-5756.1000431
22. Saud A, Sultan AAA, Shahad AS. Prevalence of depression among medical students at Taibah University, Madinah, Saudi Arabia. *Int J Acad Sci Res.* 2016;4(1):93-102.
23. Gabr AR. Depression, anxiety and stress among first year medical students in an Egyptian public university. *Int Res J Med Med Sci.* 2014;2(2354-211X):11-9.
24. Saeid Safiri NK, Ahmad K, Mohammad Reza N, Nahid K. Prevalence of depression and its associated factors using Beck Depression Inventory among students of School of Health and Nutrition, Tabriz, Iran in 2009. *J Anal Res Clin Med.* 2013;1(2):83-9.
25. Radeef AS, Faisal GG, Ali SM, Ismail MK. Source of stressors and emotional disturbances among undergraduate science students in Malaysia. *Int J Med Res Health Sci.* 2014;3(2):401-10.
26. Kaya M, Genc M, Kaya B, Pehlivan E (2007) Prevalence of depressive symptoms, ways of coping, and related factors among medical school and health services higher education students. *Turk PsikiyatriDerg* 18: 137-146.
27. Dahlin M, Joneberg N, Runeson B (2005) Stress and depression among medical students: a cross-sectional study. *Med Educ* 39: 594-604.
28. Grant K, Marsh P, Syniar G (2002) Gender differences in rates of depression among undergraduates: measurement matters. *J Adolesc* 25: 613-617
29. Ganesh Kumar, Shivanand Kattimani,1 Sonali Sarkar, and Sitanshu Sekhar Kar. Prevalence of depression and its relation to stress level among medical students in Puducherry, India. *Ind Psychiatry J.* 2017 Jan-Jun; 26(1): 86-90. doi: 10.4103/ipj.ipj_45_15
30. Mehanna Z, Richa S. Prevalence of anxiety and depressive disorders in medical students. Transversal study in medical students in the Saint-Joseph University of Beirut. *Encephale* 2006;32:976-82.
31. Jadoon NA, Yaqoob R, Raza A, Shehzad MA, Zeshan SC. Anxiety and depression among medical students: A cross-sectional study. *J Pak Med Assoc* 2010;60:699-702.