Advances in Social Sciences Research Journal – Vol.7, No.8
Publication Date: August 25, 2020
DOI:10.14738/assrj.77.7044.
Muriungi, S. K., & Menecha, J. B. (2020). Comorbidity Of Depression And Anxiety Among Students At The Kenya Medical Training Colleges In Kenya. *Advances in Social Sciences Research Journal, 7(8)* 360-370.

Comorbidity Of Depression And Anxiety Among Students At The Kenya Medical Training Colleges In Kenya

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ABSTRACT

Objectives: To determine comorbidity of depression and anxiety among students at the Kenya Medical Training College, Kenya. Methodology: This was a cross-sectional descriptive study design. Study participants were basic diploma students in a middle level college in Kenya. Data was collected using a researcher designed self-administered questionnaire for socio-demographic characteristics, the Beck Depression Inventory (BDI) for severity of depression and the Beck Anxiety Inventory (BAI) for the severity of anxiety in all the students in the seven largest KMTC campuses. All the participants gave informed consent. Results: 18.4% and 20.2% of group A and B respectively had moderate depression while 48.5% and 45.8% respectively had severe depression. The equivalents for anxiety in groups A and B were 24.4% and 23.6% for moderate anxiety and 32.1% and 31.5% for severe anxiety. There was a higher rate of depression and anxiety in the second year; with a statistically significant association between depression and anxiety and the year of study in the two groups ($p<0.0001$ each respectively). All the other social demographic characteristics had no statistically significant association with depression or anxiety in the two groups. There was a higher prevalence of depression and anxiety co-morbidity in both groups which was statistically significant ($p<0.0001$). Conclusion: Depression and anxiety were highly prevalent and significantly co-existent among the KMTC students. These mental conditions seemed to vary with the level of study training among college students. Therefore, the psychological well-being of college students need to be carefully addressed. There is need to closely monitor anxiety and depression to eliminate the risk factors and consequently prevent the development of adverse outcomes.

Keywords: KMTC, Beck's Anxiety Inventory, Beck's Depression Inventory

INTRODUCTION

Depression and anxiety disorders, either alone or co morbid, are found among the general population (1, 2, 3). They contribute significantly to the aggregate point prevalence of about 10% of neuropsychiatric disorders among adults (4, 5, 15).

Depression and anxiety are debilitating. When left unmanaged, they affect one's general functioning making it hard for them to perform everyday tasks completely, competently and efficiently (6, 7). This ultimately affects their general well-being, productivity and quality of life in relation to themselves and others (8). The average age of onset for many mental health conditions is the typical college age of 18-24 years.

This is contributed to by the many first encounters in life. Common stressors include: adjustment to college environment, educational debt, heavy workload, sleep deprivation, difficult patients, poor learning environments, financial concerns, information overload and career planning, new friendships, distance from parents, new cultures and alternative ways of thinking (9,10,11,12].

These stressors can lead to catastrophic consequences such as anxiety, depression, impaired academic performance, impaired competency, medical errors and attrition from medical schools (9, 10, 12, 13). Existence of depression and anxiety among students undertaking health training at different cadres not only affects the individual's life negatively but may also have repercussions for patient care in the long run (14, 15). The medical professionals may become reluctant to be screened and treated for depression, anxiety or other common mental disorders due to fear of being revealed that they have the condition(s) and become stigmatised (16, 17,18).

Studies have documented that at the start of medical school, medical students have mental health similar to their nonmedical peers [16], however, students' mental health worsens during the medical training.[14,16,19]

In a study involving 1st and 2nd year medical students in a Californian University to investigate the use of mental health services and its barriers, Givens et al. (20) found out that about one fourth of the respondents were depressed. He noted that there was a negative attitude towards mental illness among the respondents and therefore their unwillingness to openly seek help. He further noted that medical students encounter severely sick patients many of whom may end up dying. He further noted that the challenge of dealing with severe illness and death can challenge them emotionally and may evoke unresolved episodes of loss or trauma from their past and cause them anxiety or depression.

Givens et al. (20) also found that the students had poor coping strategies in the face of high stress levels inherent in a student's life due to inadequate sleep hours, reduced social life, fatigue and academic challenges involved. As these students encounter serious illness and deaths within their practical learning sessions, their emotional balance may be put to task and unmask their vulnerability to either anxiety or depression.

In a cross sectional study to assess prevalence of depression and anxiety among paramedical 1st, 2nd and 3rd year students of medicine in a Saudi Arabia a significant difference between males and females was found with 66.6% of the females and 44.4% of the males found to be depressed. Similar studies found co-existence of depression and anxiety among college students but with no statistically significant differences between males and females (21).

In a Swedish study (22) to assess the exposure to different stressors and the prevalence of depression among medical students at different levels of education, the Higher Education Stress

Inventory (HESI), and the Major Depression Inventory (MDI) were used. This study found out that the prevalence of depressive symptoms among the students was 12.9%, significantly higher than in the general population, and was 16.1% among female students versus 8.1% among males. Another study from Turkey used the General Health Questionnaire (GHQ-12) and found out that 47.9% of the second-year medical students experienced emotional disorders, compared to economics (29.2%) and physical education students (29.2%). [23] A study from Malaysia also reported that 41.9% of medical students experienced emotional disturbances. [24].

In an earlier study to determine the association and implications of anxiety and depression in university medical and paramedical students in Kenya, Ndetei et al (25) found 43% of the student nurses felt they needed to seek help for their symptoms, 14.3% had sought help and there was a significant correlation between individual symptoms of anxiety and depression in over 50% of all the pairs of individual symptoms. Out of 364 respondents, 48.9% required medical attention for their depression and anxiety symptoms. This was the only study found on prevalence of depression and anxiety among college students in Kenya.

However, there is paucity of information in the literature documenting the prevalence of anxiety and depression among college students in Kenya. Hence, the aim of this cross-sectional study was to determine prevalence of depression and anxiety among 1st and 2nd year basic Diploma students at the Kenya Medical Training Colleges. It was hoped that the study could contribute to the existing literature on the topic and provide information for possible future interventions.

METHODOLOGY

The study participants were drawn from seven of Kenya Medical Training Colleges. These were: The Nairobi, Nakuru, Port Reize, Mombasa, Kisumu, Muranga and Meru campuses.

All participants were recruited from seven of the KMTC colleges spread out across the country. Students involved in the study were pursing any of the courses offered at basic diploma level: Nursing, Medical Records and information sciences, Community Oral Health, Laboratory sciences, Public Health Sciences, Medical Imaging sciences, Neurophysiology, Clinical medicine, Dental technology, Occupational Therapy, Optometry, Orthopaedics Technology, Physiotherapy, pharmacy and Medical engineering Sciences.

All the students from the colleges who gave informed consent were recruited into the study. Inclusion criteria was all the 1st and 2nd year basic diploma students in all the academic departments in the selected KMTCs who gave informed consent while the exclusion criteria was any student in all the academic departments who was undertaking a post basic course or any 1st or 2nd year student who had not given consent.

Students were asked to complete self-rated instruments measuring severity of depression and anxiety as well as a researcher designed questionnaire for socio-demographic characteristics.

Data Collection Instruments

The research instruments consisted of three self-administered questionnaires:

1. A researcher designed questionnaire for Socio-Demographic Characteristics: gender, age, year of study, marital status, place of residence while in session, religion and the KMTC campus;
2. The Beck's Depression Inventory (BDI). This 21 items self-report inventory measures the severity of depression in a general population in relation to the specified scores. It is a widely used instrument, discriminates severities of depression, differentiates depression from non-depressed patients and it has a high coefficient alpha of 0.93 (p=0.001) for college students as well as exhibiting validity and reliability of 90% (25). The cut off points for the BDI used in this study were 0-9 minimal depression, 10-18 mild depression, 19-29 moderate depression, 30-63 severe depression.
3. The Beck's Anxiety Inventory (BAI). This 21 questions instrument was designed to measures the severity of anxiety in a general population. It has proved to show high interval consistency and test retest reliability over 1 week (26). In the general population, respondents who score above 36 scores are considered to have anxiety. The cut off points for BAI used for this study were 0-7 minimal anxiety, 8-15 mild anxiety, 16-25 for moderate anxiety, and 26-63 severe anxiety.

The BDI and BAI have been validated against DSM-IV respective diagnostic criteria in the western countries where they have been used extensively for similar and other relevant surveys as they were used in this study (26, 27). All the three instruments were self-administered and took an average of one hour to complete.

Ethical Consideration and data collection procedure

Ethical approval to conduct this study was obtained from Kenyatta National Hospital/University of Nairobi ethical and research committee. Authority from the Director of KMTC to carry out research in the selected KMTC campuses was officially communicated to the administrative heads of the seven selected. All the study participants gave informed consent and confidentiality was maintained throughout the study. The respondents were all given information on resources available for help. Data was collected in self-administered questionnaire without any personal identification.

Data management

The collected data was analysed using SPSS version 16, utilizing descriptive and inferential statistics. Results were presented in the form of tables and narratives. Statistical significance was set at $p < 0.05$.

RESULTS

Description of the study population - background characteristics.

The table 1 below gives the socio-demographic characteristic of the 3107 students who consented to participate in the study.

Table 1. Socio-demographic characteristics of the study participants

Categories, n=3107	%
Gender	
Male	53.4%
Female	46.6%
Age groups	
<25 years	91.0%
> 25 years	9.0%
Year of study	
1st year	57.0%
2nd year	43.0%
Place of Residence	
Within college hostels	81.8%
Outside college hostels	18.2%
Marital Status	
Single	94.6%
Married	4.9%
Separated, divorced, widowed and others	0.5%
Religion	
Protestant	63.1%
Catholic	28.2%
Muslim	4.3%
Others	4.4%

Table 2 summarizes of the prevalence of depression and anxiety among respondents in the 2 groups. There was no significant association between the 2 groups and depression or anxiety in the baseline evaluation study ($p>0.05$ respectively).

Table 2: Prevalence of Depression and Anxiety between the groups

Categories	N=3107	Percentage (100%)
Depression		
Minimal	646	20.8%
Mild	401	12.9%
Moderate	606	19.5%
Severe	1454	46.8%
	3107	**100%**
Anxiety		
Minimal	705	22.7%
Mild	673	21.7%
Moderate	743	23.9%
Severe	986	31.7%
	3107	**100%**

Correlation between the social demographic data with depression and anxiety

Table 3 summarizes the associations between social demographic characteristics and depression or anxiety in the two groups. There was higher prevalence of depression in the second years compared to the first years. There was a significant association between level of study and the prevalence of depression in group A and B, p<0.0001 and p<0.0001 respectively.

Table 3. Correlation between depression and anxiety with year of study

Outcomes	Categories	1st year N=1796	2nd year n=1311
Depression	Minimal	25.3%	14.5%
	Mild	14.9%	10.4%
	Moderate	18.1%	20.8%
	Severe	41.8%	54.3%
	x2=37.352 df=3 p<0.0001		
Anxiety	Minimal	27.4%	16.2%
	Mild	23.8%	18.8%
	Moderate	22.2%	26.0%
	Severe	26.6%	39.0%
	x2=31.345 df=3 p<0.0001		

The social demographic characteristics that had no statistically significant association with depression or anxiety and group A and B were; gender p=0.387 and p=0.071, age bracket p=0.073 and p=0.471, residence p=0.602 and p=0.856, marital status =0.387 and p=0.071 and religion p=0.203 and p=0.869.

Table 4 summarizes the co-morbidity of depression and anxiety between the two groups. The severities were similar for both anxiety and depression between the two groups. There was a significant association between co-morbidity of depression and anxiety in the two groups, p<0.0001, each with a skew toward moderate and severe conditions.

Table 4: Co-morbidity between Depression and Anxiety

		Depression			
		Minimal	**Mild**	**Moderate**	**Severe**
	n	**739**	**712**	**760**	**896**
Anxiety	Minimal	9.85%	5.25	3.25%	2.4%
	Mild	3.75%	3.5	3.15%	2.5%
	Moderate	3.7%	4.55	5.45%	5.75%
	Severe	5.15%	8.5	11.7%	21.45%
		X^2=227.057 df=9 p<0.0001			

DISCUSSION

Population studies

The high response rate is attributable to the fact that the PI had done sensitization before the data collection period to both the respondents and the administrators of the campuses. Similar studies

carried out in institutions of learning in Kenya found high return rates of up to 100% (28) while that from a medical University in Karachi was 90% (29). Majority of the respondents were below 24 years and were single since they are admitted in college after their high school examinations and the majority of those above 24 years and were married, separated, divorced or widowed were possibly those who were upgrading having undertaken a certificate course and worked for more than 3 years. More than half of the respondents were Protestants.

Prevalence of depression and anxiety

The reported higher prevalence of depression compared to anxiety in the present study probably overstates the case for depression and understates for anxiety (29, 30). However, given the fact that anxiety was independently accessed with BAI, it probably reflects true prevalence of anxiety, although at the time of the study, the anxiety had possibly already evolved to depression. Anxiety symptoms are possibly more likely to precede depressive symptoms than the reverse as stated by Leadbeater, Thompson, & Gruppuso (31). Results on a study on prevalence of depression and anxiety among medical college students in a Pakistan University found that 70% of the respondents suffered anxiety and depression which is consistent with what was found in other similar studies (32,33).

The researchers in these studies concluded that new life styles, financial challenges and psycho stressors, academic challenges experienced by the respondents might have posed a challenge to them and precipitated them to develop depression or anxiety. Similar studies explained that the high levels of severe depression and anxiety found among student respondents could be explained by the fact students have to deal with unique stressors such as new lifestyles and cultures, new friends and exposure to alternative ways of thinking. This is because these encounters required them to develop new strategies to cope with the new circumstances/situations as they progressed in their professional training and adjust to the new lifestyles different from their socializations. Those who could not cope were likely to struggle and become susceptible to anxiety and/or depression (13, 33).

In a similar study to investigate prevalence of depression, anxiety and their associated factors among medical students in Karachi, a high prevalence, 70%, of anxiety and depression was found among the respondents. Results indicated that the precipitating causes were not exclusively academic but included psycho-stressors like loss, relationship problems, residence and substance abuse among others (29).

In a similar study among Kenyan children and adolescents using the Multidimensional Anxiety Scale for Children **(**MASC), 12.9% were found to have clinical anxiety with 80% having social anxiety (28).

Correlation of depression and anxiety with year of study

More 2nd year than 1st year students were found to have severe depression. It was inferred that 2nd year students had unique issues that were not experienced by their counterparts in their first year. Since the 2nd year students were undertaking both practical attachments in the various hospitals in addition to classroom work, exposure to very sick people and death in the hospitals may have stressed them and precipitated them to develop anxiety or depression. They may also have had no spare time to get social support of their experiences from their peers because of their busy schedules in both the classroom and practical learning. In a study by Inam et al (21), it was found

out that 66% of the 1st years with depression and anxiety while 73% of the 2nd years had the same. Other similar studies found similar results (30).

These findings were different from those found in similar studies where 1st year students were found to have higher prevalence of depression than the 2nd or 3rd years. This was attributed to the ability of the seniors to cope better with emerging social issues than the 1st years as well as by the introduction of taking more responsibility for their learning and a shift from the traditional spoon feeding teaching methodology (31). The drop of prevalence rate in 2nd year may support the above hypothesis since by then the students get used to the system (13, 14, 16).

The study found out that there were more males with depression compared to females while prevalence of anxiety was similar among males and females is probably because females are more likely able to cope better with possible psycho stressors since they are by nature more expressive of their challenges and therefore more likely to get social support (21, 23). There may have been other factors that caused more males than females to develop depression that were less prevalent among the females. For instance, males having more risk to substance abuse than the females, which may have predisposed them to develop substance-induced depression or anxiety as found in other studies (34, 35). Other studies however have found more females with depression and anxiety than the males.

Bazmi (38) in a similar study found 66.6% of the females with depression and anxiety while 44.4% males had the same and there was a statistically significant difference of p=0.001. This could have been due to more females complaining about the volume and complexity of the academic material they had to cover or females were likely to report stress or a tendency of females to over report medical and psychological symptoms. Nonetheless, male bias towards female complaints cannot be ruled out. However, in our study, since the questionnaire was self-administered and anonymous, therefore, further workup could not be carried out to tease out the factors related to higher reported levels of anxiety and depression in females.

The higher percentage of respondents above 25 years in this study who had severe depression compared to the younger age groups and the similar trend observed on the correlation between anxiety and age group is probably because; those above 25 years were in their 2nd year of study which posed greater academic demands, financial challenges or social/family related challenges since they may have been married, divorced or widowed which meant added responsibilities as they studied. It was observed that respondents who were from the Nairobi campus might have had additional challenges of the city life compared to respondents who were drawn from KMTCs in less hectic rural towns. These results were different from those of other studies where the younger age groups were found to have higher levels of depression and anxiety (28) while other studies found similar results (9, 20, 29).

The higher levels of depression among group the Nairobi Campus respondents who resided outside the college hostels compared to those who resided in college hostels can be associated with more challenges they encounter compared to students in peripheral campuses: The financial burden in Nairobi city is much more than in the rural towns, notwithstanding the logistics of transportation from their places of residence to college as compared to the other KMTCs located in less hectic and

in-expensive towns. This study did not seek to investigate specific possible psycho stressors that may have precipitated the respondents to develop these conditions.

Co-morbidity between depression and anxiety

The high co-morbidity of depression and anxiety found in this study is similar to findings in other studies (29, 38, 40), leading to the conclusion that cases of pure depression without anxiety were rarer than cases of anxiety without concomitant depression (35, 36, 37), including the case of students in colleges due to the new exposures that student's encounter (35,39).

This study contributes to the global data base in general and the first Kenya data specifically on scientifically based evidence on the high prevalence of depression and anxiety among these young adult paramedical students. The results of the study provide baseline data for the institution's management to make evidence based policies for prevention, management and unveiled mental health training needs for the students. This would in turn pave way for possible scientifically based decisions to review the various curricula to incorporate a mental health component in all the academic departments.

LIMITATION OF THE STUDY

A limitation of the current study is that it did not investigate whether or not any respondent had suffered depression or anxiety previously as well as indentify definite possible psycho stressor, which may have precipitated depression or anxiety.

Acknowledgement

All the KMTC student respondents who participated in the study. The principals and lecturers who assisted with the study logistics. Grace Mutevu and my sister Lucy Gitonga for their prompt typographical assistance whenever I needed it, Purity Ngagi my bio-statistician for her timely analysis of the data, John Ng'ang'a and Esther Kariuki for their invaluable assistance.

References

1. Kessler, R. C., Gruber, M., Hettema, J. M., Hwang, I., Sampson, N., & Yonkers, K. A. (2008). Co-morbid major depression and generalized anxiety disorders in the National Comorbidity Survey follow-up. Psychological medicine, 38(3), 365-374.
2. Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. Annals of internal medicine, 146(5), 317-325.
3. Chisholm, D., Sweeny, K., Sheehan, P., Rasmussen, B., Smit, F., Cuijpers, P., & Saxena, S. (2016). Scaling-up treatment of depression and anxiety: a global return on investment analysis. The Lancet Psychiatry, 3(5), 415-424.
4. Baxter, A. J., Scott, K. M., Vos, T., & Whiteford, H. A. (2013). Global prevalence of anxiety disorders: a systematic review and meta-regression. Psychological medicine, 43(5), 897-910.
5. Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Wittchen, H. U. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. International journal of methods in psychiatric research, 21(3), 169-184.
6. Gulliver, A., Griffiths, K. M., Christensen, H., & Brewer, J. L. (2012). A systematic review of help-seeking interventions for depression, anxiety and general psychological distress. BMC psychiatry, 12(1), 81.
7. Hofmann, S. G., & Smits, J. A. (2008). Cognitive-behavioral therapy for adult anxiety disorders: a meta-analysis of randomized placebo-controlled trials. The Journal of clinical psychiatry, 69(4), 621.

8. Kanner, A. M., Barry, J. J., Gilliam, F., Hermann, B., & Meador, K. J. (2010). Anxiety disorders, subsyndromic depressive episodes, and major depressive episodes: do they differ on their impact on the quality of life of patients with epilepsy?. Epilepsia, 51(7), 1152-1158.
9. Gupta, S., Choudhury, S., Das, M., Mondol, A., & Pradhan, R. (2015). Factors causing stress among students of a Medical College in Kolkata, India. Education for Health, 28(1), 92.
10. Pulido-Martos, M., Augusto-Landa, J. M., & Lopez-Zafra, E. (2012). Sources of stress in nursing students: a systematic review of quantitative studies. International Nursing Review, 59(1), 15-25.
11. Cokley, K., McClain, S., Enciso, A., & Martinez, M. (2013). An examination of the impact of minority status stress and impostor feelings on the mental health of diverse ethnic minority college students. Journal of Multicultural Counseling and Development, 41(2), 82-95.
12. Shah, M., Hasan, S., Malik, S., & Sreeramareddy, C. T. (2010). Perceived stress, sources and severity of stress among medical undergraduates in a Pakistani medical school. BMC medical education, 10(1), 2.
13. Ab Latif, R., & Mat Nor, M. Z. (2016). Stressors and coping strategies during clinical practices among diploma nursing students. Education in Medicine Journal, 8(3), 21-33.
14. Dyrbye, L. N., Thomas, M. R., & Shanafelt, T. D. (2006). Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. Academic medicine, 81(4), 354-373.
15. Puthran, R., Zhang, M. W., Tam, W. W., & Ho, R. C. (2016). Prevalence of depression amongst medical students: a meta-analysis. Medical education, 50(4), 456-468.
16. Hope, V., & Henderson, M. (2014). Medical student depression, anxiety and distress outside North America: a systematic review. Medical education, 48(10), 963-979.
17. Hegney, D. G., Craigie, M., Hemsworth, D., Osseiran-Moisson, R., Aoun, S., Francis, K., & Drury, V. (2014). Compassion satisfaction, compassion fatigue, anxiety, depression and stress in registered nurses in Australia: study 1 results. Journal of nursing management, 22(4), 506-518.
18. Bitsko, R. H., Holbrook, J. R., Ghandour, R. M., Blumberg, S. J., Visser, S. N., Perou, R., & Walkup, J. T. (2018). Epidemiology and impact of health care provider-diagnosed anxiety and depression among US children. Journal of developmental and behavioral pediatrics: JDBP, 39(5), 395-403.
19. Rotenstein, L. S., Ramos, M. A., Torre, M., Segal, J. B., Peluso, M. J., Guille, C., & Mata, D. A. (2016). Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. Jama, 316(21), 2214-2236.
20. Givens, J. L., & Tjia, J. (2002). Depressed medical students' use of mental health services and barriers to use. Academic medicine, 77(9), 918-921.
21. Inam, S. B. (2007). Anxiety and depression among students of a medical college in Saudi Arabia. International journal of health sciences, 1(2), 295.
22. Dahlin, M., Joneborg, N., & Runeson, B. (2005). Stress and depression among medical students: A cross-sectional study. Medical education, 39(6), 594-604.
23. Aktekin M, Karaman T, Senol Y, et al: Anxiety, depression and stressful life events among medical students: A prospective study in Antalya, Turkey. Med Educ 2001;35:12–7.
24. Sidik MS, Rampal L, Kaneson N. Prevalence of emotional disorders among medical students in a Malaysian university. Asia Pac Fam Med 2003; 2:213–7.
25. Ndetei DM: The association and implications of anxiety and depression in university medical and paramedical students in Kenya. East African medical journal 1987; 64(3): 214-226
26. Osman, A., Hoffman, J., Barrios, F. X., Kopper, B. A., Breitenstein, J. L., & Hahn, S. K. (2002). Factor structure, reliability, and validity of the Beck Anxiety Inventory in adolescent psychiatric inpatients. Journal of Clinical Psychology, 58(4), 443-456.

27. Sharp, L. K., & Lipsky, M. S. (2002). Screening for depression across the lifespan. Am Fam Physician, 66, 1001-1008.

28. Ndetei DM, Khasakhala L., Nyabola, L., Ongecha, F., and Kokonya, D.A. Psychosocial and health aspects of drug use by students in public secondary schools in Nairobi Kenya. Substance abuse 2009; 30:61-68

29. Munamad SK, Sajid M, Areef B, et al: Prevalence of depression, anxiety and their associated factors among Medical students in Karachi, Pakistan. J Pak Med Assoc 2006; 12: 583-6

30. Bazmi SN: To assess prevalence of anxiety and depression among medical students in a medical college of Saudi Arabia. International journal of health sciences 2007; 1(2): 295-300

31. Leadbeater, B., Thompson, K., & Gruppuso, V. (2012). Co-occurring trajectories of symptoms of anxiety, depression, and oppositional defiance from adolescence to young adulthood. Journal of Clinical Child & Adolescent Psychology, 41(6), 719-730.

32. Givens J, Tjia J: Depressed medical students' use of mental health services and barriers to use. Acad med 2002; 77: 918 – 921.

33. Munamad SK, Sajid M, Areef B, et al: Prevalence of depression, anxiety and their associated factors among Medical students in Karachi, Pakistan. J Pak Med Assoc 2006; 12: 583-6

34. Thornicroft G, Maingay S: The global response to mental illness, an enormous health burden is increasingly being recognized. BMJ 2002; 325(9): 608-609.

35. Vaidya PM, Mulgaonkar KP: Prevalence of depression, anxiety and stress in undergraduate Medical students and as correlation with their academic performance: Indian JOCC Ther 2007; 39(1): 7-10

36. Dahlin, M. E., & Runeson, B. (2007). Burnout and psychiatric morbidity among medical students entering clinical training: a three year prospective questionnaire and interview-based study. BMC Medical education, 7(1), 6.

37. Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. Journal of affective disorders, 173, 90-96.

38. Bazmi SN: To assess prevalence of anxiety and depression among medical students in a medical college of Saudi Arabia. International journal of health sciences 2007; 1(2): 295-300

39. Scot J, Dickey B: Global burden of depression: The intersection of culture and medicine. Br. J. Psychiatry 2003; 183: 92- 4

40. Tartakousky MS: Depression & anxiety among College Students. Depression and Anxiety 2008; 0: 1-10.