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A study on association of nutritional status with depression

Abstract

Background: Depression is a common health problem among the general population and is responsible for the deterioration of person's abilities and daily activities.

Objectives: The present study aims at finding the prevalence of depression and its relationship with socio demographic characteristics and chronic diseases.

Methods: The present institution based cross-sectional study was done on a sample of 120 females in Hail city of Saudi Arabia. The sample was randomly selected from all the colleges of University of Hail, Saudi Arabia. For the purpose of data collection general questionnaire about the participants' socio-demographic characteristics and the Hospital Anxiety and Depression scale (HADS) for screening of depression was employed. The data were analyzed using SPSS version 17.

Results: The total number of the sample was 120 females and their ages ranged from 18-40years with a mean of 23.2±6.8years. The majority of subjects were Saudis. Results show that the mean BMI was 23.2±4.9years with a range of 25 (Minimum-15 and maximum 40). Analysis with HADS revealed the mean anxiety score was 9.96±3.4 while the mean depression score was 7.1±3.8. Chi square shows that there was a significant correlation between anxiety, depression and chronic diseases. Regarding anxiety, it was found that 20.8% of students were normal according to HADS-Anxiety, while 41.7% and 37.5% of students had a borderline and morbid anxiety, respectively. Regarding depression, 60% of students were normal according to HADS-Depression, while 26.7% and 13.3% had a border-line and morbid depression, respectively.

Conclusion: Results of the study shows that there was a significant correlation between anxiety, depression and chronic diseases Primary health care physicians should be the cornerstone in screening for an underlying depressive disorder and initiating appropriate referral or treatment.

Keywords: depression, anxiety, blood pressure, diabetes, hemoglobin

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Introduction

Depression is a condition of emotional disturbance that is responsible for the deterioration of person's abilities and daily activities; and it is considered to be a major public health problem and a leading cause of morbidity and mortality. It has been estimated that depression affects approximately 121million people around the globe regardless of religion, race, age, or gender.[1] Throughout the world, depression is estimated to be the third leading cause of morbidity for all ages and the leading cause for women aged 15-44years. Major depressive disorder is a common, chronic, and costly condition for which people seek most of the care from primary care physicians.[1–3] Researches from various parts of the world suggest that prevalence of depression during the whole life time appears to be in the range of 8%-16%. Due to this reason, depression is the leading worldwide cause of disability as measured by the number of years lived with a disabling condition. Depression is more common in females (approximately 10%-25%) as compared to males (5-12%), with the highest rates occurring between the ages of 25 and 44years[3,4] according to the researchers, depression is present in 5%-9% of adults visiting primary care practices. Approximately more than 50% of depressed patients go unrecognized and among the half who do receive treatment, it is adequate in approximately 42%, resulting in only 22% of all patients being treated adequately as evaluated by medication use and frequency of follow-up.[4–5]

Several studies have documented that early recognition and treatment of depression in the primary care setting can have a positive effect on overall health and mental functioning of the person. This will obviously result in increased productivity and decreased absenteeism in the work place.[6] On the other hand, the failure of primary care physicians (PCPs) to detect depression and its causes can delay potentially life-saving treatment. Therefore, there is a need to improve the knowledge and skills of primary health care providers for appropriate diagnosis and treatment of depression. Deficiency of physician knowledge and skill; limited time; lack of availability of physicians and treatments could be some of the possible barriers to the diagnosis and treatment of depression.[7] Persons with depressive symptoms are more likely to seek care from their primary care provider than from specialty mental health providers, giving the primary care setting an important opportunity for identification of depression.[4–7] Depression is a common condition. In the United States around one in 10 people has depression and around one in three of these will have it severely.[8] The symptoms of depression can come on gradually without the patient being noticed. Sometimes a friend or family member will be the one to notice how your behavior and personality have changed. Sometimes the symptoms of depression are also physical and you may think of it as weather effects or tiredness.[9,10] It has been estimated that most adults with clinically significant depression never see a mental health professional, rather the refer to a primary care physician.[11–13] Yet significant numbers of depressed

primary care patients remain undiagnosed or under treated, reflecting attitudes and practices of physicians, patients, families, and health care systems.[14,15] Many studies concluded high rates of depression among people in their reproductive age and significant detrimental health effects for them and their families.[16–18] Depression is also found to be common in patients with certain chronic diseases and is associated with increased rates of disability and mortality as according to various national and international studies.[19] The prevalence of depression among diabetic population is more than non-diabetics.[20] The same is the case with hypertension which is considered to be an important public health challenge in both economically developing and developed countries.[21,22] Anemia is considered to be a common health problem, and the symptoms in most of the patients are not prominent.[23] A cross-sectional study among 2000 patients who were 65 years or older showed that the presence of depressive symptoms among anemic patients reached up to 10%.[24] Many researchers had tried to assess the prevalence of depression in Saudi Arabia also.[25–27] However, to the best of our knowledge, no study has been conducted in this region to obtain the prevalence of depression in the general population. The main purpose of this study was to screen for the prevalence of depression symptoms among the general population using a reliable screening tool (Hospital anxiety and depression scale - HADS), and to find out if there is any association of certain socio-demographic characteristics and having one or more chronic diseases with depressive symptoms.

Methodology

Institution-based sample of 120 females aged 18 to 40years was selected randomly from the university of Hail, Saudi Arabia. This was a cross-sectional study and the subjects were selected randomly from all colleges during the first semester from October 2016 to December 2016. The investigators obtained informed consent from interested participants to fill a general questionnaire about the participants' socio-demographic characteristics. The inclusion criteria was being female within the age group 18-40years. The Hospital Anxiety and Depression scale (HADS) for screening of depression was employed. Information on patients' characteristics (age, gender, and anthropometry) and chronic conditions such as hypertension, diabetes, anemia, renal disease or certain deficiency diseases were obtained from a questionnaire completed by the participant at the time of study. Hospital Anxiety and Depression Scale (HADS) was originally developed by Zigmond et al.[28] and is commonly used by doctors to determine the levels of anxiety and depression that a patient is experiencing. The HADS is a fourteen item scale that generates ordinal data. Seven of the items relate to anxiety and seven relate to depression. Each item on the questionnaire is scored from 0-3 and this means that a person can score between 0 and 21 for either anxiety or depression. Zigmond and Snaith created this outcome measure specifically to avoid reliance on aspects of these conditions that are also common somatic symptoms of illness, for example fatigue and insomnia or hypersomnia. This, it was hoped, would create a tool for the detection of anxiety and depression in people with physical health problems. The total HADS score is the sum of the 14 items, and for each subscale (anxiety & depression) the score is the summation of the particular seven items (ranging from 0-21).

HADS scoring is grouped for each of anxiety and depression as following:

i. Normal: 0-7.

ii. Borderline abnormal: 8-10.

iii. Abnormal (morbid): 11-21.

Statistical analysis

Descriptive statistics were used to characterize the study population. For categorical variables, frequencies and percentages were used. Descriptive statistics and measures of central tendency and dispersion, as well as, appropriate significance tests were applied according to the types of variables. Level of significance was set to be <0.05 throughout the study. The data were processed using SPSS version 17.

Ethical consideration

The protocol and instruments for this study were approved by deanship of academic and scientific research, university of Hail, Saudi Arabia. Informed consent (either written or verbal) of all participants was obtained.

Results

The total number of the sample was 120 females and their ages ranged from 18-40years with a mean of 23.2±6.8years. The majority of subjects were Saudi. Results from Table 1 shows that the mean BMI was 23.2 with a range of 25 (Minimum-15 and maximum 40). Analysis with HADS revealed the mean anxiety score was 9.96±3.4 while the mean depression score was 7.1±3.8. Bivariate correlation showed that there was a positive association between anxiety and depression scores (r=0.453, P<0.000). Regarding anxiety, it was found that 20.8% of students were normal according to HADS-Anxiety, while 41.7% and 37.5% of students had a borderline and morbid anxiety, respectively. Regarding depression, 60% of students were normal according to HADS-Depression, while 26.7% and 13.3% had a border-line and morbid depression, respectively. Table 2 represents the health statistics of the study group. Regarding the populations' health, only 5% had a good health while 95% had some health problems. 5.8% of the subjects reported diabetes, and 6.7% had problem of hypertension. Quite a large percentage (31.6%) had self reported anemia, and 40% had vitamin D deficiency. 7.5% were found with calcium deficiency, whereas 13.3% had some form of colon disturbances. On the other hand 10% had multiple problems and a very small percentage (5%) did not reported any health problems. Tables 3 & 4 shows Analysis of variance (ANOVA) for anxiety and depression scores and mean anthropometric variables. It was found from Table 3 that the correlation was significant for the mean age of the study group for different levels of depression scores. The depression score was found to be increasing with increasing age showing a positive correlation between the two. However, the height, weight and BMI were not significantly correlated with depression.

On the other hand, in Table 4 the mean weight of the subjects was found to be increasing with increasing anxiety score, showing a significant positive correlation. However the remaining variables were not correlated to anxiety scores. Tables 5 & 6 shows Analysis of variance (ANOVA) for mean anxiety and depression scores and the various health problems of the study population. Results of the Table 5 depicts that mean anxiety score was significantly correlated to health problems of the study population (P<0.05). Chi square test was done to find out the correlation between categories of anxiety and depression with the health problems. Result shows that the different health problems were significantly correlated to anxiety

and depression. Results of the study from Table 5 shows that the highest number of subjects with anxiety were found with those having Vitamin D deficiency, followed by anemia, colon disturbances, and those with multiple problems. Least number was seen in the subjects with thyroid disturbance. Same was the case with depression (Table 6), as the highest number of subjects with depression were found with vitamin D deficiency, followed by anemia and multiple problems. The lease number was found in the patients of diabetes and hypertension.

Table 1 Mean variables of the study population

Variables	Mean	SD	Range	Minimum	Maximum
Age	23.2	±6.8	22	18	40
Height	159.5	±5.6	27	145	172
Weight	59.8	±12.4	57	35	92
BMI	23.2	±4.9	25	15	40
	9.96	±3.4	19	2	21
Total Anxiety score	0 -7 normal		N = 25		20.80%
	8 - 10 borderline		N = 50		41.70%
	11 - 21 abnormal		N = 45		37.50%
	Mean	**SD**	**Range**	**Minimum**	**Maximum**
	7.1	±3.8	16	0	16
Total Depression Score	0 -7 normal		N = 72		60%
	8 - 10 borderline		N = 32		26.70%
	11 - 21 abnormal		N = 16		13.30%

Table 2 Health statistics of the study population

Health problems	Number	Percentage
Diabetes	7	5.80%
Hypertension	8	6.70%
Anemia	38	31.60%
Thyroid problems	6	5%
Vit. D deficiency	48	40%
Calcium deficiency	9	7.50%
Colon disturbances	16	13.30%
Multiple problems	12	10%
None	6	5%

Table 3 Analysis of variance for depression scores and mean anthropometric variables

Variables	Depression scores			ANOVA
	0-7 normal	8-10 borderline	11-21 abnormal	
Age	21.4±4.9	23.3±5.8	26.9±9.3	0.001**
Height	159.5±5.7	160.2±6.1	158.0±2.9	0.432
Weight	58.5±12.4	62.7±13.5	60.1±9.3	0.279
BMI±	22.5±4.9	24.3±5.4	23.7±3.02	0.172

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Table 4 Analysis of variance for Anxiety scores and mean anthropometric variables

Variables	Anxiety scores			Anova
	0-7 normal	8-10 borderline	11-21 abnormal	
Age	24.2±6.5	22.3±6.6	23.6±7.3	0.454
Height	157.4±4.4	159.7±5.6	160.4±5.8	0.67
Weight	59±10.9	59.4±13.1	60.7±12.5	0.040*
BMI±	23.6±5.5	22.7±4.4	23.37±7.3	0.811

Table 5 Correlation between health problems and anxiety

Problems	Anxiety				Mean anxiety score
	Normal	Borderline	Abnormal	Total with Anxiety	
Diabetes	3	4	0	4	7.7±1.4
Hypertension	0	0	8	8	12.1±1.4
Anemia	8	7	10	17	9.5±3.2
Thyroid problems	1	0	3	3	11.5±5.0
Vit. D deficiency	7	19	11	30	9.4±2.6
Calcium deficiency	3	5	1	6	9.0±2.3
Colon disturbances	1	4	7	11	11.3±3.2
Multiple problems	2	5	5	10	11.7±6.2
None	0	6	0	6	9.0±0.0
	$\chi^2 = 39.51$ df 16, P = 0.001***				

Table 6 Correlation between health problems and depression

Problems	Depression				Mean depression score
	Normal	Borderline	Abnormal	Total with Depression	
Diabetes	5	2	0	2	5.5±2.4
Hypertension	6	2	0	2	6.8±1.5
Anemia	12	9	4	13	7.8±4.4
Thyroid problems	1	0	3	3	9.5±5.0
Vit. D deficiency	22	13	2	15	6.8±2.5
Calcium deficiency	5	3	1	4	8.7±2.5
Colon disturbances	8	1	3	4	8.3±4.2
Multiple problems	7	2	3	5	6.5±6.0
None	6	0	0	0	0.0±0.0
	$\chi^2 = 28.7$ df 16, P = 0.026**				

Discussion

The present study illustrated presence of high prevalence rates of anxiety & depression among female subjects. The rates were 41.7% and 37.5% of students had a borderline and morbid anxiety, respectively. While the corresponding rates for depression were 26.7% and 13.3%, respectively. This agrees with results of a systematic review from the USA & Canada which reported high anxiety & depression rates.[29] Rab et al.[30] conducted a similar study among female students in Pakistan and reported slightly higher rates of anxiety and depression than those of the current study (43.7% and 19.5% for anxiety and depression, respectively). This may attributed to presence of more stresses in Pakistan than in Saudi Arabia. A study carried out in Dubai[29] reported that 28.6% of medical students had depression and a similar rate (28.7%) showed anxiety. Another research done in Nigeria documented that the prevalence of depression was 23.3%.[30] The present study showed that the mean anxiety score was 9.96±3.4 and the mean depression

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score was 7.1±3.8.These means are higher than mean scores reported among Indian students (7.66±3.21 & 5.77±3.45, respectively).[31] The cause of this discrepancy may be due to differences between the two study populations or differences in the social and cultural background. Prevalence of depression in Saudi population is often underestimated, and co-morbid medical complication like diabetes mellitus, hypertension and anemia are the main risk factors.[32–35] This may be attributed to the fact that chronic disease patients are often not evaluated for preventive measures of depression.[34–36] The present study examined the association between the common chronic diseases and depression among the general population. Based on the results obtained, more than two thirds of participants showed either normal or mild mood disturbance. The remaining one third showed different level of depressive severity. These findings are in consistent with the outcomes of similar studies carried out in another community done by Dziemidok et al.,[20] Certain studies have shown the negative cardiac prognostic effect of depression. There is a need to evaluate and manage depression symptoms among populations because this will help to control the symptoms and ensure better prognosis. Globally, depression is much more common in women than in men, and it is well known that depression is the main cause of disability in women.[37,38]

In industrially developed countries, it has been argued that many factors such as hopelessness, rapid changes in the social set up, weakening family ties, lonliness and insecurities may be responsible for major mental disorders including depression. Developing countries with stressing emergencies and post conflict nations are the possible reasons for higher prevalence of depression.[39] Large scale research in China publish that the associations between BMI and depression among adults suggest that obesity has protective effects in depression. The present study results are in consistent with these results showing no effect of Obesity on depression.[40] Present study shows positive significant correlation between vitamin D deficiency and depression scores. Several population-based studies have investigated the relationship between depression and vitamin D, but with conflicting results. Thus, some cross-sectional studies have found an association between low levels of serum 25-hydroxyvitamin D (25(OH)D) and depressive symptoms[41] whereas other studies of similar design have found no such associations.[42,43] Limitations of the study: Because of the study was a cross-sectional study, cause-and-effect relationships could not be determined and the study only comprised female subjects from hail, Saudi Arabia, and this sample may not necessarily be representative of the overall population in Saudi Arabia.

Conclusion

Depression is a major problem in our society and most patients don't seek medical advice. This study has shown the association between multiple socio-demographic characteristics, Vitamin D deficiency, and hemoglobin level with depression. A high and alarming prevalence of depressive symptoms among the general population was found. Female gender and vitamin D deficiency showed statistical significance with depression. Being anemic was also strongly associate with depressive symptoms. Early recognition and treatment of chronic disease may prevent the occurrence of depression. Prospective studies are needed to investigate the risk factors that may lead to depression in patients with mentioned health condition. Further investigations and studies have to be done to ascertain the association between depressive symptoms and chronic diseases in the studied population.

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Conflict of interest

The author declares no conflict of interest.

References

1. *Depression*. Switzerland: World health organization; 2011.
2. *The treatment and management of depression in adults (NICE guideline)*. UK: National Institute for Health and Clinical Excellence; 2009.
3. NHS Evidence. *Clinical Knowledge Summaries: Depression Background information*. UK; 2011.
4. Kessler RC, Berglund P, Demler O, et al. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA*. 2003;289(23):3095–3105.
5. O'Connor EA, Whitlock EP, Beil TL, et al. Screening for depression in adult patients in primary care settings: a systematic evidence review. *Ann Intern Med*. 2009;151(11):793–803.
6. Rost K, Smith JL, Dickinson M. The effect of improving primary care depression management on employee absenteeism and productivity. A randomized trial. *Med Care*. 2004;42(12):1202–1210.
7. Gilbody S, Richards D, Barkham M. Diagnosing depression in primary care using self-completed instruments: UK validation of PHQ-9 and CORE-OM. *Br J Gen Pract*. 2007;57(541):650–652.
8. *Current Depression Among Adults -United States, 2006 and 2008*. Centres for disease control and prevention; 2010.
9. Depression. Royal College of Psychiatry.
10. Depression. MIND.
11. Menear M, Duhoux A, Roberge P, et al. Primary care practice characteristics associated with the quality of care received by patients with depression and comorbid chronic conditions. *Gen Hosp Psychiatry*. 2014;36(3):302–309.
12. Rosenström T, Jylhä P, Robert Cloninger C, et al. Temperament and character traits predict future burden of depression. *J Affect Disord*. 2014;158:139–s147.
13. Thombs BD, Ziegelstein RC. Does depression screening improve depression outcomes in primary care? *BMJ*. 2014;348:g1253.
14. Huerta-Ramírez R, Bertsch J, Cabello M, et al. Diagnosis delay in first episodes of major depression: a study of primary care patients in Spain. *J Affect Disord*. 2013;150(3):1247–1250.
15. Malhi GS, Coulston CM, Fritz K, et al. Unlocking the diagnosis of diabetes depression in primary care: Which key symptoms are GPs using to determine diagnosis and severity? *Aust NZ J Psychiatr*. 2013;48(6):542–547.
16. Farr SL, Dietz PM, Williams JR, et al. Depression screening and treatment among nonpregnant women of reproductive age in the United States, 1990-2010. *Prev Chronic Dis*. 2011;8(6):A122.
17. Mattisson C, Horstmann V, Bogren M. Relationship of SOC with sociodemographic variables, mental disorders and mortality. *Scand J Public Health*. 2014;42(5):434–445.
18. Senarath U, Wickramage K, Peiris SL. Prevalence of depression and its associated factors among patients attending primary care settings in the post-conflict northern province in Sri Lanka: A cross-sectional study. *BMC Psychiatry*. 2014;14:85.

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DOI: 10.15406/mojwh.2017.04.00094

19. Meader N, Mitchell AJ, Chew Graham C, et al. Case identification of depression in patients with chronic physical health problems: a diagnostic accuracy meta-analysis of 113 studies. *Br J Gen Pract*. 2011;61(593):e808–e820.

20. Dziemidok P, Makara-Studzińska M, Jarosz MJ. Diabetes and depression: A combination of civilization and life-style diseases is more than simple problem adding-literature review. *Ann Agric Environ Med*. 2011;18(2):318–322.

21. Kearney PM, Whelton M, Reynolds K, et al. Worldwide prevalence of hypertension: A systematic review. *J Hypertens*. 2004;22(1):11–19.

22. Hattori H. Depression in the elderly. *Nihon Ronen Igakkai Zasshi*. 2008;45(5):451–461.

23. Animasahun BA, Temiye EO, Ogunkunle OO, et al. The influence of socioeconomic status on the hemoglobin level and anthropometry of sickle cell anemia patients in steady state at the Lagos University Teaching Hospital. *Niger J Clin Pract*. 2011;14(4):422–427.

24. Stewart R, Hirani V. Relationship between depressive symptoms, anemia, and iron status in older residents from a national survey population. *Psychosom Med*. 2012;74(2):208–213.

25. Ibrahim N, Al-Kharboush D, El-Khatib L, Prevalence and predictors of anxiety and depression among female medical students in King Abdulaziz University, Jeddah, Saudi Arabia. *Iran J Public Health*. 2013;42(7):726–736.

26. Sehlo MG, Al Ahwal MS. Depression in patients with colorectal cancer. *Saudi Med J*. 2013;34(4):341–347.

27. Mansour EA, Gemeay EM, Moussa IM. Counseling and depression among diabetic patients. *Saudi Med J*. 2013;34(3):295–301.

28. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. 1983;67(6):361–370.

29. Ahmed I, Banu H, Al-Fageer R, Al-Suwaidi R. Cognitive emotions: depression and anxiety in medical students and staff. *J Crit Care*. 2009;24(3):e1–e7.

30. Rab F, Mamdou R, Nasir S. Rates of depression and anxiety among female medical students in Pakistan. *East Mediterr Health J*. 2008;14(1):126–133.

31. Mehanna Z, Richa S. Prevalence of anxiety and depressive disorders in medical students. *Transversal. Encephale*. 2006;32(6 Pt 1):976–982.

32. Inam SN, Saqib A, Alam E. Prevalence of anxiety and depression among medical students of private university. *J Pak Med Assoc*. 2003;53(2):44–47.

33. Al-Ghamdi AA. A high prevalence of depression among diabetic patients at a teaching hospital in Western Saudi Arabia. *Neurosciences*. 2004;9(2):108–112.

34. Abdul-Mohsen MF. Frequency of depression among patients with acute coronary syndrome, eastern region, Saudi Arabia. *J Family Community Med*. 2004;11(1):23–29.

35. Becker S, Al Zaid K, Al Faris E. Screening for somatization and depression in Saudi Arabia: A validation study of the PHQ in primary care. *Int J Psychiatry Med*. 2002;32(3):271–283.

36. Wexler DJ, Porneala B, Chang Y, et al. Diabetes differentially affects depression and self-rated health by age in the U.S. *Diabetes Care*. 2012;35(7):1575–1577.

37. Nadia G, Jan T, Vivian KY, et al. Cognitive emotion regulation strategies and depressive symptoms: Differences between males and females. *Personality and Individual Differences*. 2004;36(2):267–276.

38. Kendler KS, Gardner CO, Prescott CA. Toward a comprehensive developmental model for major depression in women. *Am J Psychiatry*. 2002;159(7):1133–1145.

39. Kagee A. Symptoms of depression and anxiety among a sample of south african patients with a chronic illness. *J Health Psychol*. 2008;13(4):547–555.

40. Dragan A, Akhtar-Danesh N. Relation between body mass index and depression: A structural equation modeling approach. *BMC Med Res Methodol*. 2007;7:17.

41. Lee DM, Tajar A, O'Neill TW, et al. Lower vitamin D levels are associated with depression among community-dwelling European men. *J Psychopharmacol*. 2010;25(10):1320–1328.

42. Khajehei M, Abdali K, Tabatabaee HR. A comparison between the efficacy of dydrogesterone and calcium plus vitamin D in improving women's general health. *Afr J Psychiatry*. 2010;13(3):218–224.

43. Hansen V, Skre I, Lund E. What is this thing called "SAD"? A critique of the concept of seasonal affective disorder. *Epidemiol Psichiatr Soc*. 2008;17(2):120–127.

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