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ORIGINAL ARTICLE

Prevalence of depression, anxiety, and stress among diabetes mellitus patients in Arar, Northern Saudi Arabia

Mohammed Elamin Mukrim[1], Nujud Muteb D. Alshammari[2*], Wurud Muteb D. Alshammari[2], Maali Subhi T. Alshammari[2], Yousef Nasif R. Alshammari[2], Abdulaziz Sael M. Alshammari[2], Maisa Hamad F. Alanazi[2], Abdulelah Abdulrhman F. Alzammam[2], Muharib Mana M. Alshammari[2], Slwa Khaled Abu Asyah[3], Aseel Jamal Alzuhayri[4], Mushref Saeid Alshammari[2]

ABSTRACT

Background: Patients with chronic health conditions such as cardiovascular problems, diabetes mellitus (DM), pulmonary disease, and cancer are suffering from psychological disturbances while struggling to manage their physical illnesses. This study was aimed at examining the relationship between DM and depression, anxiety and stress in the studied patients in Arar city, Northern Saudi Arabia.

Methodology: A cross-sectional study conducted on patients with DM, from the age of 12 years from both genders, attending the Diabetes Center at Prince Abdulaziz bin Musaed Hospital in Arar, Saudi Arabia, during the period from January 1, 2018 to March 30, 2018. The sample size for this study was 278 diabetic patients based on a sample size formula for cross-sectional study design.

Results: Our study showed that the prevalence reached approximately 45.6% for anxiety, 18.7% for stress, and 37.4% for depression. Demographic variables of patients had a varied effect on the psychological wellbeing of patients. Female gender is more associated with depressive symptoms (71.2%, *p*-value = 0.043). It was found that depression and anxiety were significantly related to the patient's age and lower educational level. Being unmarried was significantly associated with depression.

Conclusion: Our study showed that the prevalence reached approximately 45.6% for anxiety, 18.7% for stress, and 37.4% for depression. Depending on the study results, we recommend including the psychological aspects during evaluation of diabetic patients, more health education programs must be employed about the psychological and mental health of diabetic patients and enhancing the awareness among healthcare providers about the psychological complications of diabetic patients.

Keywords: Depression, anxiety, stress, diabetes mellitus.

Introduction

Patients with chronic health conditions suffer from psychological disturbances such as anxiety and depressive feelings that delay their recovery and healing process [1]. Therefore, patients with chronic health conditions such as cardiovascular problems, diabetes mellitus (DM), pulmonary disease, and cancer are suffering from psychological disturbances while struggling to manage their physical illnesses [2]. In previous similar studies in the Arab region [3–5], individuals with chronic illness

Correspondence to: Nujud Muteb D. Alshammari
*Faculty of Medicine, Northern Border University, Arar, Saudi Arabia.
Email: nojudalshammri@hotmail.com
Full list of author information is available at the end of the article.
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have reported a number of psychological disturbances such as depression psychological distress and low self-efficacy, and those with psychological problems have identified a number of physical health problems such as a headache, body pains, and sleeping problems. Therefore, issues related to social wellbeing, psychological distress, depression, and life satisfaction are important in understanding the health-illness relationship and this has not been investigated adequately among the Saudi population. Patients with DM are almost twice as likely to suffer from anxiety and depression as the general population [6]. Depressed and anxious individuals are less likely to comply with the added burden of diabetes self-care recommendations and are less physically active, less likely to follow their dietary regimen and less likely to take prescribed medications [7].

Managing chronic illnesses is the main health concern in the Arabian countries particularly in Saudi Arabia. However, studies related to the psychological status of patients with chronic illness are limited. There exists a great need to take care of the psychological and social wellbeing of those patients, especially with the increased cost and demands for healthcare services worldwide. Up until now, there have been no previous studies conducted on the association between diabetes, depression, anxiety, and stress symptoms in Arar, Northern Saudi Arabia. Thus, this study was aimed at examining the relationship between DM, depression, anxiety, and stress in the studied patients in Arar city, Northern Saudi Arabia.

Subjects and Methods

The study had a cross-sectional design. Diabetic patients were recruited from the Diabetes Center at Prince Abdulaziz bin Musaed Hospital in Arar, Saudi Arabia. Informed consent was received from all participants before enrolling into the study. In the subjects of the case study, patients under 18 years, the consent form was approved by the guardian of the participant. The inclusion criteria included the following: (1) All diabetic patients attending the diabetes center during the period from January 1, 2018 to March 30, 2018 and (2) age group from 12 years onward from both genders. The need for young patients can help in comparing levels of depression in different age groups. Furthermore, the patients less than 12 years of age lack the capacity to answer the questionnaire items precisely. The diabetic subjects admitted to ICU at the time of conducting the study and subjects who are less than 12 years of age were excluded from the study. The data collection was performed through a predesigned questionnaire. A random sampling technique was used for the study in which all patients with diabetes and fitting the inclusion criteria were involved in the study. The sample size for this study was 278 diabetic patients based on a sample size formula generally used for cross-sectional study design. Parameters used for calculating the sample size were the prevalence of diabetes = 50%, 95% confidence interval, the error below 5%, and a non-response rate of 10%. The sample size was distributed proportionately to the actual number of patients attending the diabetes center. Finally, systematic random sampling was used for selecting diabetic patients. Each investigator filled a predesigned well-organized questionnaire, and the depression, anxiety, stress scale (DASS) was then inserted in the program as preparation for analysis.

Data were analyzed using IBM SPSS Statistics for Windows version 20.0. Qualitative data were expressed as number and percentage. Chi-square (χ^2) test and Fisher's exact test were used for comparison regarding qualitative variables. A 5% was chosen as a level of significance in all statistical tests used in the study.

Results

Our study showed that the prevalence reached approximately 45.6% for anxiety, 18.7% for stress, and 37.4% for depression. Demographic variables of patients had a varied effect on the psychological wellbeing of patients. Female gender was found to be more associated with depressive symptoms (71.2%, p-value = 0.043). It was found that depression and anxiety were significantly related to the patient's age and lower educational level. Being unmarried was significantly associated with depression (46.2% of depressed patients) (Tables 1–3).

Discussion

Anxiety, stress, and depression are common psychiatric disorders that often affect people with chronic illnesses such as DM [8]. This study was aimed at examining the relationship between DM, depression, anxiety, and

Table 1. *Sociodemographic and anthropometric distribution of the studied subjects (n = 278).*

Characteristics	Summary statistics
Gender	
Female	216 (77.7%)
Male	62 (22.3%)
Age	
<12 years	1 (0.4%)
12–19 years	26 (9.4%)
20–29 years	103 (37.1%)
30–39 years	58 (20.9%)
40–59 years	74 (26.6%)
≥ 60 years	16 (5.8%)
Education	
Primary	33 (11.9%)
Secondary	44 (15.8%)
University	185 (66.5%)
Intermediate education	16 (5.8%)
Marital status	
Widow	14 (5%)
Single	111 (39.9%)
Married	144 (51.8%)
Divorced	9 (3.3%)
Occupation	
Working	100 (36%)
Not working	178 (64%)

Table 2. *Distribution of the studied patients comparing the effect of depression, anxiety, and stress (n = 278).*

Categories	Depression No. (%)	Anxiety No. (%)	Stress No. (%)
Normal	174 (62.6%)	151 (54.4%)	226 (81.3%)
Mild	43 (15.5%)	39 (14%)	38 (13.7%)
Moderate	56 (20.1%)	62 (22.3%)	14 (5%)
Severe	5 (1.8%)	22 (7.9%)	0 (0.0%)
Extremely severe	0 (0.0%)	4 (1.4%)	0 (0.0%)

Table 3. *Relationship between sociodemographic variables, depression, anxiety, and stress.*

Variables	Depressed (*N* = 104)	Anxiety (*N* = 127)	Stress (*N* = 226)
Gender			
Female	74 (71.2%)	97 (76.4%)	178 (78.8%)
Male	30 (28.8%)	30 (23.6%)	48 (21.2%)
p-value	0.043	0.0628	0.375
Age			
<12 years	1 (1%)	1 (0.8%)	1 (0.4%)
12–19 years	11 (10.6%)	11 (8.7%)	21 (9.3%)
20–29 years	42 (40.4%)	45 (35.4%)	82 (36.3%)
30–39 years	17 (16.3%)	26 (20.5%)	52 (23%)
40–59 years	22 (21.2%)	30 (23.6%)	58 (25.7%)
≥ 60 years	11 (10.6%)	14 (11%)	12 (5.3%)
p-value	0.027	0.019	0.56
Education			
Primary	19 (18.3%)	20 (15.7%)	24 (10.6%)
Secondary	17 (16.3%)	25 (19.7%)	35 (15.5%)
University	64 (61.5%)	73 (57.5%)	153 (67.7%)
Intermediate	4 (3.8%)	9 (7.1%)	14 (6.2%)
p-value	0.059	0.033	0.507
Marital status			
Widow	6 (5.8%)	9 (7.1%)	10 (4.4%)
Single	48 (46.2%)	53 (41.7%)	88 (38.9%)
Married	44 (42.3%)	59 (46.5%)	123 (54.4%)
Divorced	6 (5.8%)	6 (4.7%)	5 (2.2%)
p-value	0.047	0.017	0.081
Occupation			
Working	29 (27.9%)	40 (31.5%)	84 (37.2%)
Not working	75 (72.1%)	87 (68.5%)	142 (62.8%)
p value	0.03	0.154	0.368

p-value is calculated by Chi-square test.
p-value < 0.05 is statistically significant.

stress in the studied patients in Arar city, Saudi Arabia. The present study showed that the prevalence reached approximately 45.6% for anxiety, 18.7% for stress, and 37.4% for depression. Das-Munshi et al. [9], in a cross-sectional study, reported that the prevalence of major depression in diabetic patients was around 12% while milder types of depression were reported to be 15%–35%, Other studies had found higher depression rates among diabetic patients [10,11]. Studies in Saudi Arabia found that the prevalence of depression is 37% for type 1 and 37.9% for type 2 DM in one study in Riyadh [12].

The prevalence of anxiety in previous literature [9,10] was higher than that of depression, and this is comparable to our study results. Demographic variables of patients had a varied effect on the psychological wellbeing of patients. Female gender was found to be more associated with depressive symptoms (71.2%, *p*-value = 0.043). These results agree with the previous studies [13] that female patients had higher scores in depression than male patients. It was also found that depression and anxiety were significantly related to the patient's age and lower educational level. This was in accordance with the findings of a study on Mexican Americans that found that depressed diabetic patients to be of older age and of lower education [14]. Lower education may affect income and could be a source of stress leading to DM and making it

a chronic disease and consequently leading to depression [14]. Being unmarried was significantly associated with depression (46.2% of depressed patients), and it is well known that being married is related to less liability to develop psychiatric disorders including depression and anxiety [15,16].

Conclusion

The present study showed that the prevalence reached approximately 45.6% for anxiety, 18.7% for stress, and 37.4% for depression. Depending on the study results, we recommend the clinicians to include the psychological aspects during evaluation of diabetic patients. Also, there is a great need for conducting more health education programs about the psychological and mental health of diabetic patients and enhancing awareness among healthcare providers about the psychological complications of diabetic patients. As part of the management and care plan for all patients with chronic diseases, we recommend regular screening for depression and anxiety, and special attention to be provided for vulnerable individuals by employing appropriate interventions to obtain a better outcome. The major limitation of the present study is that the data were cross-sectional in nature which does not allow studying the cause and effect relationship. Therefore, a longitudinal study is warranted for better understanding for a cumulative experience over a long period of time.

List of Abbreviations

DASS Depression, anxiety, stress scale
DM Diabetes mellitus

Funding

None.

Declaration of conflicting interests

None.

Consent for publication

Informed consent was obtained from the participants.

Author details

Mohammed Elamin Mukrim[1], Nujud Muteb D. Alshammari[2], Wurud Muteb D. Alshammari[2], Maali Subhi T. Alshammari[2], Yousef Nasif R. Alshammari[2], Abdulaziz Sael M. Alshammari[2], Maisa Hamad F. Alanazi[2], Abdulelah Abdulrhman F. Alzammam[2], Muharib Mana M. Alshammari[2], Slwa Khaled Abu Asyah[3], Aseel Jamal Alzuhayri[4], Mushref Saeid Alshammari[2]

1. Consultant Psychiatrist & Medical Director ACMH Ar'ar, Ministry of Health, Saudi Arabia
2. Faculty of Medicine, Northern Border University, Arar, Saudi Arabia
3. Faculty of Medicine, Taif University, Taif, Saudi Arabia
4. Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

References

1. Katon W, Lin EH, Kroenke K. The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. Gen Hosp Psychiatry. 2007;29(2):147–55. https://doi.org/10.1016/j.genhosppsych.2006.11.005
2. Sareen J, Cox BJ, Clara I, Asmundson GJ. The relationship between anxiety disorders and physical disorders in the US National Comorbidity Survey. Depress Anxiety. 2005;21(4):193–202. https://doi.org/10.1002/da.20072
3. Hamdan-Mansour AM, Aboshaiqah AE, Thultheen IN, Salim WM. Psychological wellbeing of Saudi patients diagnosed with chronic illnesses. Psychology (Irvine). 2015;6(01):55–62. https://doi.org/10.4236/psych.2015.61006
4. Al Abeiat DD, Hamdan-Mansour AM, Ghannam BM, Azzeghaiby SN, Dawood LY. Psychosocial health status of patients diagnosed with chronic illnesses in Jordan. Open J Med Psychol. 2014;3(04):281–91. https://doi.org/10.4236/ojmp.2014.34029
5. Mirowsky J, Reynolds JR RF. Age, depression and attrition in the National Survey of Families and Households. Soc Methods Res. 2000;28(4):476–504. https://doi.org/10.1177/0049124100028004004
6. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: a meta-analysis. Diabetes Care. 2001;24(6):1069–78. https://doi.org/10.2337/diacare.24.6.1069
7. Ciechanowski PS, Katon WJ, Russo JE. Depression and diabetes: impact of depressive symptoms on adherence, function, and costs. Arch Intern Med. 2000;160(21):3278–85. https://doi.org/10.1001/archinte.160.21.3278
8. Ali S, Stone MA, Peters JL, Davies MJ, Khunti K. The prevalence of co-morbid depression in adults with Type 2 diabetes: a systematic review and meta-analysis. Diabet Med. 2006;23(11):1165–73.
9. Das-Munshi J, Stewart R, Ismail K, Bebbington PE, Jenkins R, Prince MJ. Diabetes, common mental disorders, and disability: findings from the UK National Psychiatric Morbidity Survey. Psychosom Med. 2007;69(6):543–50. https://doi.org/10.1097/PSY.0b013e3180cc3062
10. Tovilla-Zarate C, Juárez-Rojop I, Peralta Jimenez Y, Jiménez MA, Vázquez S, Bermúdez-Ocana D, et al. Prevalence of anxiety and depression among outpatients with type 2 diabetes in the Mexican population. PLoS One. 2012;7(5):e36887. https://doi.org/10.1371/journal.pone.0036887
11. De Groot M, Doyle T, Hockman E, Wheeler C, Pinkerman B, Shubrook J, et al. Depression among type 2 diabetes rural Appalachian clinic attendees. Diabetes Care. 2007;30(6):1602–4. https://doi.org/10.2337/dc06-1599
12. Petraityte K, Verkauskiene R, Danyte E, Razanskaite-Virbickiene D, Steibliene V. The association of diabetes-related emotional distress with blood glycemic control in young adults with type 1 diabetes. Biol Psychiatry Psychopharmacol. 2015;17(2):41–6.
13. Freedland KE, Rich MW, Skala JA, Carney RM, Dávila-Román VG, Jaffe AS. Prevalence of depression in hospitalized patients with congestive heart failure. Psychosom Med. 2003;65(1):119–28. https://doi.org/10.1097/01.PSY.0000038938.67401.85
14. Kendzor DE, Chen M, Reininger BM, Businelle MS, Stewart DW, Fisher-Hoch SP, et al. The association of depression

and anxiety with glycemic control among Mexican Americans with diabetes living near the US-Mexico border. BMC Public Health. 2014;14(1):176. https://doi.org/10.1186/1471-2458-14-176

15. St John PD, Montgomery PR. Marital status, partner satisfaction, and depressive symptoms in older men and women. Can J Psychiatry. 2009;54(7):487–92. https://doi.org/10.1177/070674370905400710
16. Afifi TO, Cox BJ, Enns MW. Mental health profiles among married, never-married, and separated/divorced mothers in a nationally representative sample. Soc Psychiatry Psychiatr Epidemiol. 2006;41(2):122–9. https://doi.org/10.1007/s00127-005-0005-3