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The Psychological Burden among Type Two Diabetes Mellitus Patients and the Associated Factors

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Abstract

Purpose: To assess the psychological wellbeing prevalence including: anxiety, depression and, stress. As well as their association of demographic characteristics. Methods: Correlational study design was used with convenience sample of 182 type two diabetes mellitus patients who were seeking care from private health care centers in Saudi Arabia. Results: moderate to extremely severe levels of depression, anxiety and stress were 29.1%, 26.8 % and 32.9% respectively. Depression was associated with presence of diabetes complications, marital status, and family history of depression, stress and anxiety (DSA).Anxiety also associated with family salary and family history of DSA. Stress was associated with occupation status and family history of DSA.Conclusion: It is important that health care providers to consider diabetes psychological interventions in their health care plans.

Keywords: Depression, stress, anxiety, type two diabetes mellitus, psychological wellbeing, diabetes complications and family history.

Introduction

Diabetes mellitus is a major source of illness morbidity and mortality worldwide (Carpenter et al., 2017). Diabetes is a complex illness that if inadequately controlled lead to significant and many negative health consequences. Patients with type 2 diabetes mellitus often experience psychological and social aspects of their health. These have recently considered as being in the top-10 aspects of comorbidity in patients with diabetes, addressing them is the key to improve diabetes health outcomes (Lee & Park, 2019).

Psychological problems including depression, anxiety, and stress are problems for diabetes patients. Diabetes patients have twice as likely to develop depression (Anderson et al., 2001; Shah et al., 2012). There is also more prevalence of anxiety among patients with type two diabetes, compared to other healthy person (Smith et al., 2013). Unlike anxiety but equally significant is stress (Burns et al., 2016) .That is the psychological stress because of being diagnosed with type two diabetes. Diabetes stress comes from concerns or doubts associated with living with diabetes. Patients with stress showed negative emotional responses to the diabetes diagnosis (Karlsen et al., 2012).

The World Health Organization considered Kingdom of Saudi Arabia as having the second highest prevalence rate of type two diabetes in the Middle East. It is the 7th highest globally. Its population is seven million living with type two diabetes and more than three million with pre diabetes. This is presenting a major public health problem (Alwin Robert et al., 2017). Patients with diabetes and depression tend to have poor diabetes self care behaviors. Such as inadequate adherence to medications taking, poor nutrition, not involved in regular exercise (Lustman et al., 2000).

Patients with type two diabetes and anxiety have a affinity to reveal poor diabetes related self care behaviors; they reveal inadequate adherence to medications taking , poor nutrition, and have higher hemoglobin A1c level (Lin et al., 2004). Researchers have shown the presence of relationship between anxiety and diabetes mellitus that is linked to hyperglycemia and diabetes complications (Bogner et al., 2007).

Type two diabetes diagnosis in general comes as a shock and as stressful moment (ADA, 2013). Type two diabetes can enforce patients to make many changes in their life pattern such as diet control and diabetes related self care behaviors such as monitoring glucose level that may contribute to the feeling of stress (Mitra, 2008). Stress can affect their levels of blood glucose. Stress hormones may also change the levels of blood glucose directly which considered as antagonizor for insulin action (Luthra, 2010).

In summary, type two diabetes psychological wellbeing including: depression, anxiety, and stress is frequent among patients with type two diabetes. Therefore, the study aimed to assess the psychological wellbeing prevalence including anxiety, depression and, stress; and their association of demographic characteristics among type two diabetes mellitus.

The study concerns the following questions:

1. What are the levels and prevalence of psychological wellbeing including: depression, anxiety, and stress among type two diabetes mellitus?
2. What are the demographic characteristics associated with higher levels of depression, stress, and anxiety among type two diabetes mellitus?

Materials and methods

Design and Sample

A descriptive and correlational design was used. The sample size was calculated through power analysis. By setting an alpha level of 0.05, a power of 0.86 and a medium correlation coefficient-related effect size (0.32), an estimated study sample of 182 participants were needed. Using convenience sampling of Saudi type two diabetes mellitus patients were selected, who were seeking care from three private health care centers in Southern of Saudi Arabia.

Saudi type two diabetes mellitus patients were included if they were: (a) patients able to speak and read Arabic, (b) patients equal or more than 30 years of age, (c) patient without any mental or psychiatric disorder, (d) patients without cognitive problems and who are able to communicate.

Ethical Consideration

Ethical Approval was obtained through the Ethical Committee of the Scientific Research in the institution which number is (ECM#2019-51)—(HAPO-06-B-001).Participants' confidentiality was taken in consideration. The participants signed a consent form prior to data collection. A Cover letter was given with each questionnaire, including information about the study process. All data were secured in the researcher's personal computer. The data that support the findings are available from the corresponding author upon reasonable request.

The researcher interviewed the participants immediately after their agreement to participate, and the demographic characteristics were collected. Then the patients' psychological wellbeing including the level of depression, anxiety, and stress by using the Arabic short version of 21 items Depression Anxiety and Stress Scale (DASS-21) that developed by Lovibond and Lovibond (1995).

Study Instrument

The DASS 21 is considered as a pencil and paper self report scale that measures the levels of patient depression, anxiety, and stress. DASS-21 is short form from DASS-42.A shorter version which is DASS-21 was developed for those situations where a short screening was needed. It is as a quantitative measure of patient distress with the three axes of patient depression, anxiety and stress. It is not considered as a categorical measure (DASS, 2013).

Data analysis

Data analyzed through using the Statistical Package for the Social Sciences (SPSS), version 20. Descriptive statistics were used to answer first question. Inferential statistics (i.e. Pearson correlation coefficient) were used to answer the other research question. Results were considered statistically significant when $p < 0.05$.

Results

A total of 182 Saudi type two diabetes mellitus patients were successfully recruited for the study.

The demographic characteristics results

The demographic characteristics of the participants are shown in Table 1. The mean age was 56.2 ± 11.83 years. Majority of the participants were 45–55 years old, women (55.2%), and married (79.7%). Almost 43.1% of the participants had received secondary education. Around 35% of participants were employed and 45% of the participants had monthly salary of more than 8000 SAR. And 33.2% had diabetes complications.

Table 1: Frequency distribution of participants with demographic characteristics N (182)

Demographic Characteristics	N	%
Age (years)		
30-45	100	54.9
45-55	49	26.9
≥ 55	33	18.1
Gender		
Female	101	55.2
Male	81	54.8
Marital Status		
Single	20	10.9
Married	145	79.9
Divorced	7	3.8
Widow	10	5.5

Educational level		
Not educated	10	5.2
Primary education	27	15.1
Secondary education	78	43.1
University education	67	36.6
Occupation		
Employed	63	35
Un employed	119	65
Family Salary		
<8000 SAR	80	44.0
≥8000SAR	102	56.0
Duration of diabetes (years)		
5 -10	120	66
10-20	50	27.5
≥20	10	5.5
Diabetes complications		
Yes	55	30.2
No	127	66.8
Family history of depression, an and stress	8	4.2
Yes	174	95.8
No		

Levels of depression, anxiety and stress

The current study aim to assess the psychological wellbeing including anxiety, depression and stress as measured through the Arabic version of 21 (DASS) scale. Participants' mean depression level was 12.8 (SD ± 8.12). 29.1% had moderate to extremely severe levels of depression (Table 2).

Participants' mean anxiety was 11.3 (SD ± 6.01). Results showed that 26.8 % had moderate to extremely severe levels of anxiety (Table 2). The mean stress score was 10.12 (SD ± 8.52). 32.9% had moderate to extremely severe levels of stress (Table 2).

Table 2. Levels of depression, stress and anxiety.

Levels of burden	Frequency	%
Depression		
Normal	94	51.6
Mild	35	19.2
Moderate	30	16.5
Severe	19	10.4
Extremely severe	4	2.2
Anxiety		
Normal	83	45.6
Mild	50	27.6
Moderate	23	12.0
Severe	17	9.3
Extremely severe	10	5.5
Stress		
Normal	79	43.4
Mild	43	23.6
Moderate	42	23.1

Severe	15	8.2
Extremely severe	3	1.6

Association between depression, anxiety and stress with their demographic characteristics.

Table 3 demonstrates the association between depression and the participant's demographic characteristics. On analysis using Pearson chi-square test, depression associated significantly with marital status, presence of diabetes complications and family history of depression, stress and anxiety (DSA). Participants who were married were probably less to be depressed (chi=9.10, p = 0.03). Family history of DSA was found to be strongly associated with depression (p=0.01). Monthly family salary and family history of DSA were associated significantly with anxiety. Study participants with higher monthly income more than 8000 SAR appeared to have less anxiety (chi=6.91, p = 0.06.Family history of DSA was found to be strongly associated with anxiety at (chi=10.25, p<0.001). Furthermore, stress was significantly associated with family history of DSA .And significant association with occupation status and stress.

Table 3. Summary of the associations between depression, anxiety and stress with their demographic variables

Demographic Characteristics	Pearson chi-square (*p*-value)		
	Depression	Anxiety	Stress
Age (years)	4.22 (0.65)	7.35 (0.33)	5.3 (0.4
Gender	3.25 (0.04)*	4.52 (0.03)*	2.4 (0.02
Marital Status	9.10 (0.03)*	6.23 (0.06)	5.6 (0.0
Educational level	4.04 (0.40)	3.61 (0.56)	0.4 (0.4
Occupation	6.32 (0.13)	3.25 (0.39)	9.2 (0.02
Family Salary	7.06 (0.04)*	6.91 (0.06)	6.7 (0.0
Duration of diabetes (ye	5.23 (0.60)	7.81 (0.32)	10.2 (0.02
Diabetes complications	1.21 (0.04)*	2.51 (0.45)	1.4 (0.5
Family history of DSA	15.32 (0.01)*	10.25 (0.02)*	19.6 (0.02

Discussion

The current study aim was to assess the psychological wellbeing prevalence including anxiety, depression and, stress; and their association of demographic characteristics among type two diabetes mellitus.The study reported moderate to extremely severe levels of depression, anxiety and stress 29.1%, 26.8 % and 32.9% respectively. These were lower for depression and anxiety compared with a similar research done in northern of Saudi Arabia by Mukrim et al. (2019), who found that the prevalence reached approximately 45.7% for anxiety, 18.6% for stress, and 37.3% for depression.

The differences in the prevalence rates of our study and Mukrim et al. might be linked to the demographic characteristics differences of our participants. In particular, our study was limited by a small sample size.The study mirrored another large research done in Qatar by Bener, OAA Al-Hamaq, et al. (2011) involving 12 primary healthcare centers using similar 21 items of DASS,where the prevalence of anxiety and stress were 35.3% and 23.4% respectively.

The depressive prevalence rate in the study was also comparable to a research in Bahrain country in which Nasser et al. (2009) found that the depression prevalence rate was (33%), the researchers used the Beck Depression Inventory (BDI) scale .Congruent with other research results, female participants in the study showed higher levels of depression, anxiety, and stress, more than male participants. This might be contributing to those female patients usually less effective at coping with stressful events than male participants (Chrisler & McCreary, 2010). Furthermore, Al-Amer et al. (2011) found also that

the highest depression rates are among female diabetes patients especially who were unmarried.

The study revealed also that marital status is associated with depression and the family history of DSA was also associated with highest level of depression, anxiety and stress. These results were consistent with those from other research by Lindström and Rosvall (2012) &Agbir et al. (2010).As well as Kaur et al. (2013) also showed a family history of psychiatric disorders was the strongest relationship with depression, anxiety and stress among patients with diabetes.

Furthermore, the current study also showed that the highest levels of depression were associated with the presence of diabetes complications that is congruent with meta analysis of De Groot et al. (2001) who studied the association between depression and diabetes complications. They found significant association between depression and many other diabetes complications. However, the result of the current study is incongruent with Bener, Al-Hamaq, et al. (2011) who found no significant relationship between the diabetic complications and depression.

The study also found that occupation appears to be related to stress. Patients who have job were less to be stressed compared with those who were not working. The current study researchers also recommend that future studies should be done with a larger number of samples from many health care centers for better representation and associations and study sample should be selected in a more systematic manner.

Conclusion

The study presented high prevalence of depression, stress, and anxiety for Saudi type two diabetes patients that is alarming. The findings from the study can instruct the health care providers to provide diabetic related intervention. This intervention can support the psychological health of diabetic patients. Nurses are in direct contact with diabetic patients, so they should provide psychological support and suitable referrals to specialists. As well as nurses should acknowledge that depression, anxiety, and stress may help diabetic patients to cope with diabetes, so we recommend routine screening for diabetic patients using DASS-21.

Compliance with ethical standards

Conflicts of interest/Competing interests: The authors declared no potential conflicts of interest with respect to the research, authorship or publications of this article.

Ethical Consideration: Ethical Approval was obtained through the Ethical Committee of the Scientific Research in the institution which number is (ECM#2019-51)—(HAPO-06-B-001).Participants' confidentiality was taken in consideration. The participants signed a consent form prior to data collection.

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