Prevalence and Determinants of Psychological Morbidity among Arab Diabetic Patients

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Abstract

Aim: Studies show that psychological morbidities are common among primary health care attendees, especially diabetic patients, affecting nearly all aspects of diabetes care. The aim of the study was to estimate the prevalence of psychological morbidity among Arab diabetic patients attending primary health care centres in Qatar, as well as identifying the determinants of this psychological morbidity among them.

Methods: A cross sectional study was conducted among Arab diabetic patients attending primary health care centres in Qatar, where a two stage random sample was used to first select the PHC centres then select the diabetic patients from each centre. The prevalence of Psychological morbidity was measured using an Arabic version of the General Health Questionnaire (GHQ-12) and a data extraction sheet was used to extract the relevant diabetes characteristics. Appropriate analysis was applied using the SPSS program. **Results:** The study showed that the prevalence of psychological morbidity among Arab diabetic patients was 31.8%. The binary logistic regression found that the most significant predictors of psychological morbidity were female gender (OR=2.5, 95% CI=1.5-4.1), using insulin only to control their disease (OR=3.8, 95% CI=2.1-6.8) and the presence of other comorbidities (OR=2.4, 95% CI=1.1-3.8). Moreover the study reported that 71.6% of Arab diabetic patients showed their willingness to receive psychological therapy whenever there is a need for it.

Conclusion: Almost one third of Arab diabetic patients attending primary health care centres in Qatar have psychological morbidity. The most significant predictors were female gender, insulin use, and presence of comorbidities.

Key words: Diabetes, Arab, Psychological.

Introduction

Mental health is part of overall health, and this is clear in the World Health Organization (WHO) definition of health, which is: "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".(1) This definition emphasises that mental health is an integral part of health, mental health is more than the absence of mental illness, and mental health is intimately connected with physical health and behaviour.

As mental health cannot be separated from physical health of any individual, studies conducted among individuals with chronic disease revealed that the prevalence of psychological morbidity (PM) is significantly higher in those with chronic disease.(2)

Worldwide estimates of PM among individuals with diabetes appear to vary in different countries, as in the US the prevalence rate of depression was 8.3%(3), 17% in the Netherlands,(4) while in a Greek study it has reached 33.4%. There are fewer studies conducted in the Middle East addressing such an important issue. However a study conducted in Iran had found major depression in 71.8% of diabetic patients,(5) while it is about 33% in Bahrain(6) and the UAE.(7)

The impact of PM on diabetes is an important public health issue because it has been generally associated with poor outcomes from diabetes care and it greatly affects the quality of life of diabetics as significant behavioral demands and challenging psychosocial factors affect nearly all aspects of diabetes care.(8,9) Thus, estimating the prevalence and knowing the determinants of psychological morbidity will help health care providers in reaching those in need of psychological intervention, which could play an important role in relieving the psychological as well as the physical symptoms of diabetes.

Subjects and Methods

This cross-sectional study has been approved by Hamad Medical Research Centre under research No. 10014/10. There are 22 primary health care (PHC) centres in Qatar. Of these centres, 16 centres have diabetic clinics providing specialized diabetic services where a gualified family physician and a senior nurse who have been trained and certified as diabetic educators help in providing health education and document all the diabetes related data in a diabetes follow-up sheet which is supervised and signed by the attending physician; so this study was targeting Arab Diabetic patients attending primary health care diabetic clinics. We have used a two stage random sampling where we have selected 8 health centres out of 16 (4 in Doha, the capital cities and another 4 from other towns). Then 459 Diabetic patients of 18 years of age or older, with type 1 or type 2 diabetes who were Qataris or any other Arab nationals have been recruited through random sampling by selecting three days of the week and selecting all diabetic patients attending the clinics. We have excluded

all women with gestational diabetes, and those without a medical record in the health centre. An informed consent form has been taken from each patient who accepted to be recruited in this study.

The primary outcome was PM which can be defined as depression, anxiety and their related symptoms of social dysfunction and loss of confidence(10), and was measured using the GHQ-12 where a score of 11 and above out of the total 36 score, is considered as a positive case.(11) Personal data were collected using a self-administered questionnaire that included the socio-demographic characteristics, family history of psychiatric illness, smoking status, their willingness to receive psychological therapy and their perception about their glycemic control. Other clinical data were collected using a data extraction sheet from the patients file and that included the diabetes characteristics, presence of complication and presence of comorbidities. The participants were informed about the nature of the study, its purpose and assured that data will be kept anonymous and confidential.

Statistical analysis:

Frequency tables were used to describe qualitative data and mean and standard deviations were used to describe quantitative data while Chi-square test was used to compare proportions between categorical variables.

Logistic regression was used to identify the most significant predictors associated with psychological morbidity among Arab diabetic patients. Dichotomous independent variables and the main outcome were entered into the binary logistic regression model of the Statistical Package for the Social Sciences (SPSS) program and odds ratio (OR) was used to estimate the strength of the relationship between psychological morbidity and the most significant predictors associated with psychological morbidity among Arab diabetic patients using the backward stepwise (Wald) method in the logistic regression analysis.

Subjects and Methods

A total of 459 Arab diabetic patients were approached of which 422 agreed to participate giving us a response rate of 91.9 %. Seven of them were excluded from the study due to missing data in their questionnaire, so a total of 415 subjects are included in the analysis of the study. Their socio-demographic characteristics are summarised in Table 1, and their diabetes characteristics are summarised in Table 2.

The prevalence of psychological morbidity among Arab diabetic patients attending primary health care centres in Qatar was 31.8%, where a higher percentage of those in the early adulthood period (< 40 years) have psychological morbidity than those in the middle or late adulthood period (\geq 40years) (41.6% vs. 29.1%) and this difference is statistically significant (p<0.05) - Table 3.

Table 1: Distribution of socio-demographic characteristics of the study subjects.(n=415)

Socio-demographic characteristics	NO.	%
Age (years)		
< 40 years	89	21.4
≥40years	326	78.6
Gender		
Male	257	61.9
Female	158	38.1
Nationality		
Qatari	184	44.3
Non-Qatari	231	55.7
Educational level		
No college degree	279	67.2
College degree & above	136	32.8
Marital status		
Currently Married	323	77.8
Currently Unmarried*	92	22.2
Employment status		
Currently employed	270	65.1
Currently unemployed**	145	34.9

*It includes the single, divorced and the widowed.

** It includes the unemployed, retired, students and housewives.

Table 2: Distribution of diabetes characteristics of the study subjects. (n=415)

Diabetes characteristics	NO.	%
Diabetes type		
Tybe1	71	17.1
Tybe2	344	82.9
Diabetes duration (years)		·
≤10 years	282	68.0
>10years	133	32.0
Treatment Regimen:		
Insulin	87	21.0
Oral hypoglycemic	167	40.2
Mixed treatments*	141	34.0
Diet & exercise	20	4.8

* This includes those on insulin and oral hypoglycemics

Concerning gender a lower proportion of males suffer from psychological morbidity as compared to females (25.7% vs. 41.8%) and this difference is statistically significant. When comparing the patients in terms of nationality, the percentage of patients with psychological morbidity is slightly higher among non-Qatari's (33.3%) than Qatari's (29.9%) but this difference did not reach a significant value (p>0.05).

Table 3: Psychological morbidity among diabetic patients according to their socio-demographic characteris	stics.
(n=415)	

	Psychological morbidity among					
Socio-demographic	Without	hout With		Significance		
characteristics	psychol	ogical	psycho	ological	orginitedite	
	morbidi	ity	morbi	dity		
		100		2000 2000		
	No.	(%)	No.	(%)		
Patients age						
. 10	50	(50.4)		144 61	¥2 4 000	15 . 6
< 40 years	52	(58.4)	37	(41.6)	X ² = 4.982	df = 1
2 40years	231	(70.9)	95	(29.1)	p = 0.026	
Gender						
Male	191	(74.3)	66	(25.7)	X ² = 11 680	df = 1
Female	92	(58.2)	66	(41.8)	p=0.001	01 - 1
Nationality		()		(P	
,						
Qatari	129	(70.1)	55	(29.9)	X ² =0.559	df = 1
Non-Qatari	154	(66.7)	77	(33.3)	p=0.454	
Marital status						
Currently married	229	(70.9)	94	(29.1)	X ² = 4.915	df = 1
Currently Unmarried*	54	(58.7)	38	(41.3)	p = 0.027	
Educational level						
No college degree	102	(60.2)	96	(20.9)	V2 - 0 270	df - 1
College degree & above	90	(65.2)	46	(33.8)	n = 0.538	ui - 1
Employment status	50	(00.2)		(00.0)	p 0.500	
Currently employed	188	(69.6)	82	(30.4)	X ² = 0.736	df = 1
Currently unemployed**	95	(65.5)	50	(34.5)	p = 0.391	
Monthly income in QRS	2		×.			
< 5000	102	(68.0)	48	(32.0)	X ² = 0.733	df = 2
5000 to 15000	122	(66.7)	61	(33.3)	p = 0.693	
>15000	59	(72.0)	23	(28.0)		

It includes the single, divorced and the widowed.

** It includes the unemployed, retired, students and the housewives.

Concerning the patient's diabetes characteristics there is a significant difference between them in terms of type of diabetes. Higher percentage of patients with type I have psychological morbidity than those with type II (43.7% vs.29.4%), as shown in Table 4. Conformingly a higher proportion of patients who are using insulin only have psychological morbidity than those who are using other regimens (oral hypoglycemic, diet & exercise or mixed treatments) (52.9% vs. 26.2%). This difference is statistically significant.

The percentage of patients with perceived uncontrolled diabetes who have psychological morbidity are higher than those who perceive a good control of their diabetes (35.7% vs. 26.6%). This difference is statistically significant. Furthermore 41.1% of patients with diabetes duration longer than 10 years suffer from psychological morbidity as compared to 27.3% among those with a diabetes duration less than or equal to 10 years. This difference is statistically significant.

Table 4: Psychological morbidity amon	g diabetic patients according t	to their diabetes characteristics.(n=415)
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Diabetes Psychological m patients			ity amon	g diabetic	Significance	
characteristics	Withou psychol morbidi	t ogical ty	With psychological morbidity			
	No.	(%)	No.	(%)		
Type of Diabetes						
Type I Type II	40 243	(56.3) (70.6)	31 101	(43.7) (29.4)	X ² = 5.550 p = 0.018	df = 1
Treatment Regimen				8		
Insulin Other regimens*	41 242	(47.1) (73.8)	46 86	(52.9) (26.2)	X ² = 22.522 p =0.000	df = 1
Perceived Glycemic						
Controlled Uncontrolled	130 153	(73.4) (64.3)	47 85	(26.6) (35.7)	X ² = 3.927 p = 0.048	df= 1
Duration of diabetes						
≤ 10 years > 10 years	205 78	(72.7) (58.6)	77 55	(27.3) (41.4)	X ² = 8.223 p =0.004	df = 1

This includes those on oral hypoglycemic, diet & exercise or mixed treatments.

When comparing the distribution of psychological morbidity among diabetic patients according to the existence of more than one complication in the same individual, higher proportions of patients with two or more complications have psychological morbidity than those with no documented complications (52.4% vs. 29.7%), Table 5. Moreover those who have at least one or more comorbidities, regardless of the type of comorbidity, have a higher percentage of psychological morbidity than those with no existing comorbid disease (34.8% vs. 21.9%). This difference is statistically significant, as demonstrated in Table 6.

Table 5: Psychological morbidity among diabetic patients according to the presence of two complications or more. (n=332)

Presence of two	Psycholo patients	Psychological morbidity among diabetic patients				Significance	
complications or more	Without psycholo morbidit	thout With psychologic chological morbidity rbidity No. (%)		ychological ty (%)			
	No.	(%)	110.	(70)			
Yes No	20 204	(47.6) (70.3)	22 86	(52.4) (29.7)	X ² = 8.633 p =0.003	df = 1	

Table 6: Psychological morbidity among diabetic patients according to presence of at least one comorbidity or more. (n=415)

Psychological morbidity among diabetic Presence of at patients					Significance	
least one comorbidity or more	Without psychol morbidi	t ogical ty	With psychological morbidity			
			No.	(%)		
	No.	(%)	100000	200000		
Yes	208	(65.2)	111	(34.8)	X ² = 5.680	df = 1
No	75	(78.1)	21	(21.9)	p=0.017	
					-52	

There is no statistically significant difference between patients with psychological morbidity according to their willingness to receive psychological therapy, family history of psychiatric illness and smoking status (p>0.05), as illustrated in Table 7.

Table 7: Psychological morbidity among diabetic patients according to their willingness to receive psychological therapy, family history of psychiatric illness and smoking status. (n=415)

Characteristics	Psycholog patients	ical morbid	Significance			
	Without With psychological psychological morbidity morbidity		ogical Y			
	No.	(%)	No.	(%)		
Willingness to receive psychological therapy						
Yes No	207 76	(69.7) (64.4)	90 42	(30.3) (35.6)	X ² = 1.090 p = 0.297	df= 1
Family history of psychiatric illness.						
Yes No	11 272	(50.0) (69.2)	11 121	(50.0) (30.8)	X ² = 3.545 p = 0.060	df = 1
Smoking status						
Currently smoking Currently not smoking*	47 236	(59.5) (70.2)	32 100	(40.5) (29.8)		

*This includes the ex-smoker and those who never smoked

Table 8: The most significant predictors associated with psychological morbidity among Arab diabetic patients
using the binary logistic regression analysis

Variable	Psychological morbidity				
	OR	95% CI	P-Value		
Gender					
Male Female	1 2.5	1.5-4.1	0.000		
Treatment regimens					
Other regimens Using insulin only	1 3.8	2.1-6.8	0.000		
Presence of comorbidity					
No Yes	1 2.1	1.1-3.8	0.012		

Predictors of Psychological Morbidity among Arab Diabetic Patients

The determinants that have been found to be significantly associated with psychological morbidity using the Pearson's chi-square test are re-analyzed again using the multivariate binary logistic regression to adjust for the confounding effect between independent variables (determinants of psychological morbidity) and the dependent variable (psychological morbidity). Results were presented in Table 8.

Regarding gender; being a female nearly doubles the chance of having psychological morbidity as they are 2.5 times more likely to have psychological morbidity than males (OR=2.5, 95% CI=1.5-4.1), on the other hand patients using insulin only are 3.8 times more likely to have psychological morbidity than those using other regimens (OR=3.8, 95% CI=2.1-6.8). Similarly those patients who had coexisting morbidities are about two times more likely to have psychological morbidity (OR=2.4, 95% CI=1.1-3.8) than those who did not.

Discussion

This cross sectional study explored the prevalence of psychological morbidity among Arab diabetic patients attending primary health care centres in Qatar in order to draw the attention to the health care provided to patients with a highly prevalent disease in the country which is diabetes as an effort to improve the quality of care provided to them and help in reducing the burden of this prevalent disease. This study used a simple, inexpensive, screening instrument, which has been used in different studies with similar primary health care settings.

The response rate in this study was 91.9% which is relatively high especially when we are addressing psychological morbidity that might be considered as a stigma in the Arab world. However, the entire participants were given a full explanation of the nature of the study and assurance that all the data will be kept anonymous. Moreover the questionnaire was distributed by the same individuals providing the service i.e. the diabetic educators, making it more acceptable to the participants.

This study found that almost one third of the Arab diabetic patients in Qatar had psychological morbidity (31.8%) and this comes in agreement with many international studies conducted among diabetic patients as in the Australian study, which found that the prevalence of depression was 30% while anxiety was 35%(12) and similar finding were reported in a Greek(13) study and in a Bangladesh study(14).

On the other hand some other studies reported a much lower prevalence as two American studies(3, 15) reported a prevalence of 10.1% for anxiety and 8% for depression, but in both of these studies a telephone survey approach was used and this might explain the

lower prevalence of psychological morbidities reported in both of these studies as it might have excluded people who do not have land-line phones in their household, the homeless, and institutionalized populations, i.e. the low social class people who might have a higher prevalence of psychological morbidity. Beside that people having psychological morbidity might be reluctant to answer the call and participate in such a survey. Other studies found a much higher prevalence, like the Iranian study which reported a prevalence of depression to reach as high as 71.8%, but this study was conducted in a hospital setting which might be different from the setting used in the present study in terms of the severity of diabetes and presence of more severe complications and or other comorbidities(5).

Although studies conducted in the GCC region reported a more or less similar rates as the present study, like the study conducted in Bahrain(6) and the UAE(7), another study conducted in Bahrain found a higher prevalence(16) than the present study and this again might be explained by the fact that, the investigator used a mixture of primary, secondary as well as tertiary level care as a setting for their study, as this population might include cases with more debilitating complications.

In general the variation in the prevalence of PM among diabetic patients might partly be explained by the use of multiple tools to assess psychological morbidities such as the GHQ, PHQ, BDI and the HADS as well as whether or not the tool used has been validated to be used among diabetic patients or not. Among other factors that might contribute to this variations are the geographical location (urban vs. rural), ethnicity of the subjects and the setting of the study (primary care, community based, or hospital based).

Gender was among the most significant predictors of PM in this study as it has been found that females were more likely to have PM than males and this comes in agreement with many studies(13) and the fact that women are more susceptible to PM especially depression may be explained by the theory that the biological and physical make up of women automatically puts them more at risk of developing psychological morbidity(17) as from puberty onwards, fluctuating hormone levels affects their body both physically and emotionally. Similarly, during and after pregnancy women may be particularly vulnerable to depressive disorders such as postpartum depression and postpartum psychosis. In addition to biological factors, they also tend to be more affected by the environment around them, and strive for perfection both physically and otherwise. This predefined social role, both increases the pressure, which they place on themselves.

This study as well as many other studies reported that insulin use increases the likelihood of developing psychological morbidity(18,19); this might be explained by the fact that these patients have injection related anxiety especially when the insulin is self injected,(20) as insulin self-management can be burdensome, especially when patients must deal with their diabetes all day and every day, by self-monitoring of the blood glucose, taking insulin and making sometimes complex decisions about insulin dosage in relation to physical activity and diet. Other factors, such as worries about hypoglycemia, gaining weight, the impact of insulin therapy on the social environment and feeling of failure as insulin therapy signifies that one has failed to manage diabetes with diet/ tablets(21). Many physicians also threaten their patients with insulin as a final solution for controlling diabetes, creating a great feeling of anxiety once insulin is initiated. Patients also want to avoid injections because they see insulin injections as a social stigma that labels them as diabetic. In addition those who are using insulin only to control their diabetes, as in the present study, are prone to more daily insulin injection, as well as since their failure is intensified as they think that no other treatment could possibly be effective with their diabetes and their one and only chance is insulin to have a better control.

It is well known that most diabetes patients have a number of comorbidities(22) such as hypertension, hyperlipidemia and the present study showed that there is a significant relationship between the presence of comorbidity and PM by both univariate and multivariate analysis. This finding agrees with studies that explore this relationship such as Ali et al.(23,24). However, when comparing each comorbid disease separately such as hypertension and hyperlipidemia, the study analysis failed to find a significant difference, and this might be attributed to the fact that the study addressed very prevalent comorbidities in Qatar as most patients have them whether they have psychological morbidity or not and maybe the study did not have enough power in some of these comorbidities to detect a significant difference such as in asthma.

The relationship between psychological morbidity and age must be interpreted with caution as some studies showed that psychological morbidity has been shown to be common among younger people (25,26). This might be explained by many factors as older people have fewer economic hardships and fewer experiences of negative interpersonal exchanges, beside younger adults may be more reactive to life stressors, and they may cope less effectively with these conditions than older adults(26). On the other hand different studies showed contradicting results,(27) with depression being more common among older people although older patients are less likely to report depressive symptoms and they might have suboptimal cognitive functions, which makes it difficult to diagnose psychological morbidity among them(28).

Diabetes duration has been addressed in many studies as a determinant of psychological morbidity, where some studies found that those with longer duration of diabetes are more likely to have PM than those with a shorter duration(13,29). This might be attributed to the fact that living longer with such a demanding disease exposes the individual to a longer duration of stress that might exhaust his coping resources. Also it should be noted that studies reported that after ten years, the likelihood of developing diabetes complications increases in both types of diabetes as reported by Ammari (30) and Basit et al(31). In addition this study did not show a significant relationship between currently smoking and psychological morbidity and this is in agreement with Nasser et al(6) while there are other studies that found a significant relationship between smoking and psychological morbidity(32). This finding should be interpreted with caution, as smoking is not defined in the same way in many of the studies addressing smoking.

Nevertheless, it should be worth noting that the majority of patients reported their willingness to receive psychological therapy when needed (71.6%). This should encourage the decision makers in the country to consider incorporating preventive psychological interventions into primary care services directed towards diabetic patients to enhance adaptation to diabetes and reduce related stress.

Strengths and limitations:

As in any mental health screening using a questionnaire, one cannot rule out the social desirability bias or mental health bias; also the clinical characteristics in the study are based on the existing data in the patient's file, as the PHC department are still in the process of developing guidelines which will help in standardizing the services provided in all PHC centers in Qatar. However, this study has its strength, as although it is targeting a sensitive issue in the Arab world it manages to achieve a high response rate (91.9%), and the investigator used a simple inexpensive validated tool, which can be used for future screening of diabetic patients for psychological morbidity. In addition this study can act as a baseline for the planning of preventive mental health services for diabetics in Qatar.

Conclusions

Almost one third of Arab diabetic patients attending primary health care centres in Qatar have psychological morbidity where female gender, insulin use and presence of multiple comorbidities are the most significant predictors of psychological morbidity among them.

More studies need to be done in this field in order to identify the risk factors for psychological morbidity among people with chronic disease especially diabetes, and to improve the mental health services that are offered to these people as in this study about two thirds of Arab diabetic patients showed their interest in receiving psychological therapy if they need it.

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