

ORIGINAL ARTICLE

Depression, Social Support and Quality of life in Patients with Diabetes: A Cross Sectional InvestigationSYED MESSUM ALI¹, MUHAMMAD IQBAL², KIRN ARSHID³, MUHAMMAD BILAL ARIF⁴¹Assistant Director Colleges, Lahore, Government of the Punjab, Higher Education Department²Clinical Psychologist, District Headquarter Hospital, Sheikhpura³Graduate Member, British Psychological Society, United Kingdom⁴Psychologist, Institute of Professional Psychology, Bahria University, Karachi

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ABSTRACT

The purpose of the study was to determine the relationship between Depression, Social Support and Quality of life in patients with Diabetes admitted in District Headquarter Hospital Sheikhpura using a representative population sample. The study used a cross sectional research design and sampling technique was purposive sampling strategy. The sample size of the study was 200 in the age range of 25 to 50 years of age. Depression was assessed through Hamilton Depression Rating Scale Urdu version while Social Support was assessed by Multidimensional Scale of Perceived Social Support Urdu version. Quality of Life was assessed through the WHO Quality of Life Measure. Results showed that social support significantly mediated the association between depression and quality of life. Moreover, significant gender differences were seen with regard to depression, social support and quality of life for diabetic patients. Social support also significantly mediated the association between depression and quality of life.

BACKGROUND

Diabetes is a chronic metabolic disease which emerges either when the pancreas is not able to produce sufficient levels of insulin for the blood or when the body is unable to metabolize insulin. Insulin is a specialized hormone which is involved in the regulation of blood glucose levels (UK Hyperglycemia Study Group, 2017). Hyperglycemia, also referred to as raised levels of blood sugar, is a common outcome of uncontrollable levels of diabetes and if left uncontrolled over the long period of time, can result in devastating negative effects on the physical wellbeing of individuals. In relevance to its classification, the disease is further divided into type 1 and type 2 diabetes (Vestergaard et al., 2009). Type 1 diabetes which was previously referred to as insulin dependent diabetes is marked by deficient levels of insulin production and in order to ensure efficient physiological functioning of the patient, a daily administration of insulin is needed. The symptoms include excessive urine excretion, constant hunger, fatigue, changes in visual capabilities, weight loss and thirst. Research has shown that these symptoms can occur suddenly and can be indicative of a rapid onset of diabetes (Lee et al., 2012). In comparison, Type 2 diabetes, also called non-insulin dependent diabetes, results from the inability of the body to use insulin (Kim et al., 2007). It has been assessed that most of the individuals are impacted with type 2 diabetes. This form of diabetes is more often associated with excessive body weight and higher levels of physical inactivity. Symptoms are also often similar to type 1 diabetes but less marked and might also not have a rapid onset. With the prevalence rates rising around the world, it is now a well-documented fact that diabetes is associated with significant psychiatric comorbidities.

There is a growing body of evidence to suggest that individuals diagnosed with diabetes report depression and a compromised quality of life (Gonzalez et al., 2008). Specifically, diabetics report a higher level of depression and stress in comparison to the general population. Although the direction of this relationship is uncertain (i.e. whether depression can be marked as a risk factor or a consequence or outcome of diabetes), about 30 % of adults diagnosed with diabetes have comorbid levels of clinical depression (Egede et al., 2010). Other studies have estimated the prevalence rates of depression in diabetes as being in the range 40 to 55 % (Ali et al., 2013; Calvin et al., 2015; Nouwen et al., 2011). There is also evidence to show that depression with diabetes are linked with poor health outcomes. Moreover, depression has been linked with worsening of diabetes in a large number of individuals. This has led a number of researchers to raise the need of providing specialized mental health and counseling services for such individuals (Eaton, 2002; Roy & Lloyd, 2012). It is also due to the rising levels of global

prevalence of diabetes that the need for extensive mental health services for diabetics is being called for.

The prevalence for diabetes in all age groups has been estimated to be about 2.8 % and it is now being estimated that the prevalence is going to increase to 4.4 % as of 2030. The total number of individuals diagnosed with the condition are expected to increase from 171 million in 2000 to 366 million till 2030 (Thomas et al., 2019). The estimates also show that men are at a higher risk of diabetes in comparison to women. Apart from this, urban population is at a higher risk and this increased risk has been associated with leisurely and sedentary lifestyles in these populations (Noubiap et al., 2019). These prevalence rates have also raised concerns among the government and healthcare entities about the high costs of healthcare for these populations. China is in the lead in terms of having the most number of cases of diabetes with followed by India where the prevalence is more than 15 % (Kaveeshwar & Cornwall, 2014). Moreover, other countries with high prevalence rates include USA, France, UK, Canada, Germany and Russia (Yau et al., 2012). Amir et al. (2019) reported that the prevalence of Type 2 Diabetes in Pakistan 16.98 % while the prevalence of pre-diabetes is about 10.98 % with the risk of diabetes being 2.68 times higher in those having a family history of diabetes. Moreover, as per the findings of the National Diabetes Survey, the prevalence of diabetes has been reported to be about 8.7 % (Ijaz et al., 2020). The varying estimates reveal that the prevalence of diabetes in Pakistan are higher in comparison to a number of other countries in the world. Research has also shown that the prevalence of diabetes is on the rise in even those age groups that were previously considered to be at lower risks of diabetes including individuals in the age range of 20 to 40 years of age. The prevalence rates are also raise the risk of mental health problems and conditions in the Pakistani population.

Depression and stress have been identified as the leading psychiatric comorbidities in diabetic patients. While there is a debate on the direction of causality between depression and diabetes, a wide range of studies have identified depression as being a core and leading risk factor associated with diabetes (Lynch et al., 2014). In relevance to the physical comorbidities, hypertension, mortality risk, congestive heart failure, kidney diseases and substance abuse have been identified as the leading physical comorbidities linked with diabetes. It has been assessed that the presence of these additive conditions is indicative of multi-morbidity in diabetic patient and this further raises concerns regarding the physical and psychological functioning of diabetics (Fernando et al., 2017).

Studies have also found that presence of mental health conditions in individuals with diabetes such as depression, anxiety, acute stress etc. in individuals who are marked for having multi-

morbidity further results in an adverse impact on clinical outcomes (Baumeister et al., 2005; Gautam, 2010). One study assessing the effect of psychiatric conditions (such as depression, anxiety, bipolar disorder, acute stress) on varying levels of mortality in individuals with diabetes showed that these conditions can independently contribute towards the risk of drugs and alcohol abuse which in turn leads to a 22 % higher mortality (Ducat et al., 2014). Other studies have found that chronic conditions such as diabetes occur in clusters with other conditions such as cardiovascular diseases, heart disease, kidney disease, stroke, orthopedic complications etc.) (Daniele et al., 2013; Sullivan et al., 2005). However, there is limited evidence to show separate or combined effects of physical and psychiatric conditions on the risk of mortality (Ducat et al., 2014). Apart from this, the psychological outcomes associated with diabetes are primarily concerned with assessing the quality of life of diabetics which is marked for being an important health outcome.

Since its introduction in the medical and other scientific literature in the 1960s, a number of definitions of QoL have been proposed. In 1975, it was primarily used as a keyword in a wide range of medical databases. Another root to the construct that is referred to QoL can be linked back to the era of 1947 in the definition proposed by WHO. It is referred to as the specific perceptions of individuals in relevance to their present standing and position in life keeping in view their cultural contexts and in accordance with the specific domains of the value measures and systems in which they currently live in and in accordance with their life goals (WHO QoL Group, 1995). The construct "quality of life" should also be analyzed in relation to the WHO's criteria for defining and assessing the role of health which in turn is defined as a statement of complete physical, mental, social and spiritual wellbeing. Research has identified that for the elderly population, the absence of disease is not the sole marker for health and quality of life (WHO QoL Group, 1995). Quality of life is defined by all aspects of personal and social wellbeing of an individual including the need to have sufficient levels of mental wellbeing, maintenance of a thorough and active lifestyle, good and supportive social relations and superior levels of life satisfaction.

As a number of instruments to measure QoL have been developed by the WHO and due to the fact that they have been developed keeping in view cross cultural differences, the original definition of QoL and health has been used extensively (WHO QoL Group, 1995). It should be noted that QoL instruments are available in 20 different languages, another indication of cross cultural sensitivity and homogeneity in relevance to the definition that emphasizes physical, mental and social wellbeing. However, there are additional domains that have been identified in the World Health Organization Program of Mental Health. De Vries and Van Heck (1997) have identified six domains for the measurement of health including:

Bai et al. (2008) identified the correlates of depression in type 2 diabetes using a sample of elderly. The findings showed that diabetes duration, treatment options being pursued and complications due to diabetes were significantly and negatively linked with depression. It was also found that social support and absence of other chronic conditions explained 25.9% variance with related to depression. Similarly, Park and Kim (2012) reported lower levels of social strain and depression and higher degrees of social support were associated with improved in the physical and mental health functioning of diabetics. Self-efficacy also positively impacted mental health functioning and social support and resulted in improved physical health outcomes in diabetics. Strom and Egede (2012) had performed a systematic review to determine the role of social support in differentiation health outcomes in adult patients with type 2 diabetes. Type 2 diabetes accounts for 90 % of all diabetes cases in the world and with these findings into focus, the researchers had sampled type 2 diabetics. Results showed that proper disease management is important in achieving improved clinical and health related outcomes. Moreover, social support was found as a leading and dominant factor in having a

direct impact in addition to a mediating effect on psychosocial symptomatology of diabetes. It was also found that social support for patients with diabetes can be provided through modern technological measures as well including mobile texting groups, tablet applications, social media groups, online communities and blogs. This is an indication that technology assisted social support can create a conducive environment for diabetics with regard to an efficient disease management.

Purpose and Significance of the Study: Past research has shown that diabetes results in a wide range of psychosocial, physical and emotional problems. There is also evidence to show that depression is a common psychological outcome of diabetes and it is mediated by social support and the current physical health status of patients. However, there is also a gap in the literature with regard to indigenous studies assessing the role of socio-demographic, biological, emotional and social factors impacting quality of life in individuals with diabetes. The present thus aims to assess these associations in order to identify those factors that account for a majority of the variance in quality of life for diabetic patients using the biopsychosocial model of health. Another core purpose of the study is to use the findings in order to provide recommendations with regard to specialized healthcare services for individuals with diabetes and the importance of promoting their mental health.

Aims and Objectives

- To contribute to the gap in the literature with regard to depression, social support and quality of life in diabetics
- To assess and identify the biopsychosocial determinants of quality of life in diabetics
- To assess the relationship among depression, social support and quality of life
- To determine the predictive influence of depression and social support on quality of life
- To study the mediating influence of social support on the relationship between depression and quality of life
- To identify and assess gender differences on social support, depression and quality of life

Hypotheses

- There would be a significant positive relationship between social support and quality of life in diabetics
- There would be a significant negative relationship between depression with social support and quality of life
- There would be significant gender differences among depression, social support and quality of life
- Social support would have a mediating influence on the relationship between depression and quality of life
- Socio-demographic variables, depression and support would significantly predict quality of life

METHOD

Research Design: The present study used a descriptive cross-sectional research design. The design was suitable for this research as the emphasis was on recruiting a diverse set of participants of diabetes. Moreover, cross-sectional research allowed for conducting comparisons of individuals belonging to different population domains and for achieving the aims and objectives of the study. Participants

The sample size for the study was 200 which include 100 males and 100 female selected using purposive sampling. The age range of the participants was from 28 to 60 years of age. The researcher had contacted 200 participants and 200 had completed the questionnaire. The sample size was finalized using G Power Analysis with 95 % confidence intervals. The analysis showed that the sample size was sufficient to report effect sizes.

Measures: Hamilton Depression Rating Scale: The instrument has 21 items and is known for being the most widely used tool for assessing clinical depression (Potts et al., 1990). The scale was originally developed for being used with hospital inpatients, however, it was later onwards modified for being used in other

outpatient settings as well. The alpha reliability of the scale is .91. The administration time for the scale is 20 to 30 minutes. For assessing depressed mood, the participants are required to rate the feelings from 0 to show absence, 1 identified through questioning, 2 verbally indicated by the client, 3 shows feelings non-verbally and 4 representing that patient reports these feelings extensively.

Multidimensional Scale of Perceived Social Support: MDSPSS is a measure used to assess social support through 12 items specifically designed to identify the self-report of participants with regard to the level or degree of support they receive from friends, family, colleagues, community etc. (Wilcox, 2010). The alpha reliability of the scale is .74. The participants are required to offer a rating from 1 indicating very strongly disagree to 7 indicating very strongly agree. For example, the item "there is a special person who is around you when I am in need" shows the level of social support received through a closed one.

Flanagan's Quality of Life Scale: It is an instrument used to assess the global quality of life of individuals (Flanagan, 1970). It has a total of 15 items with five sub domains including physical and material wellbeing, relations with others, community, social and civic activities. The scale has also been adopted for usage with those who have chronic illnesses. The alpha reliability of the scale is 0.82. For example, "I have productive relations with relatives" shows the social dimension of quality of life.

Procedure: The approval for the topic was attained through the Ethical Review Board of University of Lahore, Pakistan. The researcher had then initiated data collection. As the emphasis was on collecting data from those diagnosed with diabetes and those who visit outpatient settings, DHQ Sheikhpura was the primary site for data collection. The site was also suitable as it allowed the researcher access to a diverse population of residents from the city and those living in nearby regions. The participants were duly informed about the purpose of the study and were also informed about their right to refuse participation at any time. Each participant took an average of 40 minutes to complete the questionnaires. The researcher had contacted 350 participants out of which only 300 participants had completed the questionnaires. The complete questionnaires were subjected to data entry into SPSS.

Data Analysis: SPSS 21.0 was used for analysis of data. Pearson Product Moment Correlation, Independent Sample t Test, stepwise regression and mediation analysis were used.

Ethical Considerations: The participants were informed about the purpose of the study. They were assured about the confidentiality of their data and were also informed about their right to refuse answering any question or exit the research setting at any time. The researcher had emphasized the beneficence of the participants and had also provided counselling to a number of participants who had reported severe depression

RESULTS

Table 1: Descriptive Statistics of Demographic Variables of the Sample (N =200)

Variables	F	%
Age		
30-40	6	6.0
41-50	56	56.0
51-60	38	38.0
Gender		
Male	100	50.0
Female	100	50.0
Socio-economic Status		
Low	82	41.0
Middle	68	34.0
High	50	25.0
Education		
Matriculation	14	7.0
Intermediate	25	12.5
Graduate	59	29.5
Post Graduate	14	7.0
Masters	75	37.5-
MS/MPhil	9	4.5
PhD	4	2.0
Profession		
Govt. Employee	80	40.0

Private Employee	47	23.5
Self-Employed	21	10.5
House Wife	46	23.0
Retired	6	3.0
Income		
9000-30000	45	22.5
31000-60000	25	12.5
61000-100000	30	15.0
100,000-150,000	45	22.5
150,000-200,000	55	27.5
Job Duration		
1 to 3 Years	21	10.5
4 to 8 Years	47	23.75
8 to 12 Years	32	16.0
13 to 20 Years	45	22.5
21 to 27 Years	55	27.5
Marital Status		
Single	9	4.5
Married	186	93.0
Divorced	5	2.5

Table 2: Psychometric Properties for Hamilton Depression Scale, Life Satisfaction and Social Support Scale

Scale	M	SD	Range	Cronbach's α
HDRS	21.47	4.63	2-29	.77
Life Satisfaction	87.99	11.70	60-138	.81
PSS	65.32	8.98	35-96	.79

Note. HDRS=Hamilton Depression Rating Scale, PSS=Perceived Social Support Scale

Reliability analysis was performed on study variables. The results showed that life satisfaction scale had the highest reliability of .81 followed by multi-dimensional perceived social support scale with a reliability of .79 and Hamilton depression rating scale with a reliability of .77.

Table 3: Inter-Correlation among Depression, Life Satisfaction and Social Support

Variable	M	SD	1	2	3
1-Depression	9.63	4.63	-	-.44**	-.30**
2- Life satisfaction	87.9	11.7		-	.52**
3- Social support	65.32	8.98			-

Note: **p<.01

Pearson product moment correlation was performed to access the association among Depression, Social support and Life satisfaction. The findings showed that there is a significant negative relationship between depression and life satisfaction($r = -.44, p < .01$). There is a negative association between Social support and depression ($r = -.30, p < .01$). It was also found that there is a significant positive relationship between life satisfaction and social support($r = -.52, p < .01$).

Table 4: Stepwise regression to Access the predictors of Life satisfaction

Predictors	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Constant	44.05	5.25		59.8	5.75		66.82	6.1	
Social support	.67	.08	.52	.55	.08	-.42	.54	.08	.4
Depression				-.80	.15	-.31	-.84	.15	-.3
Gender							3.9	1.3	.1
							3	6	.6

Step 1: $F(1,196) = 31.39, p < .01$ Step 2: $(1,195) = 28.28, p < .01$ Step 3: $(1,194) = 8.89, p < .01$

Stepwise regression analysis was used for prediction of quality of life. The results shows that social support accounted for 26% variance on life satisfaction ($\Delta R^2 = .268$). The results also shows that depression significantly predicted effect on life satisfaction and accounted for 9% variance on life satisfaction ($\Delta R^2 = .093$). from the demographics of the participants, the regression analysis shows that gender was also the predictor and accounted for 3% variance on life satisfaction ($\Delta R^2 = .03$). altogether, depression, social support and gender predicted 38% variance on life satisfaction of diabetic patients.

Table 5: Mean Differences of gender on depression, Social Support and life satisfaction

Variable	Male (n=100)		Female (n=100)		t(198)	p	95 % CI		Cohen's d
	M	SD	M	SD			LL	UL	
Depression	10.03	5.45	8.24	3.62	1.19	.00	-.51	2.08	.17
Life Satisfaction	89.68	12.12	86.30	11.08	2.06	.21	.14	6.61	.29
Social Support	70.5	10.57	65.14	7.08	.28	.00	-2.15	2.87	.04

Note. CI=confidence interval, LL=lower limit, UL=upper limit.

Table 6: Mean Differences on depression, Social Support and life satisfaction on the basis of daily exercise

Variable	exercise (n=67)		No exercise (n=131)		t(196)	p	95 % CI		Cohen's d
	M	SD	M	SD			LL	UL	
Depression	8.4	4.8	10.3	4.3	-2.79	.00	-.51	2.08	.41
Life Satisfaction	95.04	9.76	84.34	10.8	7.01	.00	.14	6.61	1.03
Social Support	68.8	9.92	63.51	7.84	3.84	.00	-2.15	2.87	.55

Note. CI=confidence interval, LL=lower limit, UL=upper limit.

Table 5 shows mean differences between male and females on social support, depression and life satisfaction. The results indicated that there were significant differences between males and females on social support ($t=-.28, p<.01$), depression ($t=1.19, p<.01$) and life satisfaction ($t=2.06, p<.05$). The results from independent t-test also shows that male diabetic participants reported higher scores on depression ($M=10.03, SD=5.45$), life satisfaction ($M=89.68, SD=12.12$) and social support ($M=70.5, SD=1.57$) as compared to female diabetic participants who scored ($M=8.24, SD=3.62$) on depression, ($M=86.30, SD=11.08$) on life satisfaction and ($M=65.14, SD= 7.08$) on social support.

Table 6 shows mean differences of exercise on social support, depression and life satisfaction. The results indicated that there were significant differences between males and females on social support ($t=-2.79, p<.01$), depression ($t=7.01, p<.01$) and life satisfaction ($t=3.84, p<.01$). The results from independent t-test also shows that diabetic participants who exercise daily reported more score in life satisfaction ($M=95.04, SD=9.76$) and social support ($M=68.8, SD=9.92$) as compared to diabetic participants who didn't exercise daily scored ($M=84.34, SD=10.08$) on life satisfaction and ($M=63.51, SD= 7.84$) on social support. While on the other hand, the participants with daily exercise had lesser while lower score on depression scores ($M=8.4, SD=4.3$) as compared to individuals with no daily exercise ($M=10.3, SD=4.8$).

Table 7: Mediating Effect of social support on the Association between depression and Life Satisfaction

Measures	β	SE	P
Step 1 (Path c)			
Outcome: LS			
depression	-.80	.15	.000
Step 2 (Path a)			
Outcome: SS			
Depression	-.57	.13	.000
Step 3 (Path b)			
Outcome: LS			
Social support	.55	.07	.000
Step 4 (Path c')			
Mediator: SS			
Predictor: Grit	-.31	.12	.000

Note: LS= life satisfaction, SS= Social Support, β =standardized coefficient, * $p<.05$, ** $p<.01$

In terms of the current investigation, Preacher and Hayes (2008) bootstrapping method was used for the purpose of testing and observing whether social support mediated the association between grit and life satisfaction.

Path c in the table shows the predictive association between depression as the independent variable and life satisfaction as the outcome variable. There was a significant predictive relationship between the two variables ($B= -.80, p<.001$).

Path a shows relationship between depression as the predictor variable and social support as the dependent variable. This path has shown that grit was significantly associated with the metacognitive awareness variable i.e. ($B= -.57, p<.001$).

Path b in the table shows social support as the predictor of life satisfaction. There was a significant predictive relationship that was seen ($B=.55, p<.001$).

The path c' (c prime path) shows the association between depression as the independent variable and life satisfaction as the dependent variable when not controlling for the mediator. In this case, a decrease in the level of association was seen between the relationship of depression(IV) and life satisfaction (DV) via the mediation of which is an indication of partial mediation ($B= -.31, p<.001$).

DISCUSSION

Depression became hot issue now days due to the fast life routine. It is seen that people frequently suffering from the Depression. Some comes in record but so many facing this crisis silently to avoid social criticism. In such cases a very few people got social support and depict healthy life style. In this present study it was aimed to explore the relationship between depression, social support and quality of life. Diabetic patients were taken as a sample.

It was hypothesized that there would be positive relationship between social support and quality of life. It means that those patients who have strong social support in their life they showed better and happy life in its quality. Thorstennson (2017) reported in a research that there is significant relationship between social support and quality of life. If the support received from friends and family, it effects more on a person's quality of life. Thus the findings of the current research are confirmed by the literature and supported in the population of diabetic patients.

Moreover, it was also hypothesized that depression had a negative relationship between social support and depression. Results indicated that those patients who had greater social support showed less depression and those who had less support in their social life suffer more in depression. Those patients who had higher level of depression are seen to perform low in their diabetic condition. As Bai et al. (2008) explored in his research that the diabetic patients who suffer from depression shows low performance in the treatment of diabetes. It can be said that with low social support one can feel low and indulge in depression that cause a patient to restrict in a sad phase and perform low. They have very few chances to come out from that pathetic situation of life.

It was hypothesized there would be significant gender differences among depression, social support and quality of life. There are several factors which Vaccaro et al. (2014) identified a critical positive relationship as to accessibility of family/companion social help and self-administration of diabetes. Results additionally demonstrated that ethnic alliance, gender, age, financial and poor glycemic control were likewise connected with diabetes.

It was hypothesized that social support would have a mediating influence on the relationship between depression and quality of life. Brenes GA (2007) Anxiety and depressive disorders have a momentous and negative influence on quality of life. Due to the inflation, most of people do not afford the basic necessities of

life, from food to medicine and many others factors which cause depression and poor quality of life.

It was hypothesized that socio- demographic variables, depression and support would significantly predict quality of life. Cho Y (2019) There are many risk factors that may lead low Quality of Life in individuals with depression. Among different factors inspected, age, level of Education, low income, joblessness, more terrible emotional impression of wellbeing, obesity and psychological well-being were related with Quality of Life debilitations in depressive people.

Social support and health care predict better quality of life among diabetic patients. It is studied frequently in previous researches that how social support plays a key role in the quality of life among patients having diabetes. In Korea a research was conducted by the Kim in (2017) which support the above mentioned results of the present research. It was explored in that research that diabetic patients who receive social support from their love ones experience less depression in their lives and perform better in their diabetic condition. It improves their quality of life.

CONCLUSION

It is thus concluded that diabetic patients should always be subject to extensive social support and care. As the disease itself has debilitating health consequences for a number of individuals, the emerging depression can cause numerous psychosocial and emotional consequences for the patient. It is therefore imperative to structure the environment of the patient with marked social support, optimal treatment options along with measures focused on enhancing their quality of life. While most diabetics report depression resulting through the disease, it is evident that social support along with other biopsychosocial interventions can lead to desirable healthcare outcomes.

Limitations and Suggestions for Future Research

- Urdu version of scales was not available
- Patients having diabetes were not available in hospitals during COVID-19
- Time was very short for data collection
- Scales should use which are translated in Urdu
- A researcher should be expert SPSS
- Tools should use which are developed for our own culture

Implications

- The study can contribute towards the development of different psychosocial interventions and programs aimed at enhancing the quality of life with diabetic patients
- The findings can further our understanding about the role of psychosocial and biological factors in disease progression along with the protective role the former factors can play in disease management
- The results can also be used for passing legislative measures aimed at enhancing mental health outcomes for diabetic patients in Pakistan

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