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Impact of Diabetes Distress and Self-efficacy on Quality of Life Among Patients with Type 2 Diabetes

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Abstract: *Type 2 diabetes is a prevalent chronic condition that significantly impacts both the physical and psychological well-being of patients. Using a purposive sampling technique, data were collected from patients (N = 300) from various public and private clinics and hospitals in Rawalpindi, Peshawar, and Islamabad. Along with demographic information, the Urdu version of the Diabetes Distress Scale (Yousaf et al., 2014), the Generalized Self-Efficacy Scale (Tabbassum et al., 2003), and WHOBREF (Khan et al., 2003) were used to assess diabetes distress, self-efficacy, and quality of life, respectively. Cronbach's alpha reliabilities for all the scales and subscales were satisfactory. To investigate the predictors of quality of life, multiple linear regression analysis was conducted. Results showed that self-efficacy positively predicts quality of life, while diabetes distress negatively predicts quality of life.*

Keywords: Diabetes, Distress, Self-efficacy, Quality of Life, Type II Diabetes

Introduction

A collection of metabolic disorders, collectively referred to as diabetes mellitus, occurs when the pancreas fails to produce enough insulin or when the body fails to utilize the insulin that is produced (Unwin et al., 2009). There are two types of it: type 1, which manifests in childhood and is typically mediated by the immune system, and type 2, which manifests later in life and is particularly associated with aging pancreatitis (Eizirik et al., 2020). Globally, approximately 463 million people have diabetes, with type 2 diabetes mellitus accounting for 90% of cases (Pradeepa & Mohan, 2021).

Diabetes distress, which includes a range of unpleasant feelings and stress related to the disease's management, can frequently stem from the emotional and psychological difficulties encountered by diabetic patients. Evaluating risk and protective factors is a necessity for improving the general well-being and quality of life of diabetics, given the emotional and psychological burden associated with diabetes. Self-efficacy, a person's confidence in their capacity to carry out tasks and overcome obstacles associated with their health condition, has gained prominence in research on diabetes (Oluma et al., 2020). Studies have shown that higher levels of self-efficacy are associated with better diabetes management, glycemic control, and overall well-being (Azami et al., 2020; Stromberg et al., 2021).

Understanding the impact of diabetes distress on the quality of life of individuals with type 2 diabetes is crucial for improving their overall well-being. It is equally important to examine the variables mediating the association between diabetes distress and quality of life. Therefore, the present research aims to examine the mediating role of self-efficacy in the relationship between diabetes distress and quality of life among patients with type 2 diabetes. Findings will be helpful to inform interventions, support programs, and individualized care strategies that aim to enhance the overall quality of life for individuals living with type 2 diabetes.

Type II Diabetes

Type 2 diabetes mellitus (DM) is the most common form of diabetes, characterized by hyperglycemia, insulin resistance, and relative insulin deficiency (Lima et al., 2022). Common symptoms of newly diagnosed type 2

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diabetes include abnormal thirst, frequent urination, weight loss, genital itching, and stomatitis. These symptoms typically develop over a short pre-diagnostic period and are closely associated with elevated blood sugar levels. Other signs include visual disturbances and fatigue.

Diabetes Distress

Diabetic distress may account for the detrimental effects of diabetes on mood as well as emotions (Motevalli et al., 2023). Diabetes distress, which includes feelings of overabundance anxiety, despair, and depression, has been described as the unpleasant feelings and emotional burden that is associated with managing the demands and challenges of having diabetes (Trief et al., 2022). Dysfunctional glucose management, self-care, and health-related quality of life are all linked to diabetes distress, which typically endures over time (Mannan et al., 2022).

Younger age (Skinner et al., 2020), living alone (Bo et al., 2020), lower education (Sari et al., 2020), higher number of diabetes-related complications (Fisher et al., 2019), frequency and severity of hypoglycemic episodes (Polonsky et al., 2020), diabetes-related family arguments (Messer et al., 2020), and diabetes support gap (Litchman et al., 2020) are some of the factors that have been found to be associated with diabetes-related distress. Empirical evidence suggests that females tend to be at an increased risk of experiencing diabetes specific distress (Akhlag et al., 2024). Contrarily, older age (McCoy & Theeke, 2019), marriage (Presley et al., 2021), employment (Rahman et al., 2020), greater family and social support (Gupta et al., 2019), and a better patient-physician connection (Bawa et al., 2020) have been shown to contribute to lower levels of diabetic distress.

Literature suggests that females are typically more likely to experience distress associated with diabetes (De Wit et al., 2022; Khan & Shaw, 2023). Women with type 2 diabetes report experiencing emotional challenges associated with their condition, which they blame on varying social norms. However, since they fear being perceived as weaker than women, men are less likely than women to ask for assistance or to disclose when they are in distress (Auth et al., 2022). Additionally, an increased duration of diabetes and being diagnosed at a younger age have also been suggestive of another important factor associated with diabetes distress. An individual with diabetes has a greater chance of problems and a greater demand for insulin therapy the longer they have had the diagnosis (Ke et al., 2022; Serbis et al., 2021). Patients are generally at an increased risk of experiencing diabetes related distress if they have more complications along with extensive self-management needs.

Self-Efficacy

Reducing morbidity and mortality risks associated with diabetes complications requires the application of diabetes techniques for self-management (Obirikorang et al., 2022). Self-efficacy is one of the best predictors of treatment compliance and the consequent improvement in quality of life (Choi & Kweon, 2023; Kim et al., 2022). A key idea in social cognitive theory is self-efficacy as a motivating factor. It is associated with an individual's belief and confidence in their capacity to carry out tasks and utilize skills in an efficient manner (Nur & Butarbutar, 2022). In a broad sense, self-efficacy refers to a person's belief in their own capacity to carry out a certain activity in a particular circumstance (Fei, 2022).

A key component that could account for the general adherence to health-related practices is self-efficacy (Wen et al., 2021). Self-efficacy in diabetes patients is a reflection of their belief that they can successfully manage their condition and carry out self-care activities (Chan et al., 2020). Furthermore, studies demonstrate that diabetes self-efficacy is an important element of optimal self-care (Ampofo et al., 2022) and a reliable indicator of health-related behaviors (Qin, 2022), self-care (Guo et al., 2019), and glycemic outcomes (Hurst et al., 2020). There is convincing evidence that improved diabetic self-management is associated with higher levels of self-efficacy, particularly when it comes to following prescribed activities and sustaining psychosocial functioning (Lee et al., 2019; Robinson et al., 2020). Research on individuals diagnosed with type 2 diabetes has revealed associations between reduced levels of self-efficacy and

substandard compliance with medicine, diet, exercise, self-monitoring blood glucose, and foot care (Hailu et al., 2019; Xie et al., 2020).

Quality of Life

The World Health Organization (WHO) describes quality of life as an individual's perception of their position in the world, taking into account their cultural and personal value systems, as well as their aspirations, standards, and worries (WHO, 1995).

Quality of life encompasses both an individual's experience of their own existence and their current living circumstances (Uslar et al., 2022; William et al., 2023).

Quality of life is a phenomenon that has been studied in different disciplines with varying contexts, as an individual's quality of life may be impacted by multiple factors (Maturkanic et al., 2022).

Domains of Quality of Life

Quality of life as a multidimensional construct of objective and subjective factors comprises the individual's physical and psychological health, social relationships, and environmental conditions (WHOQOL Group, 1995). Each domain has been separately discussed below.

Physical Health: The physical health domain is concerned with the bodily sensations and unwanted physical tension that might not only cause harm but also interfere with the everyday routines in the lives of people, together with their energy levels and sleep (Chasco et al., 2022).

Psychological Health: An individual's emotional and mental well-being encompasses the psychological health domain. It includes an array of components, including psychological distress (presence of symptoms like anxiety and depression), self-esteem and body image (positive self-perception and body confidence), mental health (cognitive functioning, emotional stability, and psychological resilience), and emotional well-being (feelings of happiness, contentment, and life satisfaction) (Funk et al., 2022; Tankersley et al., 2021).

Social Relationships: Social relationships are regarded as another important aspect of quality of life. This domain is concerned with the extent to which a person feels loved, supported, and accompanied, and explores the quality of different relationships, including marriages, deep friendships, as well as both homosexual and heterosexual relationships (Girme et al., 2023).

Environmental Conditions: Lastly, the environment domain of quality of life emphasizes economic resources of people by focusing on whether people have sufficient finances to fulfill their needs for living a satisfactory life (Algahtani et al., 2021).

Relationship Among Study Variables

Self-efficacy has been identified in the literature as a key facilitator or potential barrier to diabetes stress management (Dzerounian et al., 2022). Empirical evidence suggests that patients with higher self-efficacy, along with an optimistic orientation to self-care, are more likely to engage in diabetes self-management behaviors (Loseby et al., 2022; Wu et al., 2023). Therefore, high self-efficacy may be associated with a reduction in diabetes-related distress and increased confidence in performing self-management tasks necessary to improve health outcomes (Bartkeviciute et al., 2023).

Literature suggests that one of the psychosocial barriers consistently related to diabetes-related distress is low self-efficacy (Suhaimi et al., 2022; Verdecias et al., 2023). In a study conducted with adults with type 2 diabetes, Dawson (2020) found that increased self-efficacy is associated with lower diabetes distress, suggesting that higher self-efficacy is associated with feeling less overwhelmed, helpless, or incompetent in one's ability to perform their diabetes stress management routine. Various other studies carried out with

diabetic patients also revealed a negative association between diabetes specific distress and self-efficacy (Knowles et al., 2020; Soufi et al., 2023; Teli et al., 2023).

Empirical evidence suggests that high levels of diabetes distress may disrupt medication adherence and the overall management of diabetes. Consequently, this disruption can result in inadequate glucose control, ultimately impacting disease management and reducing overall quality of life (Jannoo et al., 2017; Rahimi et al., 2020; Walker et al., 2019). The emotional distress associated with diabetes has also been associated with poor quality of life (Gomez-Pimienta et al., 2019).

Self-efficacy is believed to be essential for managing diseases. Lower levels of self-efficacy, or confidence in one's ability to manage one's conditions, are associated with lower quality of life in primary care patients with multimorbidity. Furthermore, they experience a higher personal burden of disease in case of lower self-efficacy (Corbett et al., 2020; Eton et al., 2020).

Studies show that higher levels of self-efficacy are associated with better quality of life (Aurpibul et al., 2023; Maeir et al., 2023; Onyedibe et al., 2022). Evidence indicates that interventions targeted at boosting self-efficacy in teenagers diagnosed with type 1 diabetes may be effective in enhancing their quality of life (Butler et al., 2022).

Compared to people with lower levels of self-efficacy, those with greater levels are more likely to adopt behaviors that are favorable to their health (Kirca & Kutlutürkan, 2021; Sun et al., 2022).

Along with its role in managing illnesses, self-efficacy also considerably improves people's general quality of life. In a study conducted with university students, Al-Mwadih and colleagues (2019) found that self-efficacy is strongly associated with all social, psychological, physical, and environmental domains of quality of life.

Rationale

Diabetes is a growing global health concern, with its prevalence increasing at alarming rates. The disease is particularly worrisome due to its association with severe complications, early mortality, and substantial healthcare costs (Ahsan et al., 2022). While diabetes affects individuals worldwide, its impact is more profound in low- and middle-income countries, where access to healthcare and resources for managing the condition tend to be limited (George et al., 2022). In Pakistan, a lower-middle-income country, diabetes prevalence is especially high, further exacerbating the public health burden (WHO, 2016).

In Pakistan, where an estimated 12.8 million individuals are projected to have diabetes by 2035, the country is anticipated to be among the top 10 nations with the highest diabetes prevalence (International Diabetes Federation, 2023). Managing type 2 diabetes requires consistent self-care efforts, including medication adherence, dietary modifications, regular physical activity, blood sugar monitoring, and overall lifestyle adjustments. However, the burden of these tasks often leads to diabetes-related distress, characterized by negative emotions, stress, and feelings of helplessness in managing the condition (Orben et al., 2022).

Although much of the existing literature focuses on the negative aspects of diabetes distress and its impact on quality of life, there is a growing need to examine positive psychological factors that could help alleviate these burdens. Self-efficacy, or an individual's belief in their ability to perform necessary tasks and manage challenges, has emerged as a critical predictor of quality of life among individuals with chronic conditions, including diabetes (Elkady, 2019; Hurst et al., 2020). Self-efficacy not only influences a person’s ability to engage in self-care behaviors but also plays a significant role in reducing the psychological burden associated with diabetes. Strengthening self-efficacy beliefs can empower individuals to better manage their condition, improve their emotional well-being, and ultimately enhance their quality of life.

Research Design

The current study aimed to examine the mediating effect of self-efficacy on the relationship between diabetes distress and quality of life among patients with type 2 diabetes. A cross-sectional research design and quantitative approach were employed. Using a purposive sampling technique, self-report measures were administered to the participants to assess diabetes distress, self-efficacy, and quality of life. The study was conducted on diabetic patients (N = 300) to test the proposed hypotheses.

Objectives

The broader objectives of the study were as follows.

1. To examine the relationship between diabetes distress, self-efficacy, and quality of life among patients with type 2 diabetes.

Hypotheses

To attain the above-mentioned objectives, the following hypotheses were phrased based on the literature:

1. Self-efficacy will positively predict quality of life
2. diabetes distress will negatively predict quality of life.
3. Diabetes distress will be higher among females, while self-efficacy and quality of life will be higher among male patients with type 2 diabetes.

Instruments

Self-report measures were used for the assessment of study variables. A detailed description of each instrument has been given below.

Diabetes Distress Scale-Urdu Version

Diabetes distress was measured using the Urdu version of the Diabetes Distress Scale (Yousaf et al., 2014), which was initially developed by Polonsky and colleagues (2022). The seventeen-item measure encompasses four subscales, including emotional burden (items 1, 4, 7, 10, and 14), physician-related distress (items 2, 5, 11, and 15), regimen-related distress (items 6, 8, 3, 12, and 16), and interpersonal distress (items 9, 3, and 17). The responses are rated on a 6-point Likert scale ranging from 1 = *Not a problem* to 6 = *A very serious problem*. The possible score range was 17-102 (5-30 for emotional burden and regimen-related distress, 4-24 for physician-related distress, and 3-18 for interpersonal distress). A high score indicates high levels of diabetes distress. The alpha reliability of different domains ranged from .78 to .86 (Chin et al., 2017). The original alpha reliability of the translated version was. 92 (Yousaf et al., 2014).

Generalized Self-Efficacy Scale-Urdu Version

Self-efficacy was measured using the Urdu version of the Generalized Self- efficacy Scale (Tabbassum et al., 2003), which was originally developed by Schwarzer & Jerusalem (1992). It evaluates an individual's level of self-belief, their capacity to anticipate and manage everyday problems and any related barriers or setbacks, and their ability to adjust after going through a variety of stressful life situations. It is a 10-item scale, and the responses are rated on a 4-point Likert scale (1 = *Absolutely false* to 4 = *Absolutely true*). The possible score range is 10-40, with a high score indicating higher self-efficacy. The reported Cronbach's alpha for the scale ranges between .76 and .90 (Jerusalem & Schwarzer, 1992).

WHO Quality of Life (BREF)-Urdu Version

In the present study, quality of life was measured using the 26-item WHOQOL- Brief. The scale measures subjective perceptions of quality of life across four major domains including physical health (item number 3, 4, 10, 15, 16, 17, 18), psychological health (item number 5, 6, 7, 11, 19, 26), social relationships (item number 20, 21, 22) and environmental health (item number 8, 9, 12, 13, 14, 23, 24, 25). The last two items are about general health and overall quality of life. The responses are recorded on a 5- point Likert scale (1 = Very dissatisfied/very poor to 5= Very satisfied). The possible score range is 26-130 (7-20 for physical

health, 6-30 for psychological health, 3-15 for social relationships, 8-40 for environmental health, and 2-10 for overall quality of life). A high score indicates a better quality of life. In the present study, the Urdu version of the WHOBREF was used (Khan et al., 2003; α = .91).

Sample

The sample of the main study comprised patients with type 2 diabetes (N = 300). Purposive sampling techniques were used for the purpose of data collection. Different private clinics and government/private hospitals based in Rawalpindi, Peshawar, and Islamabad were visited to personally approach patients and collect data. The sample included both male (n = 144) and female patients (n = 156), and the age range was 25-62 (M = 39.09 years; SD = 10.03 years).

Procedure

Prior to starting the study, the original authors of the measures were formally contacted via email to obtain consent. In order to contact patients from different government and private clinics located in Islamabad, Rawalpindi, and Peshawar, a purposeful sampling technique was employed. The aim of the study and how their involvement can improve the deeper understanding of how they, as diabetic patients, can advance scientific knowledge of the phenomenon were explained to the participants. Additionally, written and verbal instructions were given to them. Furthermore, all ethical obligations, including secrecy and informed consent, were duly fulfilled. The questionnaire booklet (which included three questionnaires, a demographic information sheet, and an informed consent form) was given to participants after their consent was obtained. After getting the booklet back, all the participants were thanked for their participation and cooperation.

Results

Data was analyzed through SPSS-26 using descriptive and inferential statistics. The alpha reliability coefficients were computed to find out the internal consistency of measures. The normality of data was checked using descriptive statistics.

Prediction of Quality of Life

Using multiple linear regression analysis, the variation explained by the major predictors of quality of life was investigated.

Table 1

Multiple Linear Regression Analysis Predicting Quality of Life from Diabetes Distress and Self-Efficacy Among Patients with Type-2 Diabetes (N = 300)

Variables	Quality of Life			
			95 % CI	
	B	***SE***	***LL***	***UL***
Constant	55.41**	2.34	50.70	60.04
Diabetes Distress	-.12**	.02	-.16	-.08
Self-Efficacy	1.26**	.07	1.13	1.39
R^2	.81			
F	316.82			

*p < .05, **p < .01.

Table 1 shows the results of multiple linear regression analysis testing the predictors of quality of life. Findings reveal that diabetes distress significantly negatively predicts quality of life, while self-efficacy positively predicts quality of life. The explained variance suggests that diabetes distress and self-efficacy explain 81% variance in mental wellbeing.

Table 2

Mean Differences Across Gender Along Study Variables (N = 300)

Variables	Males (n = 144)		Females (n = 156)		95% CI				
	M	*SD*	*M*	*SD*	*t(300)*	*p*	*LL*	*UL*	*Cohen's d*
Diabetes Distress	43.48	18.02	57.68	22.51	-7.79	.00	-30.32	-18.07	.69
Self-Efficacy	22.17	7.34	19.18	5.13	7.47	.00	5.13	8.82	.51
Quality of Life	84.36	10.95	74.35	14.62	5.57	.00	6.46	13.56	.78

Note. *QoL* = Quality of Life; *CI* = Confidence Interval; *LL* = Lower Limit; *UL* = Upper Limit

Table 2 presents gender differences across study variables. Results show that diabetes distress is significantly higher among female patients. Self-efficacy and quality of life, on the other hand, are significantly higher among male patients.

Discussion

The current study aimed to investigate the predictive role of self-efficacy and diabetes distress on quality of life among type 2 diabetic patients. Additionally, it examined the influence of demographic variables such as gender.

Data from diabetic patients were gathered using the purposive sampling technique. Patients having a diagnosis of type 2 diabetes constituted the sample (N = 300). Moreover, the study included only those patients who had received a clinical diagnosis of diabetes. The age of patients ranged from 25 to 62 (M = 39.08, SD = 10.03). Data were collected on the Urdu versions of the Diabetes Distress Scale (Yousaf et al., 2014), Generalized Self-Efficacy Scale (Tabbassum et al., 2003), and WHOQOL Brief (Khan et al., 2003).

The direction of the relationship among study variables was established through Pearson Product-moment bivariate analysis.

Hypothesis 1 posits that self-efficacy will positively predict quality of life, while diabetes distress negatively predicts quality of life. Results of regression analysis show that self-efficacy and diabetes distress predict quality of life. Findings are in line with empirical literature suggesting that self-efficacy positively predicts health-related (Teli et al., 2023) and general quality of life among diabetic patients (Jia et al., 2024; Wu et al., 2024). Since self-efficacy is the conviction that one can effectively control one's diabetes, diabetes management programs that aim to boost confidence in controlling diabetes may enhance quality of life. In Pakistan, studies have indicated that improving patients' self-efficacy can foster better diabetes management, which directly contributes to an improved quality of life (Yousaf et al., 2014).

Results of regression analysis also show that diabetes distress negatively predicts quality of life. Empirical evidence affirms that diabetes specific distress predicts poor quality of life among patients (Knowles et al., 2020; Onu et al., 2022). The stressful environment that diabetes fosters has a detrimental effect on general well-being because of the constant requirement for monitoring, possible complications, and financial hardship. People with diabetes often have a lower quality of life due to a combination of social and psychological parameters, as well as worry about health issues.

Hypothesis 2 postulates that female patients experience higher diabetes distress, while males have higher self-efficacy and better quality of life. Regarding gender differences across diabetes distress, evidence suggests that females tend to be more affected by diabetes distress (Beverly et al., 2021; Bo et al., 2020). Huang et al. (2022) reported that the risk of diabetes distress is 2.67 times higher (odds ratio) in females than in males.

In Pakistani culture, women often face a multitude of responsibilities within the family, such as caregiving, managing household tasks, and fulfilling social roles. These demands can exacerbate stress and anxiety, especially when a chronic illness like diabetes is involved. Furthermore, women in Pakistan may face societal

pressures to maintain a positive image, often prioritizing others' needs over their own well-being. This can result in a sense of helplessness and distress, particularly when coping with the challenges of diabetes management. Studies have shown that women are more likely to express emotional suffering and are at a higher risk for experiencing depression and anxiety due to the burden of family-related responsibilities and societal expectations (Huang et al., 2022).

Self-efficacy was hypothesized to be higher among male patients as compared to females. Results confirm the hypothesis. Literature suggests that male patients tend to have higher self-efficacy beliefs, particularly related to disease management, as compared to females (Striberger et al., 2022; Welter et al., 2021). Gender roles and expectations are shaped by societal and cultural factors, which may account for the higher level of self-efficacy among male diabetic patients (Gu et al., 2023). In traditional societies like Pakistan, qualities such as assertiveness, control, and independence, which may align with the attributes associated with high self-efficacy, are often associated with the male gender.

It was also hypothesized that quality of life is higher among male patients. Results confirm the hypothesis showing that males score higher on measures of quality of life as compared to females. These findings are in agreement with empirical evidence that shows that female gender is associated with poorer quality of life (Alshayban & Joseph, 2020; Jenkins et al., 2021). In a study conducted with patients of type 1 diabetes, Castellano-Guerrero and colleagues (2020) found that male patients tend to have a better quality of life. Better quality of life could be explained by a reduced prevalence of depression and anxiety and lesser intensity of depressive and anxious symptoms among males (Curran et al., 2020).

Limitations

Although the majority of the study's conclusions are based on empirical derivations, there are a few major limitations that should be taken into consideration when evaluating the study's results.

1. Self-report approaches were employed to collect data; however, due to social desirability, participants might not have provided accurate information. Thus, future research could additionally utilize multi-informant data or qualitative data collection methods.
2. The sample only included patients from clinics and hospitals in Rawalpindi, Peshawar, and Islamabad. Future studies should be conducted on larger and more diverse samples encompassing both types of diabetes to increase the generalizability of results.

Implications

Based on the results, several theoretical and practical implications of the current study are listed below.

1. The findings of this study contribute to a deeper understanding of the relationship between diabetes distress, self-efficacy, and quality of life. This knowledge can inform the development of more targeted interventions aimed at improving the well-being of individuals with type 2 diabetes.
2. The findings can inform a broader approach to managing diabetes by highlighting strategies that increase self-efficacy. This realization directs the incorporation of educational and psychological elements into conventional medical therapies, resulting in more efficient and comprehensive diabetes care.
3. The findings provide a foundation for the creation of interventions that specifically address the psychological aspects of diabetes care. By targeting the emotional burden and distress associated with the condition, these interventions can complement medical treatments and support better mental and physical health outcomes for patients.

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