A case-control study on comparing resilience, quality of life, and perceived support in patients with type 2 diabetes

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Original Article

Abstract

BACKGROUND: Diabetes is a chronic endocrine disorder characterized by impaired glucose metabolism. Diabetic foot, retinopathy, neuropathy, and nephropathy are diabetes-related outcomes that can affect resilience, quality of life (QOL), and perceived support. This study was conducted to compare resilience, QOL, and perceived support in patients with type 2 diabetes.

METHODS: This study was a correlational study conducted in the form of a case-control design and was carried out in Tehran, Iran. For this purpose, 80 patients including 40 women and 40 men were selected based on purposeful sampling method during summer 2018. Three questionnaires of Connor-Davidson Resilience Scale (CD-RISC), Family Quality of Life Questionnaire (FQOL), and Multidimensional Scale of Perceived Social Support (MSPSS) were completed by the participants during a period of time. Data were analyzed by independent t-test and multivariate analysis of variance (ANOVA) in SPSS software.

RESULTS: The difference between the mean scores of men and women in the resilience variable was significant and higher in women ($P < 0.05$). Moreover, there was a significant difference between the mean scores of men and women in the variables of quality of family life and perceived support and it was higher in women ($P < 0.01$ for all).

CONCLUSION: The relationship between resilience, QOL, and perceived support variables with demographic indices is important and can be clinically relevant in planning appropriate interventions in patients with diabetes.

KEYWORDS: Diabetes; Resilience; Quality of Life

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Introduction

Diabetes is a condition that impairs the body's ability to process blood glucose, otherwise known as blood sugar. The prevalence of diabetes is one of the most important causes of morbidity and disability in the present age and one of the increasing public health concerns in the world.[1] This disease comes in three forms: type I or insulin-dependent, type II or non-dependent to insulin, and gestational diabetes.[2] Type 2 diabetes affects the way the body uses insulin. While the body still makes insulin, unlike in type I, the cells in the body do not respond to it as effectively as they once did. This is the most common type of diabetes, according to the National Institute of Diabetes and Digestive and Kidney Diseases, and it has strong links with obesity.[2]

The prevalence of diabetes has increased dramatically in the last two decades. The World Health Organization (WHO) estimates that the number of patients with diabetes in Iran will reach over six million by 2030. In addition to the high prevalence and incidence of diabetes worldwide, the consequences of diabetes are the cause of governments' attention to this disease, because diabetes can increase the risk of cardiovascular disease (CVD),

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cerebrovascular disease, peripheral artery disease (PAD), diabetic foot, retinopathy,[3] neuropathy,[4] nephropathy, and depression.[5]

Approximately, 85 to 90 percent of diabetics are type 2 diabetes. Many factors have been implicated in the development of diabetes, and environmental factors such as physical inactivity, malnutrition, and obesity appear to be important in the development of type 2 diabetes.[6] In fact, diabetes type 2 is strongly linked to lifestyle and has very strong behavioral and emotional components. Therefore, in recent years, attention to the sources of stress and the coping strategies in these patients has been extensively studied.[7,8]

Resilience is one of the factors that appear to play a key role in the development of chronic diseases such as diabetes. Resilience is a dynamic process that involves the ability to adapt positively to a difficult environment or context.[9] Studies show that resilience is considered as an effective index of mental health in chronic patients.[10] Increased resilience can be appropriate for promoting mental health.[11]

On the other hand, one of the important indices in psychology is the quality of life (QOL).[12] QOL has been defined in many ways. The WHO views QOL as one's perception of the status of life in the realm of culture and the value system in which one lives in relation to goals, expectations, standards, and affairs. QOL is a broad concept that has been influenced by a wide range of physical health, psychological well-being, independence level of social relationships, and their relationship to a prominent aspect of one's living environment.[12] Research background suggests that diabetes has several consequences on the QOL index.[13]

On the other hand, research background including the study of Duenas et al.[14] on Spain population during 2019 indicates that social support is one of the protective factors against the occurrence and prevalence of medical and psychiatric disorders. Social support is a multidimensional concept that can be projected from two perspectives: structural quantitative and functional qualitative. The former focuses on the number of communications and social connections and the functional qualitative support refers to the quality of social interactions.[14] The findings of Barry et al.[15] study show that the amount of perceived social support affects how the patient perceives the disease and can be considered as an important index.

Accordingly and given the importance of the three indices of resilience, QOL, and perceived support as well as the research gap in Iranian society, this study was conducted to compare resilience, QOL, and perceived support in patients with type 2 diabetes.

Methods

The present study was a case-control design (Thesis code: 1012701962008). For this purpose, 80 patients including 40 women and 40 men were selected based on purposeful sampling method during summer 2018. After obtaining informed consent and meeting the required criteria, the participants entered the research process. Inclusion criteria were: 1) age range of 18-60 years, 2) diagnosis of type 2 diabetes based on International Classification of Diseases 11th Revision (ICD-11), and 3) living in Karaj City, Iran. Exclusion criteria were: 1) withdrawal from study at any time, 2) failure to complete the research instrument, and 3) no informed consent form. In order to control the intrusive factors in both groups, men and women were matched based on variables of age, marital status, and education. Three questionnaires of Conner-Davidson Resilience Scale (CD-RISC), Family Quality of Life Questionnaire (FQOL), and Multidimensional Scale of Perceived Social Support (MSPSS) were completed by the participants during one period of time. Questionnaires with more than 10 items which were not completed were excluded from the

statistical analysis. Data were analyzed by independent t-test and multivariate analysis of variance (ANOVA) in SPSS software (version 22, IBM Corporation, Armonk, NY, USA). All stages of the research were conducted according to the Declaration of Helsinki.

Demographic checklist: This checklist was developed and used by the researcher to collect demographic information such as age, marital history, and education level.[16]

CD-RISC: The CD-RISC is a 25-item instrument that measures resilience construct on a five-point Likert scale from zero to four. The minimum score of resilience on this scale is zero and the maximum score is 100. This test has five subscales of individual merit concept, confidence in individual instincts and tolerance of negative emotions, positive acceptance of change and secure relationships, control, and spiritual influences. The findings of the study by Yi and Syrjala[17] reported that the psychometric property of this tool was desirable in the chronic patient population.

FQOL: This tool was designed by Kirk et al. It consists of 25 items designed in the five-point Likert scale. This questionnaire consists of five subscales of family interaction, parenting, emotional well-being, physical/material well-being, and disability-related support. Reliability and validity of this scale have been reported to be desirable in the study of Rivard et al.[18] The calculated Cronbach's alpha was estimated to be 0.90 in the present study.

MSPSS: This scale measures the amount of perceived social support in 12 items in three domains of family, friends, and important people in life. Reliability and validity of this scale have been reported to be desirable in the study by Nearchou et al.[19] The calculated Cronbach's alpha in the present study was estimated to be 0.89.

Results

To analyze the data, the independent t-test and multivariate ANOVA were used. Before applying the parametric test of analysis of covariance (ANCOVA), its assumptions were examined. The assumption of normal distribution of the data was evaluated by Shapiro-Wilk test ($P < 0.05$). Besides, the results of the Levene's test indicated the equalization of variances ($P > 0.05$).

In the present study, 47.5% of male participants were in the age range of 50-60, 27.5% in the age range of 40-49, and 25% in the age range of 30-39. In the women group, 47.5% of the participants were in the age range of 50-60, 30% in the age range of 40-49, and 22.5% in the age range of 30-39. In terms of marital status, 57.5% of men were married and 62.5% of women were married. In terms of education index, 42.5% of men had a diploma degree or lower, 37.5% had associate's degree or bachelor's degree, and 20% had master's degree (MSc) or PhD. In the women group, 47.5% had a diploma degree or lower, 35% had an associate's degree or bachelor's degree, and 17.5% had MSc or PhD degrees.

The distribution of the subjects' scores on the variables of resilience, quality of family life, and perceived support in the two groups of men and women are presented in table 1.

The results of the multivariate ANOVA are presented in table 2.

Table 1. Distribution of the subjects' scores in the research variables

	Variables	Mean ± SD	Minimum score	Maximum score
Men	Resilience	52.91 ± 34.11	64	118
	Quality of family life	58.45 ± 36.60	28	54
	Perceived support	0.64 ± 2.70	48	77
Women	Resilience	37.97 ± 34.11	76	123
	Quality of family life	42.50 ± 54.60	31	61
	Perceived support	40.70 ± 65.70	50	80

SD: Standard deviation

Table 2. Results of multivariate analysis of variance (ANOVA) in research variables

Effect	Value	F	P
Pillai's trace	0.253	8.591	< 0.001
Wilks' lambda	0.747	8.591	< 0.001
Hotelling's trace	0.339	8.591	< 0.001
Roy's largest root	0.339	8.591	< 0.001
Pillai's trace	0.253	8.591	< 0.001
Wilks' lambda	0.747	8.591	< 0.001

As the findings of table 2 show, the effect of Wilks' lambda was 8.591 and the value of Wilks' lambda was 0.747 which was statistically significant (P < 0.001). Moreover, the effect coefficient or the coefficient of determination was 0.253.

Independent t-test was used to examine the differences between resilience, QOL, and perceived support in men and women with diabetes. The results are presented in table 3.

As can be seen from the findings in table 3, the mean difference between male and female subjects in the resilience variable was -5.85 which was significant (P < 0.05). Men's resilience was lower than women. The mean difference between the scores of male and female subjects in the quality of family life variable was -4.60 which was significant (P < 0.01). The quality of family life in men was lower than women. In addition, the mean difference between the scores of male and female subjects in the perceived support variable was -4.60 which was significant (P < 0.01). The level of perceived support in men was lower than women.

Discussion

The present study was conducted to compare resilience, QOL, and perceived support among men and women with diabetes. Data analysis showed that there was a significant difference between the mean scores of male and female subjects in the resilience variable. Besides, there was a significant difference between the mean scores of male and female subjects in the variables of quality of family life and perceived support.

Consistent with the findings of the present study, the results of the study by Ponce-Garcia et al.[20] showed that mental health indices such as resilience, anxiety, and stress were different in traumatic patients. In this regard, it can be acknowledged that resilience is a return to initial equilibrium or a higher level of equilibrium under threatening conditions and thus, provides a successful adaptation to life, and this index is a dynamic process that includes the ability of positive adaptation in an environment or a difficult context.[9] Resilience also helps to reduce susceptibility to diseases and improve prognosis and better adaptation to chronic diseases.[10] Increased resilience can be appropriate for promoting mental health.[11] In other words, high resilience can reduce the negative impacts of stressors on one's health.[11]

Parts of the findings of the present study showed that the mean difference between the scores of male and female subjects in the variables of quality of family life was significant and women had higher scores in the quality of family life index. In this regard, the results of the study by Ponce-Garcia et al.[20] indicated differences in psychological characteristics between men and women, including resilience, anxiety, and stress. Finally, improvement of these parameters can improve the QOL.[21]

Table 3. Independent t-test results in three research variables

Index	Gender	Mean	Mean difference	T	P
Resilience	Men	91.52	-5.85	-2.305	0.024
	Women	97.37			
Perceived support	Men	45.82	-4.60	-3.188	0.002
	Women	50.42			
Quality of family life	Men	64.00	-6.40	-3.895	< 0.001
	Women	70.40			

QOL can be considered as one of the outcomes of health care and one of the goals of diabetes control program. Assessing the QOL of patients with diabetes can provide insights into the quality of care associated with this disease and ways to promote protective strategies.[22]

Moreover, in the present study, there was a significant difference between the scores of male and female subjects on the perceived support variable. Although no similar study has been found in the PubMed database in this field, research background suggests a relationship between resilience, QOL, stress, and anxiety with perceived support.[23] In recent years, social support has become one of the most important facilitators of health behavior. Social support is the strongest and the most powerful coping force for successful exposure when confronting with stressful situations.[23]

This study had some limitations during the implementation process. The main limitation of the present study was the mere use of self-reporting tools. It is recommended that future studies use other data collection methods including the use of biomarkers such as plasma cortisol,[24,25] salivary cortisol,[26,27] and interleukin-6 (IL-6)[28] to evaluate psychological indicators. Conducting a clinical trial to improve the three indices of resilience, QOL, and perceived support between the two groups of men and women and comparing the results can be a good way for future studies.

Conclusion

This study was conducted to compare resilience, QOL, and perceived support among men and women with diabetes. The results showed that the mean difference between the scores of male and female subjects in resilience, quality of family life, and perceived support variables was higher in women. The relationship between psychological parameters and demographic variables such as gender can be considered in planning appropriate interventions in patients with diabetes.

Conflict of Interests

Authors have no conflict of interests.

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