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Original Article

Comparison of life satisfaction and stress coping styles in patients with type 2 diabetes: A case-control study

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Summary

Introduction: Type 2 diabetes as a chronic disease significantly affects the physical and psychological well-being of patients. Effective coping strategies and a sense of life satisfaction are essential for navigating the challenges associated with diabetes. This study aims to examine and compare the coping styles and levels of life satisfaction among type 2 diabetes patients and healthy individuals.

Methods: In a case-control design 234 participants, which included 117 type 2 diabetes patients and 117 healthy controls were evaluated through the Lazarus and Folkman Coping Strategies Questionnaire and the Satisfaction with Life Scale (SWLS). Chi-square tests, independent t-tests, and ANCOVA tests were applied for between-group comparisons and the confounding factor adjustments.

Findings: Patients with type 2 diabetes reported markedly lower life satisfaction compared to the control group ($P=0.029$). They were more inclined to employ emotion-focused coping strategies, such as avoidance ($P<0.001$), whereas healthy individuals primarily relied on problem-focused coping techniques, such as problem-solving ($P<0.001$). The coping style differences between the two studied groups remained significant even after adjusting for confounding variables such as age and gender.

Conclusion: Patients with type 2 diabetes often use emotion-focused coping strategies, which may lead to decreased life satisfaction. It is suggested to apply psychological interventions in type 2 diabetes patients which may promote adaptive coping mechanisms and enhance overall well-being.

Keywords: Coping strategies, Emotion-focused coping, Life satisfaction, Type 2 diabetes

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Introduction

According to the International Diabetes Federation (IDF) report, an estimated 463 million people worldwide are living with diabetes mellitus (DM), and it is estimated to rise to nearly 700 million by 2045.[1] As a chronic illness, type 2 diabetes remarkably impacts both the physical and mental well-being of individuals which requires continuous adjustments to one's lifestyle, eventually leading to increased stress and emotional strain in patients.

Life satisfaction reflects an individual's overall quality of life and well-being. Individuals with DM often experience lower life satisfaction compared to non-diabetic individuals, partly due to the emotional distress associated with managing the disease.[2] Li et al found that emotional distress negatively correlates with life satisfaction in people living with type 2 diabetes mellitus (T2DM). Moreover, cognitive function was identified as a mediating factor in this relationship, suggesting that interventions aimed at reducing emotional distress and improving cognitive function could enhance life satisfaction in these patients.[3] Coping strategies are the methods individuals use to handle stress and challenging situations. Type 2 diabetes patients often adopt avoidance coping styles, which are associated with a poorer quality of life. Studies examining coping styles in patients with non-insulin-dependent diabetes mellitus highlighted that those employing avoidance coping strategies reported a lower quality of life.[4]

Lazarus and Folkman's theory identifies two coping processes in response to stress: problem-focused coping, where an individual confronts the source of distress, and emotion-focused coping, where one manages emotional reactions. [5] Coping strategies play a significant role in the course, control, treatment, and psychosocial adaptation of patients with type 2 diabetes. Coping styles in dealing with diabetes have been widely discussed. [6]Problem-focused strategies enhance successful self-care in diabetic patients, whereas emotion-focused strategies may have detrimental effects. However, both problem-focused and emotion-focused strategies, are recognized as effective in alleviating stress associated with this disease.[7] Chouhan and Shalini's study on the Indian population revealed that type 2 diabetes patients utilize adaptive coping strategies, particularly problem-focused approaches, less often than healthy individuals when confronted with stress.[8] Tuncay et al found that type 2 diabetes patients use both problem-focused and emotion-focused coping strategies equally.[9] Karimi's study found that Iranian diabetic patients

primarily differ from healthy individuals in their use of support-seeking coping styles for stress and disease-related challenges.[10] Regarding the conflicting results, this investigation intends to compare coping styles and life satisfaction between diabetic and non-diabetic individuals in the Iranian population to better understand the unique challenges encountered by diabetic patients.

Methods

Participants and study design

This is a case-control study that was conducted on type 2 diabetes and healthy individuals at outpatient clinics of Tabriz University of Medical Science from December 2018 to June 2019. Inclusion criteria were willing to participate in the study, age over 18 years, and history of T2DM for at least one year. Exclusion criteria were withdrawal from the study at any stage, history of hospitalization in the past two weeks, presence of diabetic complications such as retinopathy, renal failure, etc., presence of a serious medical condition that reduces life expectancy, major psychiatric disorders, cognitive impairments or dysfunction, and alcohol consumption.

Sample size calculation

Using G*Power software and considering a medium effect size of 0.5 based on Crocker's criteria, an alpha level of 0.05, and a test power of 80%, the sample size was calculated as 105 participants per group. Considering a 10% attrition rate, the final estimated sample size was 234 participants (117 in each group).

Study protocol

Lazarus and Folkman Coping Strategies Questionnaire (1984) was used to assess coping strategies for stress. This questionnaire consists of 66 items that evaluate the thoughts and actions individuals use to cope with stressful life situations. The items are scored on a four-point Likert scale.[11] The internal consistency reliability of this questionnaire, as reported by Ghadamgahi, ranges from 0.61 to 0.79 using Cronbach's alpha, and the test-retest reliability over four weeks has been reported between 0.59 and 0.83.[12]

Life satisfaction was assessed using the Satisfaction with Life Scale (SWLS) developed by Diener et al. This scale consists of five items rated on a seven-point Likert scale, with a score range of 5 to 35. According to miri et al. Cronbach's alpha reliability of this scale has been reported as 0.83, and its test-retest reliability is 0.62.[13]

Statistical analysis

Data were presented as mean (±standard deviation) for continuous variables and as frequency (percentage) for categorical variables. The Kolmogorov-Smirnov test was conducted to evaluate the normality of data distribution. The chi-square test and independent samples t-test were employed to compare categorical and continuous variables between the two groups. An analysis of covariance (ANCOVA) was applied to adjust the confounding factors and baseline values. All statistical analyses were performed using SPSS version 16. A P value of less than 0.05 was considered statistically significant.

Results

Baseline characteristics of the study population

The mean age of type 2 diabetes groups was 51.32 ± 11.63 years (Mean ± SD, while the mean age in the healthy group was 42.32 ± 11.77 years. As tabulated in Table 1, there are significant differences between the two studied groups regarding baseline characteristics including age (P < 0.001), body mass index (BMI) (P = 0.048), sex (P = 0.017), and employment status (P = 0.020). While the education level and family history were not significant between the two studied groups (P > 0.05).

Comparisons of groups in terms of coping stress styles

The mean and standard deviation for each coping style is reported in Table 2. There are significant differences between the two studied groups in all coping styles except for social support and escape avoidance. As it is clear, self-control, responsibility acceptance, problem-solving, and responsibility-oriented coping were significantly lower in type 2 diabetes patients relative to 2 healthy patients. While emotion-oriented coping was remarkably higher in type 2 diabetes compared with healthy patients. Table 3 reported the between-group comparison for coping stress strategies after adjusting for gender and age. As it is clear,

Table 1. Baseline characteristics of studied groups

Variable	Type 2 diabetes group (n = 117)	Healthy group (n = 117)	*P* value[b]
Age (y)[a]	51.32 ± 11.63	42.32 ± 11.77	<0.001
BMI (kg/m²)[a]	29.14 ± 4.17	28.01 ± 4.46	0.048
Gender, n (%)			
Male	46 (39.3)	29 (24.8)	0.017
Female	71 (60.7)	88 (75.2)	
Employment, n (%)			
Unemployed	60 (51.3)	59 (50.4)	0.020
Employed	39 (33.3)	52 (44.4)	
Retired	18 (15.4)	6 (5.1)	
Education, n (%)			
Below high school	42 (35.9)	30 (25.6)	0.072
Diploma	47 (40.2)	44 (37.6)	
Academic education	28 (23.9)	43 (36.8)	
Family history, n (%)			
Yes	47 (40.2)	36 (30.8)	0.133
No	70 (59.8)	81 (69.2)	

[a] Values are expressed as mean ± SD.

[b] *P* values reported based on independent samples t-test or chi-square test.

Table 2. Comparison of coping stress styles between two studied groups

Variable[a]	Type 2 diabetes group (n = 117)	Healthy group (n = 117)	*P* value[b]
Self-control	9.68 ± 3.01	10.85 ± 2.73	0.021
Social support	9.58 ± 2.99	9.28 ± 3.05	0.566
Responsibility acceptance	5.76 ± 1.92	6.70 ± 2.09	0.000
Avoidance coping	10.39 ± 2.94	9.93 ± 3.54	0.451
Problem-solving	6.94 ± 2.23	9.17 ± 2.62	0.000
Responsibility-oriented coping	32.05 ± 6.86	36.77 ± 8.13	0.000
Emotion-oriented coping	41.42 ± 7.34	37.26 ± 7.46	0.000

[a] Values are expressed as mean ± SD.
[b] *P* values reported based on independent samples t-test.

life satisfaction and positive reappraisal are remarkably lower in the type 2 diabetes group in comparison with the healthy group. While avoidance is significantly higher in type 2 diabetes relative to healthy groups.

Discussion

Coping styles in response to stressful situations, such as illnesses, can be categorized into two main types: problem-focused coping and emotion-focused coping. The effectiveness of these styles can vary depending on the specific stressful situation.[14] Psychological research indicates that problem-focused coping is linked to better mental health, while emotion-focused coping is often associated with psychological issues and negative outcomes.[15] The main factor influencing whether individuals adopt problem-focused or emotion-focused coping strategies is their self-perception and cognitive appraisal.[15,16]

The primary aim of this study was to assess coping styles and life satisfaction among type 2 diabetes and compare these factors with healthy individuals.

The findings of this study revealed that Iranian patients with type 2 diabetes did not show significant differences in social support and avoidance coping compared to healthy individuals. However, notable differences were observed in other coping styles, which included positive reappraisal, confrontational coping, self-control, life satisfaction, responsibility, problem-focused coping, and emotion-focused coping.

The results indicated that diabetic patients had lower average scores in positive reappraisal, responsibility, and problem-solving—all of which are problem-focused strategies—when compared to healthy individuals. Conversely, their average scores in confrontational coping, self-control, avoidance coping (also problem-focused strategies), social support, and distancing (emotion-focused strategies) were higher.[17] These findings suggest that diabetic patients utilize both problem-focused and emotion-focused coping strategies, but they tend to rely more on emotion-focused strategies to manage stress and negative thoughts related to their condition.[18,19]

Table 3. Comparison of coping stress styles between two studied groups

Variable[a]	Type 2 diabetes group (n = 117)	Healthy group (n = 117)	*P* value[b]
Life satisfaction	20.33 ± 5.35	21.94 ± 5.80	0.029
Positive reappraisal	9.76 ± 2.70	11.61 ± 3.11	0.000
Acceptance and resignation	9.08 ± 3.23	7.91 ± 2.55	0.002
Avoidance	10.23 ± 2.25	8.56 ± 2.56	0.000

[a] Values are expressed as mean ± SD.
[b] *P* values reported based on the ANCOVA test adjusted for, age, sex.

The results of this study contrast with the findings of Gåfvels and Wändell on Swedish diabetic patients,[5] Chouhan and Shalini on Indian diabetic patients,[8] as they reported that diabetic patients predominantly used problem-focused strategies to cope with the challenges of their illness and treatment. However, the results of this study align with the findings of Toncay et al on Turkish diabetic patients, who were also found to rely more on emotion-focused coping strategies.[9]

Recently, Leventhal's Self-Regulation Theory has gained attention in explaining the cognitive components of physical illnesses and coping behaviors.[20] According to this theory, patients construct schema-like representations of their illness and treatment conditions based on experiences, access to objective information, abstract inferences, and shared beliefs.[20] The theory proposes that illness perception consists of five dimensions: identity, consequences, timeline, treatment/controllability, and causes.[21,22]

The limitations of the study were the sample size, data collection challenges, and potential interference from medication use. Therefore, these limitations should be considered when drawing definitive conclusions and generalizing the findings.

Conclusion

Considering the results of the study, the coping style of type 2 diabetes patients is emotion-oriented and the patient's level of perception is influential in choosing a coping style in dealing with the challenges of the disease and treatment. The level of life satisfaction in patients was also lower than that of healthy people in this study. It is suggested to apply psychological interventions in type 2 diabetes patients which may promote adaptive coping mechanisms and enhance overall well-being.

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Authors' Contribution

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Competing Interests

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Ethical Approval

This study was approved by the Ethics Committee of Tabriz University of Medical Sciences (Ethics Code: IR.TBZMED.REC.1397.149). All patient information remained confidential, and personal data were not recorded. All individuals were informed about the study's objectives and procedures, and written informed consent was obtained.

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