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Investigating the Relationship Between Illness Perception and Coping with the Illness In Type 2 Diabetic Patients

Abstract

An extensively used psychological approach in diabetic patients is the approach based on the type of the patient's coping behavior. This approach states that when facing an illness or a life-threatening factor, individuals form generalized images and particular beliefs about the disease and its treatment, called the illness perception. The participants of this cross-sectional study were selected with a random sampling method based on the inclusion criteria. The research tools included demographic information in written form, a brief illness perception questionnaire (Brief-IPQ), and a brief questionnaire on Coping Orientation to Problems Experienced (Brief-COPE). The data were analyzed using statistical tests of SPSS software (Version 20) on a significance level of $p<0.05$. The results of the current study indicated no relationship between the illness perception and coping of type 2 diabetic patients, except for the religion subscale. Also, considering the moderate level of illness perception, improving the level of illness perception through consultation and training is necessary.

Keywords: *diabetes Mellitus,Type 2, Illness Behavior,daptation*

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Introduction

Diabetes mellitus is a chronic metabolic disease characterized by increased blood glucose levels and one of the primary health concerns of the world in the twenty-first century (1). Type 2 diabetes is the most common form in adults when the body becomes resistant to insulin or does not produce sufficient insulin levels (2).

According to an estimate by the International Diabetes Federation (IDF), 9.3 percent of adults between 20 to 79 years have diabetes. Predictions state that the population of diabetic patients will increase to 578 million individuals by 2030 (1). Although the prevalence of diabetes in Asia is significantly lower than in Europe and North America, Middle Eastern countries such as Iran and Saudi Arabia are among the hotspots of the global diabetes epidemic (3, 4). Previous population-based studies reported a prevalence of 7.9 to 10.6 percent diabetes among Iranian adults aged 25 to 64 years (5).

An extensively used psychological approach in diabetic patients is the approach based on the type of the patient's coping behavior. This approach states that when facing an illness or a life-threatening factor, individuals form generalized images and particular beliefs about the disease and its treatment, called the illness perception. This perception of the condition affects the individual's behavior, coping with the

disease, disease management by the individual, and, eventually, the outcome of the disease (6). According to Sluiter, illness perception affects health-related and coping behaviors and, eventually, the consequences of the illness (7). The primary principle in Leventhal's self-regulation model states that patients' perceptions of their illnesses form their beliefs about their diseases. The individuals' illness perception would probably determine their selection, execution, and coping methods (8). The results of a systematic review methodology that evaluated the consequent effects of personal and cultural beliefs on medication adherence, in patients with chronic conditions such as hypertension, diabetes mellitus, chronic obstructive pulmonary disease, and asthma, indicated that medication adherence and these personal and cultural factors are associated with together (9). Tang concluded that enhancing the illness perception of Chinese diabetic patients is necessary (10). Stress coping skills include extensive concepts and various cognitive and behavioral elements. Generally, coping is considered an endeavor to improve the individual's adaptability to the environment or prevent the negative consequences of stressor conditions (11). When caring for diabetic individuals with depression, stress, or anxiety symptoms, understanding the coping method is significant because coping responses can differ, as studies have revealed their critical role in mental and physical health (12). Valeria Alcántara-Aragón reported that illness perception and diabetes knowledge significantly predicted overall diabetes self-care practices. (13). Alharbi, in a study titled Patients' Perception and Adherence to Treatment Among Older Adults with Type 2 Diabetes stated that patients develop negative beliefs about their coping abilities to symptoms and the severity of the consequences of diabetes. These perceptions significantly affect the treatment, medication adherence, and clinical outcomes (14).

Accordingly, considering the high prevalence of diabetes and as illness perception and coping with the illness can vary in different cultural and social conditions, this study aimed to investigate the relationship between the illness perception and coping of patients with type 2 diabetes. The current study helps to determine the level of illness perception in diabetic patients and investigate its relationship with coping mechanisms to plan for improving the perception and life quality of diabetic patients.

Method

The present cross-sectional study's research sample included every patient with type 2 diabetes under treatment at Neyshabur University of Medical Sciences. The participants were selected by convenience method and randomly entered into the study. The researcher obtained the list of type 2 diabetic patients of Neyshabur City from the Diabetes Clinic. Then, with daily visits of the researcher to the clinic, patients referring to receive care that met the inclusion criteria were randomly selected (every other participant). Considering the previous research (15, 16), the confidence level (95%), and the power (80%) of the test, the sample size was determined as 180 individuals, and considering a 20 percent dropout rate, 192 individuals were selected.

The inclusion criteria for research units to enter the study included a definite diagnosis of diabetes by a physician, a minimum six months history of type 2 diabetes, lack of chronic malignant diseases, physical and mental ability to answer the questionnaires, and patients' consent to participate in the study. The primary exclusion criteria of the study included patients with hearing and vision impairment (diagnosed by a physician), a history of type 1 diabetes, women with gestational diabetes, and non-native patients of the city who lacked medical history files.

After the research approval by the Vice Chancellor of Research of Neyshabur University of Medical Sciences and presenting the certificate to the authorities of the Diabetes Clinic, the researcher visited the center daily to collect the data. After describing the study's purpose and obtaining informed consent (announcement of the unit to participate in the study), the researcher presented the questionnaires to the patients. In cases where the participant could not complete the questionnaires due to illiteracy, the researcher read the questions for the participant to provide an answer.

The data collection tools included three measures:

1. Demographic information questionnaire, including age, sex, employment status, education, marital status, number of children, duration of diabetes, history of hospitalization due to diabetes and other diabetes-related diseases (i.e., hypertension, neuropathy, stroke, and heart attack).

2. Brief Illness Perception Questionnaire (Brief-IPQ): This questionnaire contains nine questions designed by Brad Benet et al. based on a revised version of the same questionnaire. The questionnaire evaluates the consequences, duration, personal management, treatment control, nature, concerns, perception of the current illness, emotional response, and cause of the disease. The scoring of the first eight questions is on a scale of 0 to 10, and items 3, 4, and 7 are scored invertedly. The ninth question was open-ended and investigated the three primary reasons for contracting the disease from the patient's point of view. The final analysis recommends examining each subscale separately. Lower scores indicated more positive illness perceptions. The total score of diseases was the sum of items 1 to 8, resulting in a score between 0 to 80. Scores 0-27 indicated good illness perception, 28 to 55 characterized moderate illness perception, and 56 to 80 showed poor illness perception (17). The reported Cronbach's alpha coefficient was 0.80, and

test-retest reliability with a week's interval for each question was between 0.43 to 0.75 (18).

3. Brief Questionnaire on Coping Orientation to Problems Experienced (Brief-COPE): Carver designed this questionnaire in 1997 to determine the coping style of individuals when facing stressors. This scale is available in Spanish, French, German, Greek, and Korean and has been utilized by several studies. The brief coping scale consists of 14 subscales and 28 items (two per subscale). This questionnaire covers areas including 1) self-distraction, 2) active coping, 3) denial, 4) substance use, 5) use of emotional support, 6) use of informational support, 7) behavioral disengagement, 8) venting, 9) positive reframing, 10) planning, 11) humor, 12) acceptance, 13) religion, and 14) self-blame. The questionnaire utilizes a four-score Likert scale, with scores 1, 2, 3, and 4 indicating 'I haven't been doing this at all,' 'I have done it a little bit,' 'a medium amount,' and 'I've been doing this a lot,' respectively. Higher scores indicate the frequency of coping uses. The average score of each strategy is between 1 and 4. The different domains of the coping questionnaire either belong to problem-focused or emotion-focused coping. The coping styles, including acceptance, active coping, planning, religion, and use of emotional support, are among the problem-focused coping styles, and styles including behavioral disengagement, venting, substance use, denial, self-distraction, and self-blame are among the emotion-focused coping styles (19). Outside of Iran, Cooper et al. evaluated the scientific validity of the standard questionnaire for stress-coping behaviors in 2008 (r=0.84) (20). Inside Iran also, the validity of these tools is confirmed (21, 22). The internal consistency of the brief-COPE verified the reliability of this measure, as 15 diabetic patients received the questionnaire, then the internal correlation coefficient was measured via Cronbach's alpha for the entire questionnaire (0.86).

Data analysis: The obtained data were categorized and analyzed using the SPSS software (version 20; Chicago, Illinois). The normal distribution of the data was confirmed using the Kolmogorov-Smirnov test ($p<0.05$). Pearson correlation and multivariate regression analysis were investigated using other tests (central tendency and dispersion indices for quantitative variables; and percentage and frequency for qualitative variables.

Results

This study investigated 174 diabetic patients of Neyshabur City. The mean age of the participants and the average duration of diabetes were 57.31±13.99 and 7.75±6.40 years, respectively. Table 1 presents other demographic information. Results of the current study indicated a total score of perceived illness (based on the illness perception questionnaire completed by the participants) of 43.54±10.27. The lowest mean score was regarding the subscale recognizing the symptoms (5±3.44), and the duration of the illness had the highest score (7.94±2.76) (Table 2).

Findings indicated that most participants used problem-focused behaviors compared with emotion-focused behaviors. Religion was the most frequently reported strategy among the problem-focused behaviors, and self-blame had the highest frequency among the emotion-focused behaviors (Table 3). As presented in Table 4, except for the item 'seeking help from religion' (r=0.23, p-value=0.02), the correlation between coping and illness perception of every subscale was not statistically significant. The coping variables could not predict illness perception.

Table 1: Demographic characteristics of patients with type 2 diabetes (n=174)

Variables		frequency	percent
gender	Female	110	63.2
	Man	64	36.8
marital status	married	143	82.2
	the widow	25	14.4
	divorced	6	3.4
Educational status	illiterate	41	23.6
	elementary	69	39.7
	middle school and above	64	36.8
Family history of diabetes	Yes	100	57.5
	no	74	42.5
The economic situation	Good	29	16.7
	medium	105	60.3
	weak	40	23
History of previous illness	I do not have any special disease	66	37.9
	History of dialysis		
	Having high blood pressure	3	1.7

Variables		frequency	percent
	Having heart disease	74	42.5
Type of Insurance	rural	31	17.8
	social security	32	18.4
	health Service	100	57.5
	Armed Forces	26	14.9
Supplementary insurance	Yes	16	9.2
	no	110	63.2

Table 2: Mean and standard deviation of the illness perception in patients with type 2 diabetes (n=174)

Variables	Mean	SD
Effect on life	6.28	2.81
Duration of illness	7.94	2.76
Personal control	5.76	3.08
Beliefs about the effectiveness of treatment	5.53	2.92
Experience of symptoms	5.00	3.44
Concern about illness	7.12	2.67
Understanding of the illness	5.87	3.23
Emotional representation	5.50	2.64
Total score	43.54	10.27

Table 3: Mean and standard deviation of the scores of coping Strategies
In patients with type 2 diabetes (n=174)

Coping Strategies	Mean	SD
Problem-Focussed	**44.78**	**7.90**
Active coping	5.05	1.39
Use of informational support	5.73	1.63
Positive reframing	5.67	1.81
Planning	5.97	1.47
Emotional support	5.57	1.77
Humor	4.50	1.99
Acceptance	6.11	1.68
Religion	6.13	1.93
Emotion-Focused	**24.19**	**4.38**
Self-blame	5.24	1.39
Venting	5.08	1.78
Self-distraction	5.07	1.50
Denial	2.23	2.27
Substance use	2.71	1.51
Behavioral disengagement	3.84	1.57

Table 4: Correlation of coping with illness perception in type 2 diabetes patients (n=174)

Coping Strategies	The correlation coefficient	P-Value
Active coping	-0.038	0.71
Use of informational support	-0.176	0.83
Positive reframing	-0.025	0.80
Planning	-0.20	0.39
Emotional support	0.03	0.77
Humor	-0.20	0.45
Acceptance	-0.046	0.65
Religion	0.23	0.02
Self-distraction	0.98	0.33
Denial	-0.041	0.68
Substance use	-0.001	0.99
Behavioral disengagement	0.16	0.10
Self-blame	-0.038	0.71
Venting	-0.176	0.83

Discussion

The present study investigated illness perception and coping in patients with type 2 diabetes. Findings indicated that participants mostly use problem-focused behaviors in facing the disease. Individuals primarily use problem-focused coping when they sense they can deal with the problem. However, they would utilize the emotion-focused coping style if they consider the condition beyond their abilities (23). Emotion-focused coping causes diabetes to be considered a threat to deteriorating the quality of life. Reports indicated that negative coping styles (emotion-focused) are significantly related to increased depression and anxiety levels (15). Meihua Ji concluded that self-efficacy, social support, and symptom distress were independent predictors of problem-solving; they significantly improved the prediction of perceived problem-solving in diabetes management after controlling covariates. (24). The results of a survey by Behrouz B. on diabetic patients emphasized the importance of this intervention in psychosomatic and chronic diseases and provided new horizons in clinical interventions (25). The results of the mentioned study were not consistent with the current study. Hence, the coping styles of individuals with daily life tensions are affected by various factors, including age, education, experiences, culture, and living environment. The severity and frequency of the tensions also affect the individuals' coping method selection and utilization. We must also consider the effect of different utilized measures to investigate the coping styles on the results. Coelho utilized the Coping Responses Inventory Questionnaire, while the present study used the Brief-COPE questionnaire.

Religion was the most frequent strategy utilized by the current study participants. Baghchi et al. also reported similar results in their study titled 'The Relationship Between Coping and Quality of Life among Women with Husbands Undergoing Dialysis' (26). In line with the results of the present study, Arifin et al. reported that coping strategies for diabetes

included spirituality, positive attitude, acceptance, and learning more about type 2 diabetes. Nevertheless, the majority of the participants stated religion as the primary factor with the highest influence on their lives (27). In Alnazly's study, self-management was the most frequent coping strategy utilized by the care providers to Jordanian hemodialysis patients (28). Such differences may be rooted in cultural and religious differences of different countries, which are reasonable from this point of view.

The current study's results indicated that the participants' illness perception scores are medium. Rezaei et al. reported that 75% of diabetic patients were aware of their disease. They also stated patients with higher levels of illness perception had lower HbA1c, indicating better blood sugar level management (6). Cana et al., in research titled 'The Relationship Between Patients' Diabetes Perception and Medication Adherence,' found that the mean illness awareness score (general characteristics of diabetes, nutrition diet, physical activities, and side effects) was 9.8 (out of the maximum 18 scores on the subscale general knowledge) (29). Bazazian reported that positive illness perception, which is in line with the perception of control over the disease and the associated symptoms and emotions, causes proper medical measures and reduces HbA1c. Improving such a condition also yields a more positive perception (30).

The results of the present study indicated the highest correlation between the religion subscale in coping styles and illness perception. The positive relationship between illness perception and religious coping strategy showed that individuals who use religious matters (such as prayer) as a coping strategy reported higher illness perception levels. We can state that religious orientation is an effective coping method against the problem (via its significant effects on individuals' lives). Improving the religious attitude can enhance coping strategies and illness perception (26). We can also explain the present study's findings by referring to Allport. Allport believes that religion and religious attitudes are a comprehensive issue with organized and internalized principles. Individuals who genuinely believe in their spiritual teachings can improve their mental health, as only true religion is capable of doing so. However, Allport notes that not every individual who claims to be religious has a healthy personality (31). Pursuing meaning and purpose in life, feeling attached to a higher source, believing in God's aid in problematic life conditions, and benefiting from social and spiritual support, are among the methods through which religious individuals can reduce the damage they suffer when facing stressful life events (32).

The limitations of the present study included the non-cooperation of patients with diabetes in answering the questionnaires. The data collection process also was in the form of a self-report; hence the data may not mirror the actual performance of the individuals.

Conclusion

The results indicated that the illness perception of diabetic patients was medium, and most patients used problem-focused behaviors when confronting the disease. Among the various subscales, seeking help from religion was the only subscale indicating a significant relationship between illness perception and coping strategies. Designing supportive and psychological plans for patients with type 2 diabetes to present guidance and help for more use of problem-focused strategies and less usage of emotion-focused methods can improve the patient's quality of life. We suggest further studies on interventions to improve the illness perception, coping techniques, and their aspects to enhance the quality of life of the mentioned patients effectively.

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Conflict of interest

The authors have no relevant financial or non-financial interests to disclose.

Ethical considerations:

According to the study's objectives, the participants were given a full explanation of the confidentiality of the information and the right to withdraw from the study at any time. The Research Ethics Committee has approved this research design of Neyshabur University of Medical Sciences with code IR.NUMS.REC.1398.030.

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