





Original Article

Relationships between early maladaptive schemas, psychological distress, and coping strategies in people with diabetes

Fatemeh Golnezhad Monfared ¹ , Farahnaz Meschi ^{*1} , Mohsen Mansoubi Far ¹ , Robabeh Ataeifar ¹ ,
Sheida Sodagar ¹ 

¹ Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran.

Corresponding author and reprints: Farahnaz Meschi, Assistant Professor, Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran.

Email: fa_meschi@yahoo.com

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Abstract

Background: Regarding the effect of early maladaptive schemas (EMSs) on the psychological distress (PD) of diabetic patients, various factors can play a mediating role. This study was to examine the associations between EMSs, PD, and coping strategies in people with diabetes.

Methods: This descriptive correlational study was carried out on people with type 2 diabetes (T2D) referred to the diabetes clinic of Shariati Hospital in Tehran, in 2021. Here, 200 patients were included in the research and the selection method of people was convenient. Research tools included Kessler's Psychological Distress Scale, Young Schema Questionnaire (YSQ-SF) and Coping Strategies Inventory (CSI). Data analysis was performed by SPSS 25 software and Smart-PLS 3, and structural equation method (SEM).

Results: The findings revealed that EMSs have a significant and direct association with PD. Coping strategies had a mediating role in relation to EMSs and PD in people with T2D. As a result, 37% of PD was explained by EMSs and coping strategies.

Conclusion: According to the results, in order to reduce the level of PD in people with T2D should be use of techniques aimed at enhancing EMSs and coping strategies.

Keywords: Coping Strategy; Early Maladaptive Schemas; Patients; Psychological Distress; Type 2 Diabetes.

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Introduction

Diabetes is one of the most challenging chronic diseases in which the body becomes resistant to insulin and cannot perform its normal function. In type 2 diabetes (T2D), various factors play a significant role in a person's illness such as genetic, obesity, and inactivity (1). People who get this disease usually suffer from tension and changes in their personal and social functioning (2). These people must deal with life-threatening alterations in order to achieve a satisfactory level of psychological and

social functioning and eventually better diabetes control (3).

One of the disorders that people with diabetes face is psychological distress (PD). PD is a term used to describe general psychopathology in a person deals with a set of symptoms of anxiety and depression (4). People with PD describe and evaluate their emotional disturbance as unbearable and unacceptable, they try to relieve their negative emotional states, and they are unable to focus on anything other than their distress (5). Whereas, distress tolerance

means a person's perceived ability when experiencing negative emotional conditions or behavioral capability to maintain goal-directed behavior (6). Investigating the factors related to PD in T2D patients is very important. It seems that one of the variables that affects PD is early maladaptive schemas (EMSs). In accordance with Hackett and Steptoe, the factors of cognitive, emotional, and social are effective in the development, regulation and control of this disease (7). People with diabetes suffer from psychological symptoms such as anxiety and depression (8). According to the study of Nefs et al., the simplest reaction of a diabetic person after becoming aware of his disease will be anxiety and depression, which are the most prevalent PD among diabetic people (9).

In recent decades, health psychology has studied the pathology and risk factors of poor mental and physical health of diabetes and it has been shown that chronic diseases are closely related to individual characteristics and psychological qualities (10). Schemas are one of the most important psychological components related to physical health and chronic diseases. EMSs are the oldest and deepest cognitive components, unconditional beliefs and feelings about ourselves and arise from the interaction of the child's natural temperament in the dysfunctional environment with parents, sisters, brothers and peers during the early years of life, and these schemas are patterns for processing of subsequent experiences (11). Initial traumatic experiences such as failure to meet needs, being victimized or harmed, excessive satisfaction of needs, and identification with important people lead to the formation of EMSs (12). According to the cognitive theory, when one of the EMSs is invoked, the patient experiences a strong and intense negative emotion such as grief, shame, fear or anger, which can lead to stress and PD (12). Yang believes that schemas indicate basic psychological patterns that crystallize important and

fundamental unsatisfied requests of children (13).

Regarding the effect of EMSs on the PD in diabetic people, various factors can play a mediating role, one of which is coping strategies. In coping strategies, when people are stressed in their daily lives, they use them to diminish tension caused by stressful events. These strategies are classified into two categories: problem-focused and emotion-focused (14). The problem-focused coping (PFC) strategy aims to adjust the source of the difficulty in order to reduce the risk of tension (15). The emotion-focused coping (EFC) strategy aims to reduce the emotional impact of the problem without affecting the source of the problem (16). Since mental distress is one of the disorders that can severely affect the personal and social life of diabetic patients, it is very important to investigate the factors related to it in order to provide appropriate strategies to reduce its level in patients. Also, the literature demonstrates that so far a practical model has not been fulfilled in relation to the mediating role of coping strategies between EMSs and PD in diabetic people. Therefore, in line with the current research gap and also the importance of the subject, this study aims to examine the associations between EMSs and PD, and also coping strategies as a mediating variable on people with T2D.

Methods

This descriptive correlational study was done on people with T2D referring the Diabetes and Metabolic Diseases Clinic of Shariati Hospital in Tehran during the third quarter of 2021. The sample consisted of 200 patients were chosen based on Morgan table and the selection method of them was convenience sampling.

The criteria for entering the study were having a history of diabetes for at least 6 months based on an Endocrinology specialist diagnosis, the ages between 40 to 65 years old. The criteria for exclusion from the study were: history of suffering from

psychological diseases and declaration of non-satisfaction to continue cooperation.

At the beginning of the research, the required permission was first gotten from the Karaj Islamic Azad University. Necessary coordination with the officials of the Clinics was done by the researcher. First, by identifying people with T2D, the required training regarding how to complete the questionnaires was given to the people and they were sound that their information would stay private. Then, written consent was acquired from the people to contribute in the research. Kessler's Psychological Distress Scale (K10), Young Schema Questionnaire-Short Form (YSQ-SF) and Coping Strategies Inventory (CSI) were given to the individuals and they completed them. Moreover, demographic characteristics of people such as age, sex, marital status, and qualifications were gathered.

Kessler Psychological Distress Scale: This scale was compiled by Kessler et al. (2002) to measure PD. The K10 scale involves 10 questions and three components of educational, social and cognitive presences (17). Each item of it is scored based on a 5 points Likert scale from 0, never to 4, always. Therefore, its maximum score is equal to 40. Furukawa et al., study disclosed that the K10 scale has high validity and reliability (18). In Yaghubi study, its Persian version was validated and the Cronbach's alpha coefficient of the scale was 0.93 (19). In the present study, the Cronbach's alpha coefficient of the scale was 0.87.

Young Schema Questionnaire-Short Form: In this self-report questionnaire, the schemas of people are measured on a 6 points Likert scale from 1 to 6 (completely true to completely false, respectively). This is a short form questionnaire with 75 questions, which the lowest score obtained is 75 and the highest score 450. The components of EMSs include disconnection and rejection (25 questions with a maximum of 150 scores), impaired

autonomy and performance (20 questions with a maximum of 120 scores), other-directedness (10 questions with a maximum of 60 scores), over vigilance/inhibition (10 questions with a maximum of 60 scores), and impaired limits (10 questions with a maximum of 60 scores). Waller et al, reported the overall reliability of the questionnaire as 0.94 to 0.96 and its subscales as 0.62 to 0.93 (20). Also, it Persian questionnaire was validated by Ghiasi et al. (21) and using Cronbach's alpha coefficient, the reliability and validity of it were 0.94 and 0.64, respectively.

Coping Strategies Inventory: This questionnaire was created according to the Folkman and Lazarus list of coping strategies, 1980 and was rewritten in 1985. This 66-question questionnaire has two main styles of emotion-focused and problem-focused, each of which is divided into subscales. The EFC strategy comprise confrontation, distancing, escape/avoidance and restraint. The PFC strategy includes: seeking social support, acceptance of accountability, planned problem solving, and confident re-evaluation. The scoring scale of inventory is based on a 4-point Likert from 0 to 3 (I have not used it to a lot of use, respectively). The CSI was standardized in Iran and its reliability was reported by Nedaei et al., in the range of 0.61 to 0.79 using Cronbach's alpha coefficient (22). Moreover, Mazlum Befruei et al., (23) found the Cronbach's alpha coefficient of the inventory as 0.79. Also, in this study the Cronbach's alpha coefficient of it was obtained 0.85. In this research, data analysis were performed in two parts including descriptive and inferential statistics, using SPSS software version 25 and Smart-Pls software version 3, and structural equation method (SEM).

Results

In this study, the mean and standard deviation of people's age was 51.08 ± 5.9 years. Men accounted for 92(48%) and women 108(52%) of the research.

Table 1. Mean and association between research variables

Variable	Mean ± SD	1	2	3	4	5	6	7	8
Disconnection and Rejection	58.72 ± 18.43	1							
Impaired autonomy and performance	40.67 ± 13.61	0.764	1						
Other-directedness	23.41 ± 6.65	0.769	0.754	1					
Overvigilance/ inhibition	28.51 ± 7.67	0.526	0.41	0.461	1				
Impaired limits	26.90 ± 7.7	0.478	0.516	0.378	0.614	1			
EFC strategy	30.38 ± 9.62	-0.329	0.162	0.133	0.18	0.755	1		
PFC strategy	42.76 ± 8.16	0.474	0.356	0.233	0.139	0.183	0.341	1	
PD	25.97 ± 5.19	0.471	0.599	0.51	0.313	0.375	0.266	0.241	1

*P-value <0.001.

161(80.5%) participants were married and 39(16.5%) single. 90(45%) of people had Bachelor's degree and higher and 110(55%) diploma and below.

Table 1 shows the mean and relationship between research variables. With respect to the results, the components of EMSs had a significant and direct association with PD caused by diabetes; while these components showed a significant and indirect association with coping strategies. In addition, coping strategies showed a significant and indirect relationship with PD caused by diabetes.

According to the results of Table 2, all scales reliability by using Cronbach's alpha coefficient is more than 0.7. All squared correlation coefficients are less than AVR (discriminant validity). The condition AVE < CR is established for all variables

(convergent validity). In addition, the fit results showed that the prediction model has a good level (GOF=0.404 > 0.36).

The main model of the research with factor loading values is presented in Figure 1. In addition, the values of factor loadings and direct and indirect paths of the main model are shown in Tables 3 and 4, respectively. With respect to the results in Table 3, the direct paths of EMSs on coping strategies and PD caused by diabetes were investigated. Also, as seen in Table 4, the indirect path of coping strategies as a mediating variable in the relationship between EMSs and PD in people with T2D has been confirmed (P<0.001). Therefore, it can be stated that 37% of PD caused by diabetes is explicated by EMSs and coping strategies.

Table 2. Results of Average variance extracted, correlation coefficient, Cronbach's alpha and composite reliability coefficient of the studied variables

Variable	Average variance extracted (AVE)	Composite reliability coefficient	correlation coefficient	Cronbach's alpha coefficient
EMSs	0.285	0.962	0.97	0.82
EFC	0.252	0.782	0.83	0.78
PFC	0.288	0.832	0.91	0.74
PD	0.362	0.917	0.945	0.84

Table 3. The direct path coefficients in the main model of research hypothesis

Pathway	Coefficient	t	P-value	Results
EMSs → Coping strategies	-0.35	10.537	<0.001	Confirmed
EMSs → PD	0.55	12.056	<0.001	Confirmed

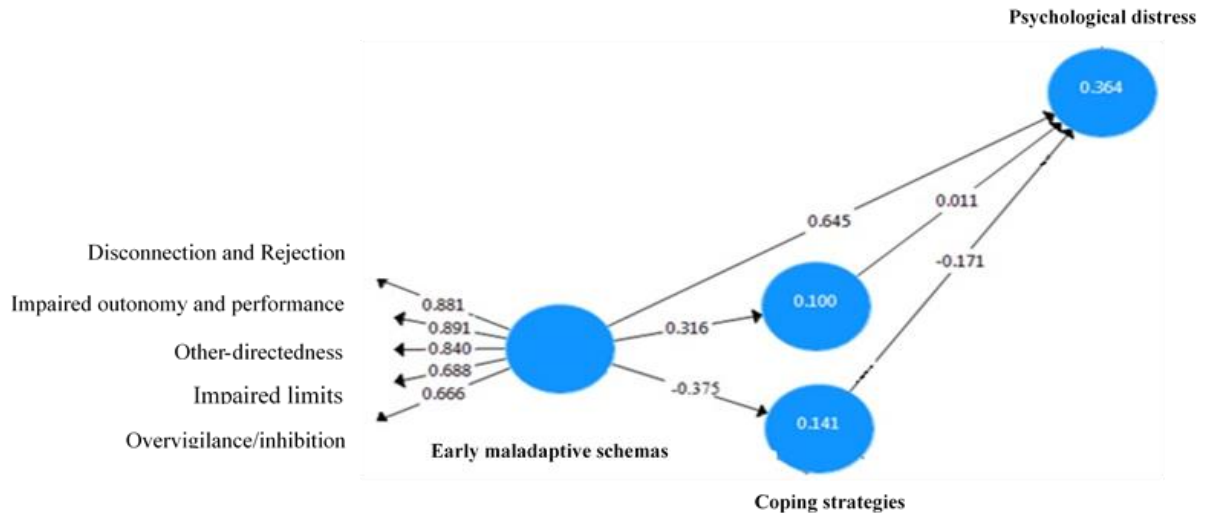


Fig 1. The main model of the research with factor loading values

The fit indices of the model were checked. As shown in Table 5, all the fit indices for are in the good to acceptable range; therefore the experimental data confirm the conceptual model of present research.

Discussion

This study investigated to the association between EMSs and PD in people with T2D. Also, the mediating role of coping strategies in regard to this relationship was explored. The results showed that EMSs can forecast PD with the mediation of coping strategies. Furthermore, there was a positive and significant association between EMSs with coping strategies and PD in people with diabetes 2, as well as between coping strategies and PD. The findings of this research are in agreement with the results of Marengo et al. (24) and

Savolainen et al., (25). In its explanation, since schemas indicate basic psychological patterns that crystallize fundamental and important unsatisfied requests of a person (13). Also, the EMSs regulate people's standpoint in interpersonal interactions with others and most likely furnishes cognitive motivational procedures to deal with risky behaviors (26). According to the studies, the bias caused by incompatible schemas appears as misunderstandings and unrealistic expectations in spouses, which can affect consequent insights and evaluations. Therefore, it can be said that schemas are ineffective mechanisms that directly or indirectly lead to PD (27, 28) and cause PD in people with diabetes, which confirms the findings of our study.

Table 4. Indirect path coefficient in the main model of research hypothesis

Pathway	Coefficient	t	P-value	Results
EMSs → Coping strategies → PD	0.371	7.1	<0.001	Confirmed

Table 5. Fit indices related to the basic research model

Index type	Observed size	Result
RMSEA	0.080	Good
SRMR	0.085	Good
CFI	0.853	acceptable
NFI	0.801	acceptable
NNFI	0.800	acceptable
GFI	0.907	Good
AGFI	0.856	acceptable

Young believes that some schemas are at the core of personality complaints, slighter behavioral difficulties, and various chronic Axis I syndromes, particularly those formed mainly as a result of incompatible childhood experiences. People, who have been abandoned in childhood, have been abused, forgotten or rejected. In adulthood, their schemas are evoked, if they (unconsciously) perceive current life events as similar to traumatic childhood experiences. Therefore, they experience strong negative emotions such as grief, shame, fear or anger, and as a result, they lose mental stability and have difficulty in using coping strategies (12). People who score higher in effective coping strategies such as problem-oriented, determine the main problem when facing life's difficulties, propose several solutions, weigh the benefits of each of these solutions, finally choose one of these solutions and acts based on it, which is the ability to provide a solution instead of avoiding it facing difficulties can help a person in stressful situations to show more reasonable behavior and performance and instead of undesirable emotional behaviors and mental distress manage the mental and physical condition of themselves and those around them. These people are able to control mental distress in themselves and provide less conditions for causing mental distress. Therefore, coping strategies will play an effective role in mental distress (29). Inconsistency in the use of coping strategies will cause an individual to have a chaotic life and not be able to cope with the problems caused by diabetes. Therefore, inappropriate reactions such as anger, aggression and anxiety appear in him. EMSs and dysfunctional ways in which people learn to get along with others often underlie the chronic symptoms of Axis I disorders (30), which causes the EMSs create PD due to the lack of effective use of coping strategies. In addition, patients with the schema of stubborn criteria lead to a feeling of continuous pressure and extreme fault-finding of themselves and others. This

situation leads to disruption in health, sense of worth, interpersonal relationships or enjoyment of life and causes a person's coping strategies to change when faced with life's problems (31). As a result, EMSs through coping strategies can cause PD in patients with T2D.

The impossibility of participating all T2D patients in the study, as well as the limitation of the current research sample to a specific geographical area, can make it difficult to generalize the research. Since this research was unique to the city of Tehran, it is suggested to work on this concept in other societies as well. In order to reduce the level of PD of diabetic patients, it is suggested that research centers provide solutions to reduce the adverse effects of coping strategies and EMSs, as well as medical centers also pay attention to coping strategies and EMSs in order to decreasing the distress level of patients.

Conclusion

According to the results, it can be concluded that EMSs can increase PD in people with T2D. In addition, coping strategies had an evident in mediating role in the association between EMSs and PD in T2D patients. Therefore, in order to reduce the PD of these people, attention should be paid to their coping strategies and EMSs, and the necessary trainings can be provided in this regard.

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Authors' contribution

Study conception and design: Golnezhad Monfared F and Meschi F; data collection: Golnezhad Monfared F; analysis and interpretation of results: Mansoubi Far M and Ataeifar R; draft manuscript preparation: Golnezhad Monfared F, Meschi F, and Sodagar S. All authors approved the final version of the manuscript.

Ethical considerations

The present study was approved by the Islamic Azad University, Karaj Branch with ethics code IR.IAU.K.REC.1401.135.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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