

# Relationship between Self-Care Behavior and Early Maladaptive Schemas in People with Type 2 Diabetes: The Mediating Role of Coping Strategies

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**Submitted:** 29 March 2023

**Accepted:** 3 May 2023

Int J Behav Sci. 2023; 17(1): 53-57

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## Abstract

**Introduction:** This study investigated the mediating role of coping strategies in relation to self-care behaviors with early maladaptive schemas in people with type 2 diabetes.

**Method:** This descriptive, correlational research was conducted on patients referring to diabetes clinics in Tehran, 2021. In this study, 200 patients with type 2 diabetes were selected through convenience sampling. Research data were collected using Miller's health attitude scale (1982), Young's schema questionnaire (1995) and the coping strategies questionnaire of Lazarus and Folkman (1980). Data analyze was done using SPSS version 25 and Smart-PLS version 3 was used to fit the model.

**Results:** The results showed that early maladaptive schemas have a direct and significant linear relationship with self-care behaviors ( $r = -0.630$ ). Also, early maladaptive schemas have an indirect and significant linear relationship with self-care behaviors with the mediating role of coping strategies. The research model had a good fit and it can be said that 36% of self-care behaviors caused by diabetes are explained by coping strategies and early maladaptive schemas.

**Conclusion:** In order to improve the level of self-care behaviors of people with type 2 diabetes, attention should be paid to the early maladaptive schemas and coping strategies

**Keywords:** Self-care, Behavior, Coping Strategies, Schema, Type 2 diabetes

## Introduction

Diabetes is one of the metabolic diseases and is a multifactorial disorder characterized by chronic increase in blood sugar or hyperglycemia [1]. In type 2 diabetes, genetic factors, obesity and inactivity play an important role in a person's disease [2]. Decreasing the ability of patients to control diabetes aggravates their psychological problems and causes patients to be trapped in a vicious cycle [3]. Suffering from this disease is associated with tension and changes in individual, interpersonal and social functioning. The important point is that a person with diabetes should be responsible for his disease. In fact, the main responsibility for controlling the disease rests with the patient himself and he should pay attention to self-care behaviors [4]. Self-care behavior is a key concept in achieving adaptation and improving the health of these patients and includes decisions and activities that a person uses to adapt to a health problem or improve their health [5, 6]. Researchers believe that one of the most important factors in controlling diabetes is self-care behaviors and improving self-care behaviors is the first step in helping patients to better care for and manage their disease [7].

One the most important variables related to self-care behaviors is coping strategies [8]. Having diabetes and requiring the patient to take special care of himself causes many challenges in daily life. These challenges cause different psychological problems for the patient, which makes it necessary to use effective coping strategies in order to adapt [9]. Coping strategies are strategies that people use to reduce stress caused by stressful events in daily life and are divided into two categories: problem-oriented and

emotion-oriented [10], and include behaviors that protect a person from psychological harm associated with problematic experiences or influences. In other words, it refers to the responses that people do to avoid injuries caused by life pressures [3].

Schemas are another psychological component related to physical health and chronic diseases, and it seems to be related to self-care behaviors and coping strategies [11, 12]. Schemas can sometimes be self-fulfilling, that is, they influence the social world in such a way as to make this social world consistent with the schema. This process of self-fulfilling prophecy is called schemas [13, 14]. Young et al. [15] suggests that certain schemas, especially those formed primarily as a result of adverse childhood experiences, may be at the core of personality disorders, milder behavioral problems, and many chronic Axis I disorders [16]. Early maladaptive schemas and the dysfunctional way patients learn to cope with others often underlie the symptoms of chronic disorders that can affect self-care behaviors [17].

Self-care behaviors of patients with type 2 diabetes are influenced by various psychological and cognitive factors. Studies have shown that early maladaptive schemas, self-care behaviors and coping strategies are related and can influence each other [7, 18-21]. Early maladaptive schemas can influence on coping strategies in certain situations [14]. Also, due to their self-fulfilling nature, early maladaptive schemas can also affect self-care behaviors, and self-care behaviors are usually influenced by these schemas [21].

The review of research literature shows that so far no comprehensive and coherent model has been presented regarding the mediating role of coping strategies in the relationship between self-care behaviors and early maladaptive schemas in people with diabetes. In addition, individual-psychological factors, coping strategies and early maladaptive schemas can play an important role in the onset, course, management and treatment of diabetes. Therefore, this research was conducted to investigate the mediating role of coping strategies in the relationship between self-care behaviors and early maladaptive schemas in people with type 2 diabetes.

## Method

This descriptive study was of the correlation type using the Structural Equation Modeling (SEM). The statistical population included all patients with type 2 diabetes referred to the Diabetes and Metabolic Diseases Clinic and Shariati Hospital Clinic in Tehran, 2021. In this study, 200 patients with type 2 diabetes were selected through convenience sampling.

Inclusion criteria included having a history of diabetes for at least six months based on the criteria of diagnosis of permanent diabetes, being between the ages of 40 and 65 years, and informed and voluntary participation. Exclusion criteria also included declaration of non-satisfaction to continue cooperation and suffering from psychological diseases during the study.

In order to collect data from the research samples, the necessary permission was first obtained through the university. Necessary coordination with the officials of the

clinics was done by the researcher. In order to collect data from the research samples, the necessary permission was first obtained through the university. Necessary coordination with the officials of the clinics was done by the researcher. In order to pay attention to ethical considerations, the research units were assured that they could withdraw from the research at any stage of the work if they did not want to continue, the participants were given the necessary training and were assured that their information would remain confidential; written informed consent was obtained from the participants to participate in the study. Then the questionnaires were given to the participants and they were asked to complete the questionnaires.

Data collection tools were Miller's health attitude scale, Young's schema questionnaire and Lazarus and Folkman coping strategies questionnaire. Also, demographic information of people including age, gender, level of education and marital status was collected.

**Young Schema Questionnaire – Short Form:** Young schema questionnaire (1995) is a self-report tool for measuring schemas. In this questionnaire, the person is measured on a six-point Likert scale from 1 = completely true, to 6 = completely false. The minimum score obtained is 75 and the maximum score is 450. In this questionnaire, when a person has three or four high scores (5 or 6) in a schema, it usually means that this schema exists in the mind from a clinical point of view. In the Waller et al. study, this questionnaire was validated and its reliability was reported as 0.94 to 0.96 in the overall scale and 0.62 to 0.93 in the subscales as a whole [22]. The simultaneous reliability and validity of its Persian version was obtained by Ghiasi et al. [23] using Cronbach's alpha coefficient of 0.94 and 0.64, respectively. In this research, Cronbach's alpha coefficient of the whole questionnaire was 0.83.

**Coping Strategies Questionnaire:** This 66-question questionnaire was developed based on Lazarus and Folkman list of coping strategies in 1980 and was revised in 1985. The components of the questionnaire include direct coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planned problem-solving and positive reappraisal. The scoring of the questionnaire is based on a four-point Likert scale from I have not used it at all (0) to I use it a lot (3). The lower limit of its scores is zero and the upper limit of scores is 198 [24]. The reliability of this test was reported by Lazarus using Cronbach's alpha of 0.79 [25]. The Lazarus questionnaire was standardized in Iran by Alipour et al. [26] and its reliability was reported 0.85 using Cronbach's alpha coefficient. In this study, the Cronbach's alpha coefficient of the entire questionnaire was 0.85.

**Health attitude scale:** Miller's (1982) questionnaire for determining self-care behaviors was used to measure self-care. This scale contains 20 items on a five-point Likert scale from 1 to 4 indicating a low probability and 5 indicating a high probability of following self-care behaviors. The minimum score of the scale is 20 and the maximum score is 100. Thus, a score of 20 to 79 indicates unfavorable self-care behaviors and a score of 80 to 100 indicates favorable self-care behaviors [27]. The internal

consistency of the dimensions of this scale was examined in the study of Laffrey using Cronbach's alpha, which ranged from 0.867 to 0.884 [28]. Also, the validity and reliability of the scale was checked by Niakan et al. [29] and the Cronbach's alpha coefficients in the area of dietary prevention, non-smoking, physical activity, use of prescribed drug regimen, and adjusting the effect of stressful variables after discharge from the hospital were determined 0.95, 0.98, 0.81, 0.92, and 0.80, respectively. The research data were used in two parts of descriptive and inferential statistics. Analyzing the correlation and prediction relationships were done using SPSS software version 25 and Smart-PLS software version 3 was used to fit the model.

**Results**

In this study, the average age of participants was 51.07 ± 5.91 years. Men and women participating in the study were 92 (48%) and 108 (52%), respectively. Also, married and single people were 161 (80.5%) and 39 (19.5%), respectively. The mean, standard deviation and correlation between research variables have been presented in Table 1. Based on the results, the components of early maladaptive schemas, including disconnection and rejection, impaired autonomy and performance, other-directedness, impaired limits, and over-directedness, over

vigilance/inhibition, and impaired limits had an indirect and significant relationship with coping strategies and self-care behaviors; while coping strategies showed a direct and meaningful relationship with self-care behaviors.

Table 2 shows the results of the model goodness of fit test. According to the calculation results of the goodness of fit statistic, the prediction model is reported at a strong level, which is less than 0.36.

The general outline of the main hypothesis of the research, along with the values of the factor loadings, is shown in Figure 1. Moreover, factor loading values, test statistics and significance level values for the effect of early maladaptive schemas on self-care behaviors through self-care behaviors are presented in Table 3.

Based on the results of Table 3 and Figure 1, early maladaptive schemas had a direct effect on coping strategies, and early maladaptive schemas had a direct effect on self-care behaviors. So, the hypothesis that coping strategies have a mediating role in relation to self-care behaviors with early maladaptive schemas in people with type 2 diabetes is confirmed (P-value < 0.001). Also, the indirect effect of coping strategies in relation to self-care behaviors with early maladaptive schemas is confirmed. Moreover, the results show that 35% of self-care behaviors are explained by the model.

**Table 1. Mean and Standard Deviation of Research Variables and Correlation between them**

Variable	Mean ± SD	1	2	3	4	5	6	7
Disconnection and Rejection	57.71 ± 17.55	1						
Impaired autonomy and performance	40.31 ± 13.84	0.724	1					
Other-directedness	22.40 ± 6.56	0.679	0.752	1				
Over vigilance/ inhibition	27.53 ± 7.56	0.516	0.408	0.455	1			
Impaired limits	26.80 ± 7.55	0.483	0.505	0.377	0.577	1		
Coping strategies	76.71 ± 25.06	-0.296	-0.302	-0.276	-0.266	-0.265	1	
Self-care behaviors	66.59 ± 10.82	-0.538	-0.576	-0.451	-0.262	-0.375	0.624	1

\*P < 0.001.

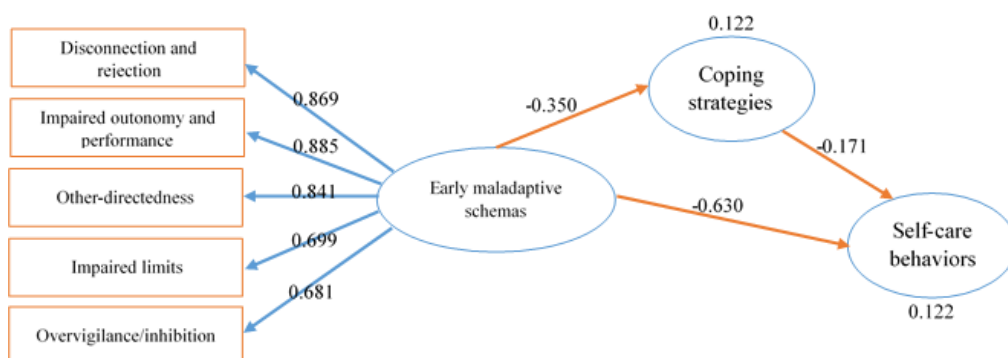
**Table 2. Results of Goodness of Fit Test of Model**

Variable	Cross validity	The coefficient of determination
Self-care behavior	0.062	0.366
Mean	0.3	0.544

GOF = 0.404

**Table 3. Effect of Early Maladaptive Schemas on Self-care Behaviors through Self-care Behaviors**

Path	Coefficient	T value	P	Result
Early maladaptive schemas → Coping strategies (direct)	-0.35	10.537	<0.001	Confirmed
Early maladaptive schemas → Self-care behaviors (direct)	-0.63	15.753	<0.001	Confirmed
Early maladaptive schemas → Coping strategies → Self-care behaviors (indirect)	0.184	4.738	<0.001	Confirmed



**Figure 3. The main research model with the values of factor loadings.**

## Discussion

The aim of the present study was to investigate the mediating role of coping strategies in relation to self-care behaviors with early maladaptive schemas in people with type 2 diabetes. The results of fitting the model to measure the mediating role of coping strategies in relation to self-care behaviors with early maladaptive schemas in people with diabetes showed that the model has a good fit and early maladaptive schemas can predict self-care behaviors with the mediating role of coping strategies. Moreover, since the estimated coefficient is positive, it can be said that there is a positive and significant relationship between early maladaptive schemas and coping strategies, between coping strategies and self-care behaviors, and also between early maladaptive schemas and self-care behaviors in people with diabetes. This means that both the direct effect of early maladaptive schemas on self-care behaviors and the indirect effect with the mediating role of coping strategies are confirmed. In explaining this finding, it can be said that schemas represent basic psychological patterns that crystallize fundamental and important unsatisfied needs of a person [30]. The early maladaptive schema adjusts the perspective of people in interpersonal relationships with others and most likely provide the underlying cognitive motivational processes to deal with risky behaviors [31]. Therefore, it can be said that the initial incompatible schema has an impact on coping strategies and has a decisive role in the application of various strategies. Also, coping strategies are effective on self-care behaviors, and the higher the use of coping strategies by diabetic patients, the better their self-care behaviors. On the other hand, as the self-care behaviors of patients increase, the level of using coping strategies also increases [32]. Patients who use coping strategies in the face of stress resulting from diabetes are more likely to follow diabetes control programs than patients who use less coping strategies [26]. In this regard, a person who uses appropriate coping strategies usually accepts responsibility for solving the problem, makes realistic decisions, is optimistic, and has high self-efficacy and, as a result, high self-care [31].

Young believes that maladaptive schemas cause bias in the interpretation of events. These biases in psychopathology appear in the form of misunderstandings, distorted attitudes, false assumptions, unrealistic goals and expectations in spouses, and these misunderstandings affect subsequent perceptions and evaluations. Having diabetes and requiring the patient to take special care of himself causes many challenges in everyday life, which necessitates the use of coping behaviors in order to adapt [33]. Coping strategies can play an important role in the course, control, treatment and psycho-social adaptation of patients with diabetes [34]. Also, the coping strategies used by these patients can have a key role in maintaining or increasing the amount of psycho-social adaptation [35]. Therefore, early maladaptive schemas both directly and indirectly through coping mechanisms can cause self-care behaviors in people with type 2 diabetes. Therefore, regarding the self-care behaviors of these people,

attention should be paid to their early maladaptive schemas.

The present study had some limitations. The convenience sampling method was used in this study and due to potential sample selection bias, the findings cannot be generalized to a wider population. Also, the sample of the current study, which was limited to a specific geographical region, has limited the generalizability of the research. In addition, reducing the number of study scales may worsen content validity and affect the relationship of research variables. It is suggested to conduct studies with more samples using the original scales and based on advanced sampling techniques such as probability sampling. Since this research was unique in Tehran, similar studies can be carried out in other societies as well. According to the results of the research, it is recommended to pay attention to their coping strategies and early maladaptive schemas regarding the self-care behaviors of people with type 2 diabetes and provide the necessary training in this regard.

## Conclusion

Due to the stress caused by the disease, people with diabetes often do not have sufficient mental health and do not take self-care behaviors seriously. Based on the results of the present study, therapists should pay attention to the early maladaptive schemas of type 2 diabetes patients and teach these patients effective coping strategies so that they can improve their mental health by promoting self-care behaviors. Based on the research results, the mediating role of coping strategies in relation to self-care behaviors with early maladaptive schemas in people with diabetes has been proven. It is very important to pay attention to the early maladaptive schemas and coping strategies in people with diabetes.

## Conflict of Interest

The authors declare no conflicts of interest.

## Ethical Approval

The ethical principles in writing this article have been observed according to the instructions of the National Ethics Committee and the COPE regulations.

## Acknowledgment

The authors are grateful to all those who helped in conducting this research.

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