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RESEARCH ARTICLE

The Relationships Between Early Maladaptive Schemas, Quality of Life and Self-care Behaviors in a Sample of Persons Living with HIV: The Potential Mediating Role of Cognitive Emotion Regulation Strategies

SeyedAhmad SeyedAlinaghi¹, Mehrzad MohsseniPour¹, Elahe Aghaei², Fariba Zarani², Jalil Fathabadi^{2,*} and Mona Mohammadifirouzeh³

¹Iranian Research Center for HIV/AIDS, Iranian Institute for Reduction of High-Risk Behaviors, Tehran University of Medical Sciences, Tehran, Iran

²Department of Psychology, Shahid Beheshti University of Medical Sciences, Tehran, Iran

³George Mason University, School of Nursing, 4400 University Dr, Fairfax, VA 22030, United States

Abstract:

Introduction:

People who are living with HIV often experience physical as well as psychological challenges. Therefore, the aim of this descriptive, correlational study was to explore the potential mediating role of cognitive emotion regulation strategies in the relationships between early maladaptive schemas, quality of life, and self-care behavior in patients with HIV/AIDS.

Methods:

In the first half of 2017, patients with HIV/AIDS (N=240) were recruited from an HIV clinic in Tehran, Iran. A self-report questionnaire included the Young Schema Questionnaire-Short Form (YSQSF), Short Form Health Survey (SF-36), short form of Cognitive Emotion Regulation Questionnaire (CERQ), and a self-care behaviors questionnaire. The data analysis involved using advanced statistical techniques for structural equation modeling.

Results:

There were significant, inverse relationships between all five areas of early maladaptive schemas and positive cognitive emotional regulation strategies, self-care behaviors, and quality of life. Also, there were significant, positive relationships between all five areas of early maladaptive schemas and negative cognitive and emotional regulation strategies.

Conclusion:

The findings suggest that practical interventions to reduce maladaptive responses may result in healthier outcomes for persons living with HIV.

Keywords: Maladaptive schemas, Quality of life, Self-care behaviors, Cognitive emotion regulation, HIV, Structural equation modeling.

Article History

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1. INTRODUCTION

In recent years, the rate of chronic illnesses such as HIV disease (Human Immunodeficiency Virus) has progressively increased. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO), 36.9 million people were living with HIV (PLWH) [1] by the end of 2019, although between 1997 and 2010, new HIV

infections fell by 21%. Despite the decline, there is an increasing rate of HIV infection in the Middle East and North Africa (MENA) region, among which Iran is located. HIV diagnosis causes fear, stress, and anxiety in patients and their families [2, 3], which may pose different negative psychological challenges [4]. Some studies indicate that between 20% to 60% of patients with HIV disease suffer from psychological disorders, especially mood disorders such as anxiety and depression [2, 3, 5, 6]. HIV disease also may increase psychosocial issues, including low self-confidence, low life-

* Address correspondence to this author at the Department of Psychology, Shahid Beheshti University of Medical Sciences, Tehran, Iran;
E-mail: fathabadi51@gmail.com

expectancy, loneliness, stigma, fury, and suicidal thoughts [7]. Some studies revealed that adherence of patients to medication have declined due to psychological disorders such as depression [8, 9]. Chronic diseases like HIV/AIDS need long-term treatment; hence, PLWH have to adhere to and follow their clinical treatment [10].

Patients with HIV disease need to improve their self-care behaviors, including following a proper diet, taking medications regularly, doing exercise, adhering to the orders of physicians, avoiding stressful situations, and doing regular check-ups [11]. Generally, the absence of self-care behaviors may affect the condition of patients and quality of life and can lead to adverse outcomes of HIV/AIDS [12 - 14].

Quality of life can be defined as a multidimensional concept, including physical and mental health, physical function, social function, and treatment satisfaction [15]. The basis of the quality of life is formed from objective factors (physical, mental and social function) and mental factors (inner well-being) [16 - 18]. Challenges in the management of chronic diseases such as HIV disease may result in reducing the quality of life. Therefore, recognition of related factors to improve the quality of life is highly important [15]. Besides, self-care behaviors, quality of life, and cognitive factors, including early maladaptive schemas, are significant factors in the cognitive roles among these patients. Early maladaptive schemas which can be conscious or unconscious are inner beliefs about him- or herself, others, and the universe [19]. Early maladaptive schemas are constant during life and form the cognitive basis of a person. Schemas lead an individual to organize his experience about the universe and actions [20].

Therefore, new research studies are trying to find an answer about the role of early maladaptive schemas in predicting self-care behaviors and the quality of life in PLWH. Another factor that is related to mental well-being is emotion regulation, which refers to the perception of emotions, modification of experiences, and expression of emotions. It was considered by scientists as an important factor to investigate mental and physical pathology [21, 22]. Emotion regulation strategies play a pivotal role in well-being and adaptation to stressful events [23 - 25]. One of the most common strategies is emotion regulation using cognitive methods. The main purpose of emotion regulation is to regulate or calm emotions and thus facilitate feeling better, helping in communication and relationship development. Cognitive emotion regulation strategies are defined as a reaction of individuals to negative events [26, 27]. These involve a re-interpretation of the emotion status [24]. Emotion regulation strategies may play an important role in intervention strategies [23, 28].

To the best of our knowledge, there are no other studies investigating the correlation of all psychological aspects in PLWH as a distinct model. Previous studies that investigated cognitive emotion regulation strategies had some weaknesses. Considering the importance of related factors which may affect the patients' quality of life and self-care behaviors, this descriptive, correlational study aimed to explore the potential mediating role of cognitive emotion regulation strategies in the relationships between early maladaptive schemas, quality of life, and self-care behavior in patients with HIV disease.

2. MATERIALS AND METHODS

2.1. Participants

In this cross-sectional, correlational study, two hundred and forty patients were selected through the convenience sampling method between April to September 2017, from a voluntary counseling center affiliated with the Medical School of Tehran University and University of Medical Sciences, as well as the Department of HIV Infection of Imam Khomeini Hospital.

The factors based on which eligible patients were recruited involved age over 18 years, confirmed HIV status either from medical records or testing, able to understand, read, and speak Farsi and providing informed consent; all the patients were inhabitants of Tehran.

2.2. Instruments

Young Schema Questionnaire-Short Form (YSQ-SF): this questionnaire was developed by Young (1998) and includes 75 questions. The questionnaire was designed to measure 15 scales and 5 early cognitive maladaptive schemas domains, including 1) Disconnection/Rejection consisting of Emotional Deprivation (ED), Abandonment/Instability (AB), Mistrust/Abuse (MA), Social Isolation/Alienation (SI), Defectiveness/Shame (DS); 2) Impaired Autonomy/Performance consisting of Dependency/Incompetence (DI), Vulnerability to Harm or Illness, Enmeshment/undeveloped self (EU), Social Undesirability (SU), Failure; 3) Impaired Limits consisting of Entitlement/Grandiosity (ET), Insufficient Self-Control/Self-Discipline (IS); 4) Other-Directedness consisting of Subjugation (SB), Self-Sacrifice, and 5) Overvigilance/Inhibition consisting of Emotional Inhibition (EI), and Unrelenting Standards/Hypercriticalness (US). Each schema has a different scale to measure it. Scores for each schema are estimated by counting the total number of items within each schema [29]. A high score demonstrates the significant presence of maladaptive schemas, and for each schema, the minimum score is 5 and the maximum score is 25. There could be a total score for each questionnaire, which is an aggregate of 15 schema scores, and it ranges from 75 to 375. The coefficient of confidence, as reported by Bartaf and Tian (2007), using the Alfa Cronbach factor for all tests is 0.96 and for subscales, it is more than 0.80. In Iran, Zolfaghari, Fatehi far, and Abedi (2008) performed short-form questionnaires study on 70 couples. Their Alfa Cronbach factor for the whole questionnaire was 0.94 [30].

Short form health survey (SF-36 questionnaire): health survey questionnaires could be used as a measurement tool to compare the quality of life in patients and healthy individuals [31]. The questionnaire consists of 8 subscales including Limitations in physical activities because of health problems, Limitations in social activities because of physical or emotional problems, Limitations in usual role activities because of physical health problems, Bodily pain, General mental health (psychological distress and well-being), Limitations in usual role activities because of emotional problems, Vitality (energy and fatigue), General health perceptions. The questionnaire has been translated by Montazeri, Gashtasbi, and Vahdani nia (2005). Evidence indicates the validity of the questionnaire. Except for the vitality subscale which has a 0.65 Alfa Cronbach factor, other coefficients consist of Alfa Cronbach

factor ranging from 0.77 to 0.90 [30].

Short Form of Cognitive Emotion Regulation Questionnaire (CERQ): the questionnaire was designed by Garnefski, Kraaij, and Spinhoven [24] to identify cognitive emotion regulation strategies someone applies after experiencing negative events or situations [32]. CERQ is a 36 item questionnaire consisting of 9 subscales including Self-blame, Other-blame, Rumination, Catastrophizing, Positive refocusing, Planning, Positive reappraisal, Putting into perspective, and Acceptance and it can be applied in different age groups [33]. Response options are based on the Likert scale ranging from 1 (not true at all) to 6 (this describes me perfectly) [29]. Each subscale consists of 2 sub-divisions. The Iranian version of CERQ was developed by Hasani (2011). Alfa Cronbach factor ranges from 0.68 to 0.82, which shows high reliability of the questionnaire [30].

Self-care behavior Questionnaire: to measure self-care behaviors in PLWH, researchers designed a questionnaire to identify the category schemes of self-care strategies. The strategies were scaled into eight categories consisting of medication, self-comforting, complementary treatment, daily thoughts and activities, diet changing, help-seeking, spiritual care, and exercise [34]. The questionnaire has been applied to 30 patients living with HIV/AIDS in Tehran. Alfa Cronbach factor for this scale was 0.89.

2.3. Ethical Considerations

All participants were asked to sign an informed consent form. Also, the study protocol was approved by the Institutional Review Board (IRB) of Tehran University of Medical Sciences (TUMS) with Id no. IR.TUMS.VCR.REC.1396.3302.

3. RESULTS

Two hundred forty patients were selected through the convenient sampling method. 116 of the participants (48.3%) were female and 124 of them (51.7%) were male. The mean age was 37 years with a standard deviation of 7.8. In terms of educational level, 85 (35.4%) did not have a diploma, 94 (39.2%) had a diploma, 49 (20.4%) had bachelor's and 12 (5%) had a master's degree and higher. Descriptive indicators are shown in Table 1.

As shown in Table 2, there was a significant negative relationship between the five areas of early maladaptive schema and positive cognitive emotion regulation strategies, self-care behaviors and, quality of life. Furthermore, there was a significant positive relationship between five areas of early maladaptive schemas and negative cognitive emotion regulation strategies. Moreover, there was a significant positive relationship between quality of life and self-care behaviors.

Table 1. Descriptive features of variables of people living with HIV, VCT center, 2017.

| | Variable | Mean± SD | Min | Max |
|--|----------------------------------|-------------|-----|-----|
| Maladaptive schemas | Emotion Deprivation (ED) | 14.55±7.23 | 5 | 30 |
| | Abandonment/Instability (AB) | 17.03±6.80 | 5 | 30 |
| | Mistrust/Abuse (MA) | 14.32±6.51 | 5 | 29 |
| | Social Isolation/Alienation (SI) | 13.92±6.25 | 5 | 29 |
| | Defectiveness/Shame (DS) | 12.07±5.44 | 5 | 30 |
| | Failure | 12.71±5.83 | 5 | 25 |
| | Dependency/Incompetence (DI) | 11.45±4.73 | 5 | 25 |
| | Vulnerability to Harm or Illness | 12.77±6.34 | 5 | 30 |
| | Subjugation (SB) | 13.17±6.06 | 5 | 29 |
| | Self-Sacrifice | 20.35±5.01 | 5 | 30 |
| | Emotion Inhibition (EI) | 15.39±6.05 | 5 | 27 |
| | Refractory criterion | 18.64±4.75 | 5 | 30 |
| | Entitlement/Grandiosity (ET) | 16.02±5.10 | 5 | 28 |
| Insufficient Self-Control (IS)/Self-Discipline | 15.07±5.45 | 5 | 28 | |
| Regulation strategies | Self-Blame | 11.60±4.20 | 4 | 20 |
| | Acceptance | 14.09±3.30 | 7 | 20 |
| | Rumination | 13.29±3.68 | 5 | 20 |
| | Positive refocusing | 13.77±4.04 | 4 | 20 |
| | Planning | 14.67±3.59 | 4 | 20 |
| | Positive re-appraisal | 14.29±3.87 | 4 | 20 |
| | Putting into perspective | 13.51±3.91 | 4 | 20 |
| | Catastrophizing | 11.65±3.70 | 4 | 20 |
| | Other-blame | 9.06±3.94 | 4 | 20 |
| Total score | 115.97±19.33 | 68 | 154 | |
| Quality of life | Total score | 94.85±10.46 | 65 | 109 |
| Self-care behaviors | Total score | 56.22±8.46 | 39 | 72 |

Table 2. Correlation matrix of variables of people living with HIV, VCT center, 2017.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------------------------|----------|----------|----------|----------|----------|---------|--------|--------|---|
| Rejection schema | 1 | | | | | | | | |
| Disrupted function | -0.114 | 1 | | | | | | | |
| Disrupted restriction | 0.050 | 0.610** | 1 | | | | | | |
| To be guided | 0.042 | 0.617** | 0.836** | 1 | | | | | |
| Vigilance | 0.025 | 0.604** | 0.885** | 0.859** | 1 | | | | |
| Positive emotion regulation | 0.014 | 0.350** | 0.075 | 0.012 | 0.032 | 1 | | | |
| Negative emotion regulation | 0.579** | -0.510** | -0.422** | -0.356** | -0.330** | -0.141 | 1 | | |
| Self-care | 0.017 | 0.124 | -0.220** | -0.269** | -0.279** | 0.803** | -0.415 | 1 | |
| Quality of life | -0.249** | 0.329** | 0.006 | -0.050 | -0.031 | 0.769** | -0.554 | 0.195* | 1 |

**P<0.01, *P<0.05

3.1. Structural model

R² is an endogenous variable of the model. R² is a factor that shows the effect of an exogenous variable on an endogenous one. An increase in the R² amount shows a better fitting of the model. According to Table 3, the R² factor for self-care behaviors, positive emotions, negative emotions, and quality of life was 0.918, 0.212, 0.308, and 0.849, respectively. Self-care behaviors involved a very severe factor, positive emotions were weak, negative emotions were at an intermediate level, and the quality of life also included a very severe factor.

Effectiveness factor (f²) was used for endogenous structures that are influenced by more than one exogenous variable, including self-care behaviors, positive emotions,

negative emotions, and the quality of life in this study. Cohen was defined as a small, medium, and large effect size of one variable on another with the values of 0.02, 0.15, and 0.35, respectively. The highest f² amount belonged to the effect of positive emotions on self-care behaviors, which were defined as 0.446 and indicated strong relations between these variables. Load factors are shown in Fig. (1).

Table 3. Fitting structural model criterion.

| Variables | R ² | Q ² |
|---------------------|----------------|----------------|
| Self-Care Behaviors | 0.918 | 0.619 |
| Positive Emotions | 0.212 | 0.242 |
| Negative Emotions | 0.308 | 0.249 |
| Quality of Life | 0.849 | 0.656 |

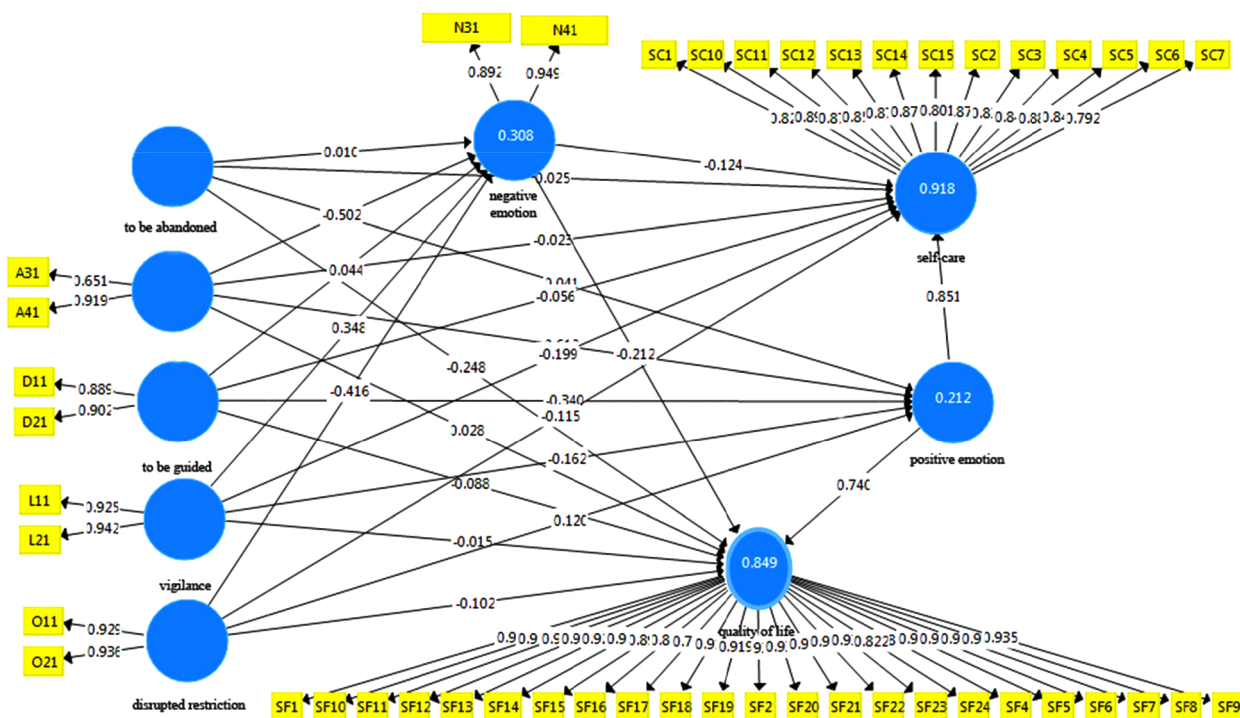


Fig. (1). Partial least squares structural equation modeling.

In structural equations, load factor between questions and variables and route coefficients between variables show minimum partial least squares structural equation modeling. Hence, all factor loads are more than 0.5 and this indicates a high reliability of these factor loads.

4. DISCUSSION

The objective of this descriptive and correlational study was to explore the potential mediating role of cognitive emotion regulation strategies in the relationships between early maladaptive schemas, quality of life, and self-care behavior in patients living with HIV/AIDS. There was found a significant negative relationship between early maladaptive schemas disjunction and rejection, impaired restriction, another direction and vigilance, and quality of life in the PLWH. Our findings are in line with other studies which showed that there was a relationship between early maladaptive schemas and the quality of life among chronic patients [35, 36].

The study demonstrated a higher score in disjunction and rejection, impaired restriction, another direction and vigilance in PLWH, and reduction in the quality of life among those patients and vice versa; as those schemas decrease, subsequently the quality of life improves. Patients who have higher scores in the early maladaptive schemas, disjunction and rejection, are not able to communicate easily with others. Inability to communicate with others results in a lack of meeting the primary and basic needs, including safety, peace, acceptance, protection, stability, sympathy, and love. Besides, according to impaired restriction, patients who obtain higher scores have weaker responsibility sense, long term goals, and collaboration skills. Due to this inability, their quality of life will be decreased. Based on the significant relationship between direction and quality of life, patients who get higher scores emphasize more on others' satisfaction rather than themselves. Generally, the quality of life in PLWH could be defined according to the quality of life theory of Frish. In the quality of life theory, life satisfaction is equated with the quality of life, which refers to a person's subjective evaluation of the degree to which his or her most important needs, goals, and wishes have been fulfilled [37]. Factors that increase the probability of the occurrence of dissatisfaction or depression refer to Vulnerability factors. According to Frish theory, vulnerability factors include inadequate coping skills and interpersonal competencies related to valued areas of life, pessimism, neuroticism, external locus of control, introversion, depressive schemas, self-focused attention, low self-esteem, self-blame, and criticism for negative outcomes [38]. J.E.Young's (1995) Early Maladaptive Schemas (EMS) are assumed to be highly stable and enduring beliefs that are responsible for the persistence of poor treatment response to a variety of clinical problems [39]. Early loss experience, negative experiences of parents, inattentive or hyper-protective parents lead to inefficient adaptation, and patients may not be able to be independent. Indeed, Frish theory has been taken from the Beck theory (1967), which proposed that a person's reaction to specific offending thoughts may contribute to abnormality. Beck (1967) described the concept of a cognitive schema as "... a cognitive structure for screening, coding, and evaluating the stimuli that impinge on the organism ...", emphasizing the organizational and information processing function of schemas [39]. Fostering better quality of life is a final aim of all therapies, which help clients adapt to chronic or

short-term physical illness and disability [40].

Furthermore, there was observed a significant negative relationship between early maladaptive schemas, impaired restriction, another direction, and vigilance with self-care behaviors in the PLWH. Any increase in higher values of maladaptive schemas results in reduction of self-care behaviors and vice versa. Therefore, reducing early maladaptive schemas results in improving self-care behaviors. The results of our study are also in agreement with other studies including that of Walker (2009) [41] based on the relationship between early maladaptive schemas and self-care behaviors. As an explanation for the significant negative relationship between early maladaptive schemas, impaired restriction and self-care behaviors, patients who achieve higher scores are less responsible for their HIV diagnosis and long-term goals of dealing with the disease. In fact, they are less capable of disease management due to early maladaptive schemas and lack of personal planning or self-management. It results in a reduction of self-care behaviors. Regarding the significant relationship between another direction and self-care behaviors, the latter needs full attention and concentration on symptoms, signs, diet, and orders of the doctors; hence, patients who achieve higher scores in another direction care about others' satisfaction more than themselves. Therefore, self-care behaviors may decrease. Due to the significant relationship between vigilance and self-care behaviors, patients having higher scores may have higher negativism, pessimism, emotional inhibition, and self-punishment. In addition, they concentrate more on the negative impacts of the disease, including death, guilt, loss and betrayal, and subsequently, they result in reducing the quality of life. According to Lontal *et al.*, the disease is defined based on the patient's beliefs about a disease that can form a pattern to understand, deal with, and adapt to it [42]. The patients who have higher maladaptive schema scores achieve lower self-adjustment. Therefore, they are not able to solve problems, which can result in the absence of self-care behaviors.

A significant positive relationship was observed between positive cognitive emotion regulation strategies and quality of life. Also, there was a negative and significant relationship between negative cognitive emotion regulation strategies and quality of life. Results of the current study are consistent with other studies, including those of Baan and Kraaij (2005) [43], Garnefski *et al.* (2007) [44], Garnefski and Schroevers *et al.* (2008) [45], Bahrami *et al.* (2015) [46] based on the relationship between cognitive emotion regulation strategies and quality of life in other chronic diseases.

Emotions are considered as important and effective psychological factors that affect the quality of life in patients with chronic diseases. Therefore, emotions can play an important role in different aspects of life, including adaptation and coping with stressful conditions. Therefore, emotion regulation is the basic principle at the beginning of assessing and organizing adaptive behaviors and to avoid negative emotions as well as maladaptive behaviors [47, 24]. Our findings showed that there was a correlation between emotion regulation strategies and the quality of life in PLWH; hence, patients applied adaptive strategies and had a different point of view toward their disease, which can affect the quality of life. In other words, when patients are diagnosed with HIV disease, they could cope with the disease if there are acceptance

strategies. This adaptation may result in higher life-expectancy, more successful treatment, less anxiety as well as depression, and finally improved quality of life. Emotion regulation strategies are indicated as important factors in psychological well-being which affect adapting to stressful conditions and quality of life [24, 28].

There was a significant, positive relationship found between positive cognitive emotion regulation strategies and self-care behaviors. Also, there was a significant, inverse relationship between negative cognitive emotion regulation strategies and self-care behaviors. Since HIV infection is defined as a painful chronic disease, it may be accompanied by psychological and negative social-cultural consequences that might result in negative effects on self-care behaviors and quality of life. Patients should be ready to deal with disease outcomes. Also, they might have a better quality of life as far as they use positive cognitive emotion regulation strategies to adapt to the disease.

Results of the statistical modeling showed that there was a significant, indirect effect of early maladaptive schemas, another direction, impaired function, and self-regulation, on the quality of life and positive emotion regulation strategies mediating variables.

Patients who have acquired higher scores in another direction and impaired functions were not found to be independent in care. Since characterological patients usually lack psychological flexibility, they are much less responsive to cognitive-behavioral techniques and frequently do not make meaningful changes in a short period of time [48]. They do ask for attention and support. Anxiety may lead to mental rumination and depression, which results in reducing the quality of life. Higher scores in early maladaptive schemas may affect positive emotions. Therefore, patients try to act upon inflexible self-rules, which lead to unhappiness, mental health issues, and reduced quality of life. The mediating role of early maladaptive schemas and the quality of life in patients' recognition of peripheral phenomena might affect emotions. Therefore, when patients apply positive emotion regulation strategies, their quality of life improves, and vice versa, when patients apply negative emotion regulation strategies, their quality of life reduces.

CONCLUSION

Besides, our findings showed that patients who have gotten higher maladaptive schemas used more inefficient cognitive emotion regulation strategies that might result in reduced self-care behaviors. The mediating role of early maladaptive schemas and self-care behaviors in patients' recognition of peripheral phenomena might affect emotions. Therefore, when patients apply positive emotion regulation strategies, they hold better self-care behaviors, and when patients use negative emotion regulation strategies, they hold limited self-care behaviors.

Some limitations inhibit the generalizability of the current study. First, the current study was a temporary modality; hence, the cause and effect inference scheme should be concerned. Accordingly, the suggestion to scientists is to examine the relationship between multiple psychological structures based on the assumed structural pattern in futuristic scientific research, which is done at different intervals. Therefore, it is

recommended to collect information through the research and the goal is to get notified of selected functional feature variability on the assumed model. Second, the self-report strategy instead of the study of actual behavior may encourage participants to use social confirmation methods and avoid notoriety. Third, according to the selected conceptual combination in the assumed model, it is recommended to test alternative models that increase the informing capacities of the study. According to Weston and Gore (2006) [49], choosing alternative models in structural equation statistics such as comparing the partially mediated model with a fully mediated model is an explainable choice. Fourth, in the current study with covariance between remaining errors for hidden factors in the assumed model, it has been tried to improve indicators. Model modification selection may reduce generalizability capacity.

Despite the limitations, this study has provided useful information regarding the relationship between early maladaptive schemas and cognitive emotion regulation strategies and quality of life and self-care behaviors among PLWH. It is more effective to predict the quality of life and self-care behaviors and treatment modalities among PLWH according to the early maladaptive schemas and cognitive emotion regulation strategies. Furthermore, most of the PLWH in Iran have borderline and anti-social personality traits. Therefore, psychologists, psychotherapists, and other interventional therapists can treat disorders, including depression, anxiety, stress, and other health-related disorders, according to the early maladaptive schemas and cognitive emotion regulation strategies.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study protocol was approved by the Institutional Review Board (IRB) of Tehran University of Medical Sciences (TUMS), Iran, with Id no. IR.TUMS.VCR.REC.1396.3302.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

All participants provided an informed consent form.

AVAILABILITY OF DATA AND MATERIALS:

Not applicable.

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CONFLICT OF INTEREST

The author declares no conflict of interest, financial or otherwise.

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