Clinical Psychology: Research and Practice Innovations, Vol. 17, Issue 4, No. 68, 2025, 49-65

Clinical Psychology: Research and Practice Innovations

Online ISSN: 3115-9508

Homepage: https://cprpi.semnan.ac.ir

Semnan University

The Mediating Role of Alexithymia in the Relationship between Cognitive Flexibility with Quality of Life and Obsessive–Compulsive Disorder of Patients with Psoriasis

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ARTICLE INFO

Article type:
Research Article

Article history:
Received: 03 January 2025
Received in revised form: 03 June 2025
Accepted: 06 June 2025
Published Online: 31 December 2025

Keywords:
Alexithymia,
Cognitive Flexibility,
Obsessive–Compulsive Disorder,
Psoriasis,
Quality of Life

ABSTRACT

Background: The purpose of the present study was to investigate mediating role of alexithymia in the relationship between cognitive flexibility with quality of life and obsessive–compulsive disorder of patients with psoriasis. This was descriptive-correlation research.

Method: The statistical population of the study was patients with psoriasis of Tehran city in year 2024. The sample size was selected based on Klein's model and with subjectivw sampling of 200 patients with psoriasis. Data collection tools include the dermatology life quality index (DLQI), the Maudsley obsessive–compulsive inventory (MOCI), cognitive flexibility inventory (CFI) and Toronto alexithymia scale (TAS). Data were analyzed using Pearson correlation and structural equations modeling.

Results: The results showed direct effect of cognitive flexibility on quality of life (β= -0.84 and sig= 0.001) and obsessive–compulsive disorder (β= -0.73). Also, the final research model had a good fit (RMSEA= 0.03, p< 0.05) and 98% of the variance of obsessive–compulsive disorder and 98% of the variance of quality of life is explained by cognitive flexibility with mediating role of alexithymia.

Conclusion: This study deepened our understanding of the possible mechanisms of of quality of life and obsessive–compulsive disorder in patients with psoriasis. For those suffering from low quality of life and obsessive–compulsive disorder, cognitive inflexibility and alexithymia may be a coping strategy that predisposes people with psoriasis to a less quality of life and obsessive–compulsive disorder.

Citation: Mahmodian Fard, F., & Eskandari, H. (2025). The Mediating Role of Alexithymia in the Relationship between Cognitive Flexibility with Quality of Life and Obsessive–Compulsive Disorder of Patients with Psoriasis. *Clinical Psychology: Research and Practice Innovations*, 17(4), 49-65.

DOI: 10.22075/jcp.2025.36277.3080

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Extended Abstract

Introduction

Based on the research background, both quality of life and obsessive-compulsive disorder can be affected by cognitive flexibility, but what is important is to address the role of mediating variables in the relationships between cognitive flexibility and quality of life and obsessive-compulsive disorder, which in this study has examined the mediating role of alexithymia, because alexithymia can be affected by the antecedents of this study, namely cognitive flexibility, and can also affect the outcomes of this study, namely quality of life and obsessive-compulsive disorder. Therefore, alexithymia can be a suitable mediating variable for the present study. Alexithymia is a subclinical condition characterized by a low degree of emotional self-awarenes and is a multifaceted construct that includes difficulties in identifying and describing one's own emotions and distinguishing emotional experiences from internal body signals, and a thinking style that focuses more on external aspects of reality and less on internal experiences, especially emotions. A lack of imagination or fantasy world, along with a lack of positive emotions and a high prevalence of negative emotions, have been described as characteristics of alexithymia. The purpose of the present study was to investigate mediating role of alexithymia in the relationship between cognitive flexibility with quality of life and obsessive–compulsive disorder of patients with psoriasis.

Method

This was descriptive-correlation research. The statistical population of the study was patients with psoriasis of Tehran city in year 2024. The sample size was selected based on Klein's model (2023) and with subjectivw sampling of 200 patients with psoriasis. The age range of 20 to 50 years, diagnosis of psoriasis by a specialist physician, at least 6 to 12 months of illness, having at least a high school diploma, no other chronic physical illnesses, and no psychiatric disorders (based on self-report) were the criteria for inclusion in the study. Substance abuse and psychiatric medication, failure to cooperate in answering all research questions, and simultaneous receipt of psychotherapy were the criteria for exclusion from the study. After being informed about the purpose of the study, the method of implementation, the principle of confidentiality, the right to choose to cooperate, and the right to withdraw while answering the questions, the patients with psoriasis were given questionnaires to answer. Data collection tools include the dermatology life quality index (DLQI) of Finlay & Khan (1994), the Maudsley obsessive–compulsive inventory (MOCI) of Hodgson and Rachman (1977), cognitive flexibility inventory (CFI) of Dennis and Vander Wal (2010) and Toronto alexithymia scale (TAS) of Bagby and et al (1994). At the descriptive level, mean and standard deviation were used to measure the research variables. Pearson correlation coefficient and structural equation modeling were used to analyze the data. The data analysis software was SPSS and AMOS version 28.

Results

The number of respondents was 220, and no outliers or outliers were identified in this study. In terms of age, the mean and standard deviation were 34.54 and 8.78, respectively. 24 people (12%) had a low-level diploma, 56 people (28%) had a diploma, 40 people (20%) had a bachelor's degree, 56 people (28%) had a master's degree, and 24 people (12%) had a doctorate. Also, 48 people (24%) were male and 152 people (76%) were female. In addition, 32 people (32%) were employees, 24 people (12%) were freelancers, and 112 people (56%) were housewives. To measure the univariate normality of the data, the values of skewness and kurtosis are used, the values of which should be in the range of -2 to +2, which indicates the univariate normality of the score distribution, which in this study, the values of skewness and kurtosis were in the

range of -2 to +2. Also, to examine the multivariate normality of the data, the "standardized Merdia coefficient of kurtosis" is used, the value obtained for the Merdia coefficient should be less than 4. Based on the results, the Merdia coefficient value was 2.63, which indicates the multivariate normality of the score distribution. Another assumption of structural equation modeling is the assumption of independence of errors. The value of the Durbin-Watson statistic was between 1.5 and 2.5, so the independence of errors can be accepted. The assumption of multiple collinearity was also examined and none of the tolerance statistic values were smaller than the permissible limit of 0.1 and none of the variance inflation factor values were larger than the permissible limit of 10. Therefore, there was no multiple collinearity. The results showed that the standardized and direct coefficient of cognitive flexibility (β= -0.84 and sig= 0.001) and alexithymia (β= 0.81 and sig= 0.001) were significant on quality of life. The standardized and direct coefficient of cognitive flexibility (β= -0.73 and sig= 0.001) and alexithymia (β= 0.86 and sig= 0.001) were significant on obsessive-compulsive disorder. The standardized and direct coefficient of cognitive flexibility (β= -0.67 and sig= 0.001) was significant on alexithymia. Also, alexithymia also plays a mediating role in the relationship between psychological flexibility, quality of life, and obsessive-compulsive disorder and 98% of the variance of obsessive–compulsive disorder and 99% of the variance of quality of life is explained by cognitive flexibility with mediating role of alexithymia.

Conclusion

When people experience more positive psychological well-being and mental health, they are better able to manage their emotions, better able to describe and identify their feelings, and when they describe and identify their feelings, they are less likely to suffer from emotional alexithymia. Therefore, it can be said that people with emotional alexithymia, for various reasons such as personality traits, have problems regulating emotions, especially in conflict-filled psychological situations, which directly predisposes the person to the inability to regulate obsessive-compulsive disorder. Also, psychological flexibility makes people use adaptive strategies when facing problems, become aware of their problems, try to eliminate those problems, respond appropriately to the demands of the environment, and move towards personal and social values, which creates a sense of constructiveness in the person and ultimately improves the management of emotions and the ability of the person to describe and identify their feelings. Therefore, a person who suffers from less emotional alexithymia has a greater ability to identify feelings and describe emotional states, and this condition causes them to experience better psychological and emotional functions and their quality of life becomes better than others. According to the findings of this research and the role of cognitive flexibility and alexithymia, the use of emotion regulation training and acceptance and commitment therapy, to improve the quality of life and obsessive–compulsive disorder of patients with psoriasis.

Ethical Considerations

Ethics Code: The Ethics Committee of Science and Research Branch, Islamic Azad University, Tehran approved this study (IR.IAU.SRB.REC.1402.112).

Financial support: This study did not have any funds.

Authors' Contributions: The conceptualization, methodology, data collection, formal analysis, writing – original draft, writing – review & editing was done by the first author as a master's student and the supervision and project administration: was done by the second author as a supervisor.

Conflict of Interest: None declared.

Acknowledgments: We thank and appreciate all the people and participants (patients with psoriasis of Tehran city) who helped us in conducting this research.

Introduction

Psoriasis is a chronic inflammatory skin disease, with a prevalence ranging from 0.1% to 8% depending on geographic region, affecting more than 125 million people worldwide (1). It can also be described as a chronic inflammatory condition (eczema) of unknown etiology, which, according to the most recent studies, is classified as a systemic disease (2). Psoriasis primarily affects adults and appears to be more prevalent in Asian countries (3). Due to the severity of its symptoms, associated comorbidities, and the lack of effective treatments, it can exert profound negative and debilitating effects on quality of life (4,5). Quality of life is defined as individuals' perception of their position in life within the context of the cultural and value systems in which they live, in relation to their goals, expectations, standards, and priorities. It is an entirely subjective concept, not directly observable by others, and is grounded in individuals' perception of various aspects of life (6). Impairment in quality of life is often severe among patients with psoriasis (7), and improvement in disease severity is associated with enhanced overall well-being (8, 9). It can also be noted that the prevalence of psoriasis varies due to country-specific factors and methodological differences in epidemiological studies; however, a global analysis has shown that it ranges from 0.4% to nearly 3% (10). Given the growth and aging of the global population, and the fact that psoriasis primarily affects adults, the burden associated with psoriasis is likely to continue increasing (1). Among patients, the disease may involve the skin, nails, bones, tendons, ligaments, synovial membrane, and joints (11, 12). Such conditions can negatively affect patients' quality of life, leading them to experience lower and poorer health-related quality of life compared to the general population (13, 14). Moreover, significant associations have been identified between the occurrence of autoimmune diseases and obsessive–compulsive disorder (OCD). However, the relationship between OCD and dermatological diseases has not been thoroughly investigated (15). Obsessive-compulsive disorder (OCD) is a neuropsychiatric condition characterized primarily by obsessions and/or compulsions, in which repetitive behaviors or mental acts are performed to prevent or reduce distress or to avert potentially feared consequences (16). Individuals with obsessive–compulsive disorder and related disorders -primarily trichotillomania, body dysmorphic disorder, and excoriation (skin-picking) disorder- often seek dermatological care due to hair- and skin-related symptoms. Therefore, it is crucial for dermatologists to be familiar with these conditions (17). These conditions may be associated with lower health-related quality of life. Research has demonstrated that obsessive–compulsive disorder is a serious disabling condition that exerts a significant negative impact on individuals and their families, leading to marked functional impairment and reduced quality of life (18). Previous studies have reported that individuals with obsessive–compulsive disorder experience poorer health-related quality of life compared to the general population, as well as to those with other psychiatric and medical disorders (19). Various factors may be associated with quality of life, among which cognitive flexibility can be mentioned (20, 21, 22). Cognitive flexibility refers to the mental capacity that enables individuals to adapt effectively to changing tasks and/or environmental demands, and it is thought to arise from the interaction of higher-order executive functions (23). Furthermore, cognitive flexibility is a vital cognitive function that allows individuals to shift their cognitive strategies, simultaneously consider two or more aspects of an object, idea, or complex situation, and appropriately adapt their behavioral strategies (24).

Research has shown that cognitive flexibility may be associated with quality of life, such that individuals with relatively low cognitive flexibility exhibit poorer

functioning, which in turn negatively affects their quality of life (25).

Based on the above, both quality of life (20, 21, 22) and obsessive–compulsive disorder (26, 27) may be influenced by cognitive flexibility. However, the most important fact is to address the role of mediating variables in the relationship between cognitive flexibility, quality of life, and obsessive-compulsive disorder. In this study, the mediating role of alexithymia is examined, as alexithymia may be affected by the antecedent variable of this research, namely cognitive flexibility (28), while also influencing the outcome variables, including quality of life (29) and obsessive-compulsive disorder (30). For this reason, alexithymia can serve as an appropriate mediating variable for the current study. Alexithymia has been described as a condition characterized by a low level of emotional self-awareness (31) and is considered a multifaceted construct. It involves difficulties in identifying and describing one's own emotions, distinguishing emotional experiences from internal bodily signals, and is associated with a thinking style that focuses more on external aspects of reality and less on internal experiences, particularly emotions (32). A lack of imagination or fantasy life, together with an absence of positive emotions and a high prevalence of negative emotions, has been described as characteristic of alexithymia (33).

Based on the abovementioned about the importance and necessity of this study, it can be stated that psoriasis is an immune-related inflammatory skin disorder with a genetic predisposition, intertwined with metabolic factors, that affects more than 125 million people worldwide and imposes a considerable disease burden (34). Over the past three decades, the prevalence of psoriasis has shown a gradual increase without a clear explanation (35, 36). Furthermore, research indicates that these patients experience significantly higher levels of depression and anxiety (37), impaired sexual functioning (38), reduced quality of life (39), lower levels of psychological flexibility compared to healthy individuals (40), and more negative body image (41). Such conditions highlight the importance and necessity of investigating the factors influencing quality of life and obsessive-compulsive disorder in patients with psoriasis. Therefore, conducting such research is of great importance, and its findings can be utilized by psychologists and counselors working in the field of physical health problems and dermatological diseases to achieve their professional goals. Therefore, based on the points discussed, the research question is as follows: Does alexithymia mediate the relationship between cognitive flexibility, quality of life, and obsessive-compulsive disorder in patients with psoriasis?

Method

Research Design: The present study employed a descriptive–correlational design and was conducted using structural equation modeling (SEM).

Participants: The study population consisted of all patients with psoriasis who attended clinics and hospitals in Tehran in 2024. Although there is no general consensus regarding the required sample size for factor analysis and structural equation modeling, many researchers consider a minimum of 200 participants necessary. Kline (42) also argues that 20 participants are required for each variable; therefore, based on Kline's recommendation and considering the possibility of attrition in some questionnaires, a sample size of 200 was selected for the present study. Participants were selected using purposive sampling. On this basis, the required number of patients was recruited from clinics and hospitals in Tehran, where they were provided with the questionnaires and asked to complete them. Inclusion criteria were: age between 20 and 50 years, a confirmed diagnosis of psoriasis by a dermatologist, a disease duration of at least 6 to 12 months, a

minimum educational level of high school diploma, absence of other chronic physical illnesses, and absence of psychiatric disorders (based on self-report). Exclusion criteria included substance abuse or use of psychiatric medications, failure to complete all research questionnaires, and receiving concurrent psychotherapy. Prior to participation, patients with psoriasis were informed about the purpose of the study, the procedures, the principle of confidentiality, their right to choose whether to participate, and their right to withdraw while completing the questionnaires. In addition, explaining the purpose of the study and assuring participants that their questionnaires would be analyzed collectively were among the ethical principles observed in this research. Furthermore, ethical considerations such as confidentiality, privacy, and protection of personal rights were upheld, and participation in the study posed no potential harm to the participants. This study was also approved by the Ethics Committee under the code IR.IAU.SRB.REC.1402.112. At the descriptive level, means and standard deviations were used to assess the study variables. For data analysis, Pearson's correlation coefficient and structural equation modeling were employed. Data were analyzed using SPSS and AMOS software, version 28.

Instruments

1. Dermatology Life Quality Index (DLQI): Developed by Finlay and Khan (43), this scale consists of 10 items that assess the impact of skin disease on various aspects of a patient's life. Responses are rated on a four-point scale from 0 to 3. Scoring is as follows: "very much" = 3, "a lot" = 2, "a little" = 1, and "not at all" = 0. The total score ranges from 0 to 30, with higher scores indicating poorer quality of life. The cutoff point is 21 and above (44). The authors of the questionnaire assessed its reliability using Cronbach's alpha and reported a coefficient of 0.99 (43). In a study conducted in Iran, the reliability of the questionnaire was also evaluated with Cronbach's alpha, yielding an overall coefficient of 0.91 for all items (45). In other studies, the applicability of exploratory factor analysis was examined using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity. The KMO value (0.92) indicated the adequacy of the sample size for conducting factor analysis. Furthermore, the statistical significance of Bartlett's test of sphericity (1758.842, sig = 0.001) indicated that the scale items were appropriate for factor analysis, explaining 49.58% of the total variance. Reliability was examined, with Cronbach's alpha coefficients ranging from 0.89 to 0.90. Construct validity was evaluated through correlations between the total score and the individual items, yielding Pearson correlation coefficients in the range of 0.47 to 0.83 (44). In the present study, reliability was recalculated, and Cronbach's alpha for all items was obtained as 0.80.

2. Maudsley Obsessive–Compulsive Inventory (MOCI): This inventory was developed by Hodgson and Rachman (46) and consists of 30 items, measuring four subscales: checking, washing, slowness, and doubting. The items are presented in a true-false format, with each response consistent with the answer key receiving a score of 1, and all other responses scored as 0. This scale is designed such that an individual with pronounced obsessive-compulsive tendencies would answer 'true' to half of the items and 'false' to the other half. The total score ranges from 0 to 30, with higher scores indicating greater obsessive–compulsive symptoms. The authors of the inventory examined its internal consistency using Cronbach's alpha and reported coefficients of 0.70 for checking, 0.70 for washing, 0.80 for slowness, and 0.70 for doubting (46). In Iran, its validity and reliability were assessed, and reliability was calculated using the Kuder–Richardson method, yielding a coefficient of 0.81 (47). Concurrent validity was evaluated with the Toronto Alexithymia Scale (TAS) developed by Bagby and

colleagues (48), and Pearson correlation coefficients ranging from 0.13 to 0.14 were obtained, which were statistically significant at the 0.01 level (30). In the present study, its reliability was calculated, and Cronbach's alpha for all items was obtained as 0.92.

3. Cognitive Flexibility Inventory (CFI): This inventory was developed by Dennis and Vander Wal (49) and consists of 20 items. It measures two components: problem-solving processing, assessed by items 1, 3, 5, 6, 8, 10, 12, 13, 14, 15, 16, 18, and 19; and perception of controllability, assessed by items 2, 4, 7, 9, 11, and 17. Item 20 does not belong to either of the components and therefore is not included in the scoring. The inventory is scored on a 7-point Likert scale, such that 'strongly disagree' receives a score of 1, 'disagree' a score of 2, 'slightly disagree' a score of 3, 'neutral' a score of 4, 'slightly agree' a score of 5, 'agree' a score of 6, and 'strongly agree' a score of 7. Items 2, 4, 7, 9, 11, and 17 are reverse-scored. The authors of the inventory assessed its reliability using Cronbach's alpha, obtaining coefficients of 0.84 for problem-solving processing, 0.91 for perception of controllability, and 0.91 for the total scale. To examine validity, Pearson correlation coefficients were calculated between this inventory and the Beck Depression Inventory-II (BDI-II) developed by Beck et al. (50), yielding a coefficient of -0.39, which was statistically significant at the 0.01 level, indicating concurrent validity (49). This inventory was translated and standardized in Iran, where its reliability was assessed using Cronbach's alpha. The coefficients obtained were 0.89 for problem-solving processing, 0.78 for perception of controllability, and 0.81 for the total inventory. Validity was examined using both exploratory and confirmatory factor analyses. The exploratory factor analysis showed that the factors could explain 54% of the total variance. The results of confirmatory factor analysis indicated that the chi-square to degrees of freedom ratio (χ^2/df), the adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) were 2.059, 0.854, 0.885, and 0.066, respectively (51). In the present study, its reliability was calculated, and Cronbach's alpha for all items was obtained as 0.76.

4. Toronto Alexithymia Scale (TAS): This scale was developed by Bagby et al. (48) and consists of 20 items, measuring three subcomponents: difficulty identifying feelings (items 1, 3, 6, 7, 9, 13, and 14); difficulty describing feelings (items 2, 4, 11, 12, and 17); and externally oriented thinking (items 5, 8, 10, 15, 16, 18, 19, and 20). Scoring is based on a five-point Likert scale, such that 'strongly disagree' is scored 1, 'disagree (somewhat disagree)' is scored 2, 'neither agree nor disagree' is scored 3, 'agree (somewhat agree)' is scored 4, and 'strongly agree' is scored 5 (52). Items 4, 5, 10, 18, and 19 are reverse-scored, such that 'strongly disagree' is scored 5, 'disagree' 4, 'neither agree nor disagree' 3, 'agree' 2, and 'strongly agree' 1 (53). A score above 61 has been considered the cutoff point for the scale (54). In Iran, internal consistency was examined using Cronbach's alpha, yielding a coefficient of 0.71 (55). Convergent validity of the alexithymia scale with the Pines Marital Disaffection Scale (56) was reported with a correlation coefficient of 0.57, which was statistically significant at the 0.01 level (57). In studies conducted outside Iran, Cronbach's alpha coefficients ranging from 0.83 to 0.89 have been reported (58). In another study, Cronbach's alpha was reported as 0.77, indicating very good reliability (59). In the present study, reliability was calculated, and Cronbach's alpha for all items was obtained as 0.90.

Research implementation process: No financial compensation was provided to patients with psoriasis who participated in the study at clinics and hospitals in Tehran; therefore, obtaining informed consent was prioritized. After signing the informed consent form, participants were asked to complete the questionnaire items. In this survey, demographic characteristics were

collected. Data collection lasted for one month, and completing the questionnaires took an average of 25 minutes per participant. Furthermore, the research procedure and all stages of the study were conducted in accordance with established testing guidelines and regulations.

Results

A total of 200 individuals participated in the study, and no outliers or extreme data were identified. The mean age of participants was 34.54 years with a standard deviation of 8.78. Among the participants, 24 individuals (12%) had less than a high school diploma, 56 (28%) held a high school diploma, 40 (20%) had a bachelor's degree, 56 (28%) a master's degree, and 24 (12%) a doctoral degree. In terms of occupation, 32 participants (16%) were employees, 24 (12%) were self-employed, and 112 (56%) were homemakers. Table 1 presents the descriptive indices (mean and standard deviation) as well as the univariate and multivariate normality of the study variables. Table 1 represents the mean, standard deviation, and normality of the study variables. To assess univariate normality, skewness and kurtosis values were examined, which should fall within the range of −2 to +2 to indicate a univariate normal distribution of scores (42, 60). In the present study, the skewness and kurtosis values were within this range. Also, multivariate normality of the data was assessed using Mardia's normalized multivariate kurtosis value, which should be less than 4 (42, 60).

Table 1. Descriptive Indices and Normality of Research Variables

Research Variables	Mean	Standard Deviation	Skewness	Kurtosis
Problem-Solving Processing	21.61	6.38	0.83	-0.51
Perceived Control	11.52	7.50	1.17	-0.56
Total Score of Cognitive Flexibility	33.13	13.52	1.13	-0.55
Checking	4.81	2.55	-0.15	-1.17
Washing	5.84	3.57	0.05	-1.72
Slowness	4.31	2.17	-0.24	-1.37
Doubting	4.23	2.13	-0.03	-1.52
Total Score of Obsessive-Compulsive Disorder	19.18	10.15	-0.06	-1.58
Symptoms and Feelings	2.16	1.55	0.23	-1.14
Daily Activities	2.46	1.39	-0.20	-1.42
Level of Comfort	2.52	1.75	0.08	-1.34
Work and Education	1.38	0.83	0.05	-0.57
Personal Relationships	2.59	1.77	0.17	-1.01
Treatment	1.3	0.99	0.13	-1.08
Total Score of Quality of Life	12.41	7.19	-0.04	-1.66
Difficulty Identifying Feelings	15.98	4.93	-0.38	-1.36
Difficulty Describing Feelings	11.55	3.03	-0.23	-1.16
Externally Oriented Thinking	23.36	8.09	-0.30	-0.99
Total Score of Alexithymia	50.88	15.09	-0.16	-1.29
Multivariate Normality		Standardized Kurtosis Coefficient (Mardia): 2.63		

As shown in Table 1, the obtained Mardia's coefficient was 2.63, indicating multivariate normality of the score distribution. Another assumption of structural equation modeling is the independence of errors. The Durbin–Watson statistic ranged between 1.5 and 2.5, indicating that this assumption was satisfied. The assumption of multicollinearity was also examined, and none of the tolerance values were below the acceptable threshold of 0.1, nor were any of the variance inflation factor (VIF) values above the permissible limit of 10. Therefore, no multicollinearity was detected. Table 2 presents the correlation matrix among the study variables.

Table 2 presents the correlation matrix among the study variables. A significant negative correlation was found between cognitive flexibility and obsessive–compulsive disorder ($r = -0.66$, $p < 0.01$). Similarly, a significant negative correlation was observed between cognitive flexibility and quality of life ($r = -0.57$, $p < 0.01$). A significant negative correlation was also

found between cognitive flexibility and alexithymia (r= −0.60, p< 0.01). Table 3 presents the model fit indices of the study.

In this study, parameter estimation was performed using the Maximum Likelihood Estimation (MLE) method. As suggested by Meyers et al. (61), the subset of overall fit indices—including chi-square, the Normed Fit Index (NFI), the Goodness of Fit Index (GFI), the Incremental Fit Index (IFI), the Tucker–Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA)—are considered the most important indicators of model fit. In the present study, the results of these fit indices indicated that the model demonstrated a satisfactory level of fit.

Table 2. Correlation Matrix among the Research Variables

Research Variables	1	2	3	4
1. Obsessive-Compulsive Symptoms	1			
2. Quality of Life	0.78 **	1		
3. Alexithymia	0.63 **	0.61 **	1	
4. Cognitive Flexibility	-.66 **	-0.57 **	-0.60 **	1

** Significant at the 0.01 level

Table 3. Model Fit Indices of the Research

Type of Index	Indices	Obtained Value	Acceptable Value
Absolute Fit Indices	Normed Chi-Square (CMIN)	95.53	-
	Degrees of Freedom (df)	85	less than 3
	CMIN/DF	1.12	-
	Significance Level (p-value)	0.001	less than 0.08
Relative Fit Indices	Root Mean Square Error of Approximation (RMSEA)	0.03	-
	PCLOSE (p-value for Close Fit)	0.001	greater than 0.90
	Comparative Fit Index (CFI)	0.92	greater than 0.90
	Adjusted Goodness-of-Fit Index (AGFI)	0.96	greater than 0.60
	Parsimonious Comparative Fit Index (PCFI)	0.73	greater than 0.60
	Parsimonious Normed Fit Index (PNFI)	0.71	greater than 0.90
	Incremental Fit Index (IFI)	0.92	greater than 0.90
	Goodness-of-Fit Index (GFI)	0.98	greater than 0.90
	Normed Fit Index (NFI)	0.91	-

Furthermore, the RMSEA index should be below 0.08. The RMSEA test, which holds significant importance among the indices and criteria for assessing model fit, is recommended for three main reasons. 1) It is sufficiently sensitive to model misspecification, 2) The interpretive guidelines commonly applied to it usually provide an appropriate conclusion regarding model quality, and 3) It allows for the construction of confidence intervals around the RMSEA value. The RMSEA index analyzes the probable error within the population and addresses the question of how well a model, with its unknown parameters and optimally estimated values, can be considered acceptable and aligned with the population covariance matrix, if available. Therefore, to make it sensitive to the estimated parameter values in a given model, RMSEA values below 0.05 indicate a good fit, while values above 0.05 reflect potential errors in population estimation. According to Table 3, the RMSEA value was 0.03; therefore, it can be concluded that the model demonstrated an excellent fit with the data. Figure 1 presents the proposed and fitted model of the study.

Figure 1 illustrates the fitted structural model of the study, indicating that 98% of obsessive–compulsive disorder and 99% of quality of life are explained by psychological flexibility through the mediation of alexithymia. Table 4 presents the standardized and direct coefficients.

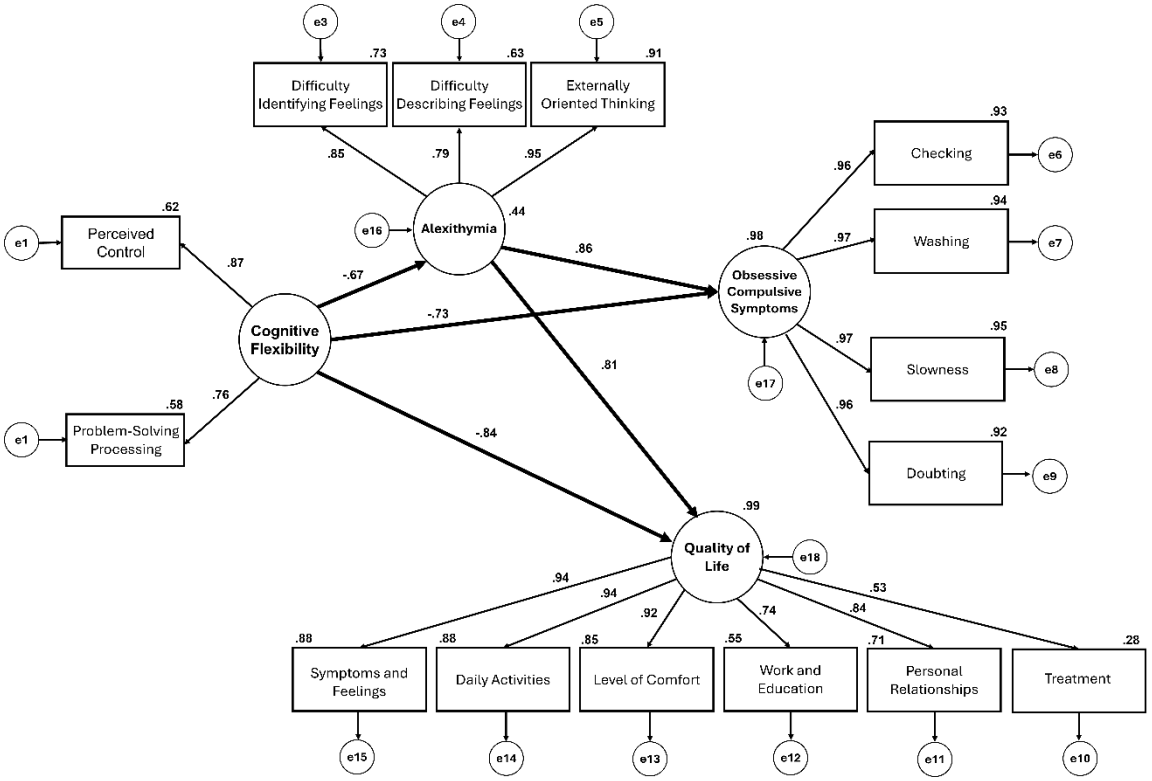

Figure 1. Final Research Model

Table 4. Standardized Direct Coefficients of the Research Model

Direct Paths	Standardized Coefficient	Unstandardized Coefficients			
	Beta Coefficient (β)	Coefficient b	Standard Error (SE)	T-value	Sig
Cognitive Flexibility → Quality of Life	-0.84	-0.81	0.02	6.15	0.001
Alexithymia → Quality of Life	0.81	0.75	0.02	8.05	0.001
Cognitive Flexibility → Obsessive-Compulsive Symptoms	-0.73	-0.71	0.09	5.62	0.001
Alexithymia → Obsessive–Compulsive Symptoms	0.86	0.89	0.30	19.59	0.001
Cognitive Flexibility → Alexithymia	-0.67	-0.58	0.06	10.42	0.001

As shown in Table 4, the standardized and direct effects of cognitive flexibility (β= −0.84, p= 0.001) and alexithymia (β= 0.81, p= 0.001) on quality of life were significant. Likewise, the standardized and direct effects of cognitive flexibility (β= −0.73, p= 0.001) and alexithymia (β= 0.86, p= 0.001) on obsessive-compulsive disorder were also significant.

The standardized and direct effect of cognitive flexibility on alexithymia was significant (β= −0.67, p= 0.001). Table 5 presents the bootstrap results for the mediating role of alexithymia in the relationship between cognitive flexibility, quality of life, and obsessive-compulsive disorder.

To test the significance of the mediating effect of alexithymia in the relationship between cognitive flexibility, quality of life, and obsessive–compulsive disorder, the bootstrap method with 1,000 resamples and a 95% confidence interval was employed. The greater the number of resamples, the higher the predictive accuracy (42, 60). Furthermore, according to Kline (42), if the confidence interval of the lower and upper bounds does not cross zero, the indirect effect is considered significant. Accordingly, the results in Table 5 indicated that alexithymia mediates the relationship between cognitive flexibility, quality of life, and obsessive–compulsive disorder.

Table 5. Bootstrap Results for Indirect Effects

Indirect Paths	Standardized Indirect Effect	Confidence Interval		Significance (p-value)
		Lower Bound	Upper Bound	
Cognitive Flexibility → Alexithymia → Obsessive-Compulsive Symptoms	-0.52	0.56	-0.75	0.002
Cognitive Flexibility → Alexithymia → Quality of Life	-0.63	-0.54	-0.73	0.001

Discussion

The aim of the current study was to investigate the mediating role of alexithymia in the relationship between cognitive flexibility, quality of life, and obsessive–compulsive disorder in patients with psoriasis. The results indicated that cognitive flexibility has a direct and significant effect on quality of life. This finding is consistent with the results of studies by Rudnik et al. (20), Khanizadeh et al. (21), and Weissmeradi et al. (22). This finding can be interpolated by noting that cognitive flexibility refers to the extent of an individual's openness to internal and external experiences. This personality characteristic exists to varying degrees among individuals and determines how they respond to new experiences. Cognitive flexibility suggests that flexibility requires the ability to remain connected to the present moment and to differentiate oneself from internal thoughts and psychological experiences. Flexible individuals are curious about both their inner and outer worlds, and their lives are enriched through
diverse experiences. Because they tend to enjoy new experiences and seek out further opportunities for exploration. Rather than avoiding internal and external experiences, they often actively pursue new ones (62). Cognitive flexibility is also defined as an individual's ability to inhibit a dominant but ineffective or inappropriate response and to generate more distant alternative responses. It is therefore considered to encompass two subcomponents: the inhibition of irrelevant information and the shifting of attention and focus to different tasks or mental sets. Cognitive flexibility, which positively influences an individual's ability to cope with internal and external stressors as well as their well-being within the interactive family environment, plays a key role in the development and enhancement of various personal capacities. Individuals with cognitive flexibility are able to examine problems and novel situations at multiple levels, generate alternative options and ideas, and demonstrate greater tolerance for conflict. Individuals with lower cognitive flexibility struggle to let go of their initial learning experiences. They persist in relying on prior patterns of learning, even when these have negative consequences, and such rigidity hinders their ability to adapt to new conditions and situations (63). Therefore, when individuals possess greater cognitive flexibility, they are able to analyze problems and new situations at different levels, generate alternative options and ideas, and exhibit greater tolerance for conflict. As a result, those with higher levels of this trait experience fewer psychological and cognitive problems, and consequently, their quality of life is higher compared to individuals with cognitive inflexibility. Based on the abovementioned, it is reasonable to conclude that cognitive flexibility has a significant relationship with quality of life in patients with psoriasis.

On the other hand, the results indicated that cognitive flexibility has a direct and significant effect on obsessive-compulsive disorder. This finding is consistent with the results of studies by Pellegrini and Fineberg (27) and Chamberlain et al. (26). This finding can be explained by noting that cognitive flexibility refers to the set of behaviors and actions an individual engages in while pursuing their values. Overall, the absence of behaviors aligned with an individual's values may lead them to feel that their life lacks meaning and purpose, or to perceive their life as filled with pain and suffering. It has been suggested that

cognitive flexibility plays an important role in improving individuals' relationships with others (64). Moreover, possessing cognitive flexibility enables individuals not only to engage in value-driven behaviors but also to demonstrate commitment in their actions (65). Cognitive flexibility refers to the ability and capacity to select an appropriate behavioral response from among available options and to make use of creativity (66). In addition, cognitive flexibility can adapt an individual's thoughts and behaviors in response to changing environmental conditions (67). Cognitive flexibility is also associated with psychological well-being (68) and vulnerability across a wide range of distress, including depression (69), anxiety (70), and general psychological discomfort. Thus, cognitive flexibility can significantly influence individuals' mental health (71). However, regarding how cognitive flexibility may affect obsessive-compulsive disorder, it can be stated that experiential inflexibility is not only much higher in patient groups compared to healthy groups, but higher levels of experiential inflexibility are also associated with greater severity of the disorder (72). In fact, it is assumed that individuals with obsessive-compulsive symptoms experience high levels of negative emotions along with difficulties in emotion regulation (73). It can also be assumed that negative thoughts, such as worries and obsessive thoughts-both characteristic of obsessive–compulsive disorder-may easily occupy the available cognitive space in patients, resulting in fewer cognitive resources being accessible to manage situations that require flexibility. Based on the above, it is reasonable to conclude that cognitive flexibility is related to obsessive-compulsive disorder in patients with psoriasis. The results also showed that alexithymia mediates the relationship between cognitive flexibility and obsessive-compulsive disorder in patients with psoriasis. No previous research has demonstrated that alexithymia mediates the relationship between cognitive flexibility and obsessive-compulsive disorder in patients with psoriasis. Therefore, it is not possible to determine whether this finding is consistent or inconsistent with earlier results. In explaining the mediating role of alexithymia in the relationship between cognitive flexibility and obsessive-compulsive disorder, it can be stated that individuals with the ability for flexible thinking employ alternative justifications, positively reconstruct their cognitive frameworks, and accept challenging situations or stressful events. Compared to those who lack flexibility, they experience greater psychological well-being (74). The personality traits and profile of flexible individuals are such that they accept reality, hold a deep belief that life is meaningful, and possess the capacity for meaningful improvement and adaptation to change. They are able to continue along the path of self-actualization, and these characteristics can contribute to their psychological well-being and positive mental health (74). When individuals experience greater psychological well-being and positive mental health, they are better able to manage their emotions and more effectively identify and describe their feelings. As a result, they are less likely to experience alexithymia. Therefore, it can be stated that individuals with alexithymia, due to various factors such as personality traits and difficulties in emotion regulation particularly in psychologically conflict-laden situations-are directly predisposed to impairments in regulating obsessive-compulsive disorder. Thus, it is reasonable to suggest that alexithymia serves as a mediator in the relationship between cognitive flexibility and obsessive-compulsive disorder. Finally, the results showed that alexithymia mediates the relationship between cognitive flexibility and quality of life in patients with psoriasis. However, no previous research has demonstrated that alexithymia plays a mediating role in the relationship between cognitive flexibility and quality of life in patients with psoriasis. Therefore, it is not

clear whether this finding is consistent or inconsistent with previous results. In explaining the mediating role of alexithymia in the relationship between cognitive flexibility and quality of life, it can be stated that increased psychological flexibility helps individuals, through enhanced mindfulness and contact with experiences, to reduce cognitive fusion and experiential avoidance rather than attempting to control or challenge thoughts and emotions. This encourages individuals to shift their energy from controlling emotions toward engaging in value-driven actions and to choose appropriate behaviors despite personal difficulties and distress (75). Overall, it can be stated that psychological flexibility enables individuals to use adaptive strategies when facing problems, become aware of their difficulties, strive to overcome them, respond appropriately to environmental demands, and move in the direction of personal and social values. This process fosters a sense of productivity in the individual and ultimately improves emotion regulation as well as the ability to describe and identify one's feelings. Therefore, an individual with lower levels of alexithymia has greater ability to identify emotions and describe emotional states, which in turn leads to better psychological and emotional functioning and an improved quality of life compared to others. Thus, it is reasonable to suggest that alexithymia mediates the relationship between cognitive flexibility and quality of life.

Given that the study was conducted in Tehran, one of its limitations is that the research population was restricted to patients with psoriasis attending clinics and hospitals in this city. Therefore, caution should be exercised when generalizing the findings to other cities. In this study, data were collected solely through questionnaires; therefore, the restriction of research instruments to self-report questionnaires represents another limitation. Response bias is also a limitation, as some questions addressed highly personal issues, and participants may not have answered honestly, instead attempting to present themselves more favorably. This could have influenced the study results. This research was conducted exclusively on patients with psoriasis and therefore cannot be generalized to other patient groups or to healthy individuals. Given that the research was carried out in Tehran, it is recommended that similar studies be conducted in other cities and their results compared with those of the present study. It is suggested that similar research be conducted in non-clinical populations as well as among other patient groups, such as those with multiple sclerosis, cancer, diabetes, kidney disease, and systemic sclerosis, in order to examine the mediating role of alexithymia in the relationship between cognitive flexibility, obsessive–compulsive disorder, and quality of life in these patients. Based on the results, it is recommended that counselors and clinical psychologists working in counseling centers and psychological services for patients with psoriasis consider the role of cognitive flexibility in improving obsessive–compulsive symptoms and enhancing the quality of life of these patients. Because cognitive flexibility can be enhanced through acceptance and commitment-based therapy, psychologists and counselors working in counseling centers and psychological services to address obsessive-compulsive symptoms and poor quality of life in these patients can make use of the findings of this study. By organizing specialized workshops for patients with psoriasis, they may help reduce obsessive-compulsive disorder and improve quality of life.

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