



## Research Paper

# The Mediating Role of Rumination and Cognitive Distortion: The Relationship Between Body Image and Depression



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**Citation** Saleh Kazem M, Salehi S, Shaygan Majd F. The Mediating Role of Rumination and Cognitive Distortion: The Relationship Between Body Image and Depression. Caspian Journal of Health Research. 2024; 9(4):205-216. <https://doi.org/10.32598/CJHR.9.4.463.3>

**Running Title** Mediating Role of Rumination and Cognitive Distortion  
**doi** <https://doi.org/10.32598/CJHR.9.4.463.3>

### Article info:

**Received:** 12 May 2024

**Accepted:** 14 Jul 2024

**Published:** 01 Oct 2024

## ABSTRACT

**Background:** Depression is one of the mental disorders during which the patient's activities are greatly reduced. There are many psychological factors that can play a role on depression.

**Objectives:** Present study was conducted with the aim of determining the mediating role of rumination and cognitive distortions in the relationship between body image and depression.

**Materials & Methods:** The statistical population included the students studying at psychology course at Islamic Azad University- South Tehran Branch in the first semester of 2022-2023. A total of 300 participants were selected by convenience sampling method and responded to the Beck depression inventory questionnaire, multidimensional body-self relationship questionnaire, rumination response style scale, and cognitive distortions questionnaire. The proposed model was assessed using structural equation modeling via AMOS software, version 24.

**Results:** The findings of this research showed that there is a significant inverse association between body image and rumination, cognitive distortion and depression. Body image, rumination, and cognitive distortions explain a total of 67% of the variance in depression. The body image is mediated by cognitive distortion ( $\beta=-0.195$ ) and rumination ( $\beta=-0.135$ ).

**Conclusion:** Based on this, it is necessary to pay more attention to the role of rumination and cognitive distortions in the state of body image and exacerbation of depression. It is suggested to hold workshops in counseling and psychotherapy centers at universities in order to raise student's awareness in the field of body image dissatisfaction problems.

### Keywords:

Body image, Body dissatisfaction,  
Cognitive distortion, Depression,  
Mental disorder, Rumination

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## Introduction

Depression occurs in all ages and brings a combination of feelings of sadness, loneliness, irritability, worthlessness, hopelessness, and guilt with physical symptoms [1]. The World Health Organization (WHO) estimates that depression is the second leading cause of disability after cardiovascular disease. Depression is a mental disorder characterized by symptoms of low mood, loss of appetite and interest, feelings of guilt, and sleep disturbances [1]. Various views have been proposed in the etiology of depression. According to Beck and Alford's cognitive model (2009), depression has four components: Cognitive, emotional, motivational and physical, where the cognitive component plays a more central role in describing depression disorder [2].

Body image is an internal representation of a person's external appearance and includes perceptual components, feedback and emotions [3]. According to Cash theory (2002) perceptual aspect refers to the extent to which a person assumes that their worthiness is measured by their appearance. The feedback aspect includes the components of evaluation (dissatisfaction with body appearance), investment (importance of internalizing ideal body appearance and the importance one attaches to one's body), and affect (emotions evoked in relation to one's body) [4]. It can be positive (self-esteem) or negative (depression). Body image is a psychological phenomenon, along with a set of multidimensional cognitive structures. But these subjective perceptions are not fixed and change based on various factors. Research results showed that dissatisfaction with body image due to overweight is related to increased symptoms of depression [5].

Nolen-Hoeksema, Parker, and Larson (1994) studied depression in bereaved adults. They found that if variables including depression level, social support, source of stress, and gender were controlled for, rumination could still predict depression levels for the next six months. Rumination is a set of passive thoughts that have a repetitive aspect and hinder adaptive problem solving and lead to an increase in negative affect [6]. Research shows that rumination has a significant negative relationship with life satisfaction [7]. According to response style theory by Nolen-Hoeksema's, ruminative response can be defined as repetitive thoughts and behaviors that focus the depressed person's attention on the symptoms of depression, its causes and consequences [8].

Cognitive distortions appear when information processing is distorted in people's minds and occur intermittently. Such distortions can lead to psychological disorders such as depression [9]. Cognitive distortions are thought patterns that affect a person's assessment of situations and psychological pressures, and can change people's views on themselves, the world, the future, their beliefs and attitudes, and vulnerability to emotional disorders. According to the cognitive-behavioral approach, thoughts that are considered as irrational beliefs or cognitive distortions are important factors for the emergence and continuation of dysfunctional behaviors and mental disorders [10]. In fact, it can be said that body image can be directly related to depression because a person's body image may be disturbing to him [11]. In this phenomenon, the person gradually uses rumination and cognitive distortions. And then, they feel out of control and become depressed. The existence of extensive advertisements in the field of body and beautiful appearance and the investments that are made to move towards this ideal body, and on the other hand, this believe that the self-esteem of a person is dependent on his body and appearance as a result of these advertisements and the impossibility of achieving an ideal body caused a sense of failure. The result of this failure is depression in people [3].

The lifetime prevalence of depression is predicted to be 10-25% for women and 5-12% for men. The average age of this disorder is 32 years old. Most of the researches that have been done in the field of body image, dissatisfaction with body appearance, its consequences and depression have been done in western countries [12]. Considering that the cultural context of each society fosters its own values and emphasizes them, generalizing the results from other parts of the world, might be misleading. No similar study has determined the relationship between body image and depression with the mediating role of rumination and cognitive distortions.

The hypothetical model of the research was developed based on the research evidence on the negative interaction of cognitive styles (negative inferential styles and dysfunctional attitudes) with rumination about stressful events and defective inference in predicting the onset and exacerbation of depression [13], the relationship between body image and rumination [14, 15], the relationship between body image and depression [16], the relationship between cognitive distortions and depression [17] (Figure 1). According to the proposed research model, in this research, an attempt has been made to answer the question whether rumination and cognitive distortion play a mediating role in the relationship between body image and depression.

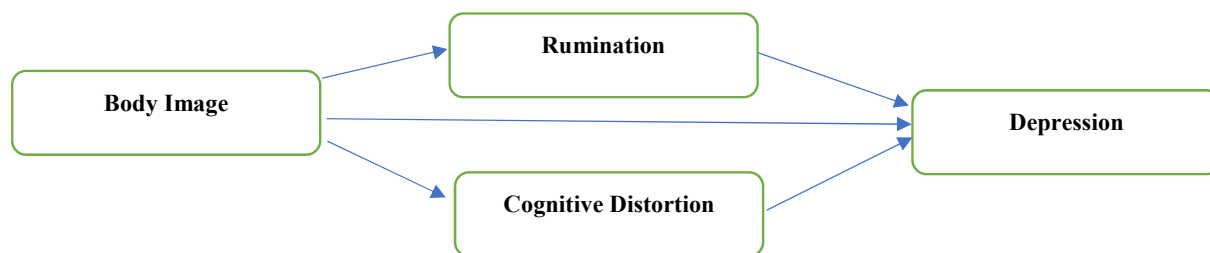


Figure 1. Proposed conceptual model of research



## Materials and Methods

### Study type and study population

The current descriptive cross-sectional study was conducted on students of psychology majors in the first half of the academic year 2022-2023. Sampling was done by the convenience sampling method. According to Kline's (2013) formula, the sample size can be 2.5 to 5 times the number of items of the tools and the minimum number of samples should be 200 [18]. In this research, 4 questionnaires with a total of 108 items were used. Based on minimum number of observations per item and assuming 10% attrition a total of 300 subjects was calculated. The inclusion criteria for the research were: 1) Not suffering from psychological disorders based on the self-report of the participants, 2) Willingness and informed consent to participate in the research. Exclusion criteria from the research: 1) Incomplete answers to the questionnaire. The required permission was obtained from [Islamic Azad University, Tehran South Branch](#). Before distributing the questionnaire, the subjects were informed about the purpose of the research, the content of the questionnaire, as well as the principle of confidentiality and anonymity of the information.

### Measures

Multidimensional body-self relationships questionnaire: It was designed by Cash, Winstead and Janda (1986-1987) with 46 items to assess individual feedback about different dimensions of body image structure [19]. The revised form by Cash (1997) was used in this research [19]. The questionnaire has 6 subscales of appearance evaluation, appearance tendency, physical fitness evaluation, physical fitness tendency, preoccupation with overweight or active weight, and body satisfaction [20]. Questionnaire of multidimensional relationships of the body itself can be implemented individually or in groups from the age of 15 and is not suitable for evaluating children. Each item has 5 points, based on the Likert scale, 1 is given for completely dis-

agree and 5 for completely agree. The cut point of this tool is the mean. Scores above the mean indicate satisfaction with different parts of the body, and scores below the mean indicate dissatisfaction with different parts of the body. The minimum score of a person can be 46 and the maximum score of a person can be 230. The validity and reliability of the main parts of the questionnaire were investigated by Brown, Cash and Mikulka (1990) and the internal consistency of the subscales was reported as 0.79 to 0.94 and its reliability coefficient was 0.81 [21]. The Iranian scholar investigated the validity and reliability of this questionnaire in female Iranian university students [22]. Internal consistencies of the subscales ranged from 0.76 to 0.86 and test re-test reliabilities ranged from 0.75 to 0.93 (short form). Convergent validity was also confirmed. Cronbach's  $\alpha$  of the total and subscales of appearance evaluation, appearance orientation, physical fitness evaluation, orientation physical fitness, functional weight and body satisfaction in subjects were 0.87, 0.66, 0.77, 0.64, 0.78 and 0.81, respectively in this study.

### Beck depression inventory 2<sup>nd</sup> edition (BDI-II)

It was introduced in 1961 to assess the presence and severity of depression symptoms in the world. BDI has 21 items that measure the physical, behavioral and cognitive symptoms of depression [23]. BDI-II) is the revised form of Beck depression inventory, which was developed to measure the severity of depression. The revised form of the Beck depression inventory is more consistent with the 4<sup>th</sup> edition of the diagnostic and statistical manual of mental disorders DSM-IV compared to the original form. In addition, the 2<sup>nd</sup> edition of this questionnaire covers all the elements of depression based on the cognitive theory of depression. This questionnaire, like the 1<sup>st</sup> edition, consists of 21 items, and for each item, the subject chooses one of the four options that indicate the severity of depression symptoms [24]. The maximum score in this test is 63 and the minimum score is zero. A score of 0-13 indicates none or minimal, a score of 14-19 indicates mild depression, a score of 20-



28 indicates moderate depression, and a score of 29-63 indicates severe depression. The meta-analysis results of the BDI indicate that its internal consistency coefficient is between 0.73 and 0.93 with an average of 0.86 [23]. The test re-test reliability coefficients are in the range of 0.45 to 0.86 according to the distance between the times of implementation and the type of population [2]. Also, Iranian scholars obtained the Cronbach's  $\alpha$  coefficient of 0.87 for Iranian college students (high internal consistency), and the test re-test reliability coefficient was 0.74 [25]. In the present study, the reliability of this questionnaire was evaluated using Cronbach's  $\alpha$  coefficient method, and its value was calculated as 0.89.

### Rumination scale

The most powerful theory of rumination is Nolen Hoeksma's (1991) response style theory. The response style scale consists of two subscales of ruminating responses and distracting responses [8, 26]. In this research, rumination responses scale was used. The scale of ruminative responses has 22 items and three factors of manifestation, thinking and depression. The subject was asked to indicate his answer in a four-point Likert scale from never to always. The minimum possible score is 22 and the maximum is 88. A score between 22 and 33 indicates low rumination, between 33 and 55 indicates moderate rumination, and above 55 indicates high rumination. Nolen-Hoeksma and Morrow (1991) obtained the convergent validity of the rumination response scale with the BDI, 0.67, and its Cronbach's  $\alpha$  coefficient was 0.92 [8]. Lumint (2003) reported the re-test correlation coefficient of rumination response scale as 0.67 and Cronbach's  $\alpha$  as 0.88 [27]. In Iran, the result of one study obtained the convergent validity of this scale with the BDI of 0.56 [28]. The Cronbach's  $\alpha$  was reported as 0.90. In the present study, the reliability of this questionnaire was investigated using Cronbach's  $\alpha$  coefficient method, and its value was calculated as 0.93.

### Cognitive distortions questionnaire

This questionnaire was created by Abdullah Zadeh and Salar (2009) with the aim of obtaining a tool to be aware of the cognitive distortions in everyday life [29]. This questionnaire is based on Ellis's cognitive distortions and measures ten cognitive distortions identified by Ellis. This questionnaire measures 10 dimensions with 20 scored on Likert scale from 1 (completely agree) to 5 (completely disagree) and only item 1 is scored in reverse. Based on scoring, a person who gets a higher score has more appropriate thinking, and a person who gets a lower score has more cognitive distortions [29].

The minimum score is 20 and the maximum score obtained in this questionnaire is 100. The reliability coefficient of the questionnaire with Cronbach's  $\alpha$  method was reported as 0.90 in the research of Abdollahzadeh and Salar (2009). The convergent validity of this questionnaire was reported to be 0.56 through the correlation of the questionnaire with the questionnaire of interpersonal cognitive distortions of Hamamsy and Buyuk-Ozturk (2004) [30]. In the present study, the reliability of this questionnaire was evaluated using Cronbach's  $\alpha$  coefficient method, and its value was calculated as 0.86.

### Data analysis

Data was described using frequency and percentage and or Mean $\pm$ SD according to the type of variables. Normal assumption of continuous variables was assessed using skewness and kurtosis index. Multiple collinearity between the research variables was investigated using the variance inflation factor (VIF) and the tolerance coefficient. Structural equation model was performed in AOMS software, version 24; and SPSS software, version 26). Three latent variables of body image, rumination and cognitive distortion and their markers were examined in the measurement model. The model fit was assessed using comparative fit index (CFI), parsimonious normed fit index (PNFI), root mean square error of approximation (RMSEA) and non-adjusted fit index (NFI). If the CFI, NFI indices are greater than or equal to 0.90 and the RMSEA index is less than 0.08, it means a good fit. If the chi-square is not statistically significant and the ratio of chi-square to degrees of freedom is less than 5 (CMIN/DF), it indicates a good fit. In order to estimate the path coefficients with 95% confidence interval, we used bootstrap method with 5000 iteration. All statistical analyzes were performed at a significance level of  $P < 0.05$  was considered as significant.

### Results

Table 1 shows demographic characteristics of the studied sample. The majority of participants were female (50.3%), were between 20-25 years (41.7%) and studied in bachelor's degree (72%).

Descriptive statistics of the studied variables are presented in Table 2. The students have mild depression (based on the standard questionnaire, the score range between 14-19 is mild depression, a score of 20-28 indicates moderate depression), their rumination is almost high (a score between 22 and 33 indicates low rumination, a score between 33 and 55 indicates moderate rumination, and a score above 55 indicates high rumination),

**Table 1.** Description of demographic characteristics

Variables	Groups	No. (%)
Sex	Male	149(49.7)
	Female	151(50.3)
	Total	300(100)
Age categories	20-25	125(41.7)
	25-30	114(38)
	30-35	61(20.3)
	Total	300(100)
Grade	Bachelor's degree	216(72)
	Master's degree	84(28)
	Total	300(100)



and they are at moderate level in terms of cognitive distortion (the minimum score is 20 and the maximum score in this questionnaire is 100), while their body image is lower than usual (the minimum score of a person can be 46 and the maximum score of a person can be 230). As can be seen from Table 1, the amount of skewness and skewness distribution of each for the research variables is in the range of (2, -2), so based on Kline (2013), normal assumption was met for all research variables. The results show that the variables of rumination with a coefficient of 0.483, cognitive distortion with a coefficient of 0.593 and body image with a coefficient of 0.571 have a significant correlation with moderate intensity at the level of 0.01 with the variable of depression among students. Based on the fact that by increasing the amount of binge drinking and cognitive distortion, depression in people is strengthened and by improving their body image, the level of depression in people is reduced. The results also show that the variables of rumination with a coefficient of -0.237 and cognitive distortion with a coef-

ficient of -0.283 have a significant and negative correlation with weak intensity with the variable of body image at the level of 0.01, which means that with the improvement of body image in people, the amount of rumination and cognitive distortion decreases.

Regarding to multiple collinearity, the results show that the minimum tolerance statistic for all predictor variables is higher than 0.1 and the VIF statistic for all variables is less than 10. As a result, the non-collinearity between the predictor variables is confirmed. The final model using SEM is illustrated in Figure 2.

Figure 2 shows path diagram of the final model. The model goodness of fit indices indicate that the assumed model has a relatively good fit with the data. The RMSEA index is 0.068, which is less than 0.08 and acceptable, and all of the other indexes are more than 0.9 (PNFI=0.977, CFI=0.992, NFI=0.967) CMIN/df=2.465.

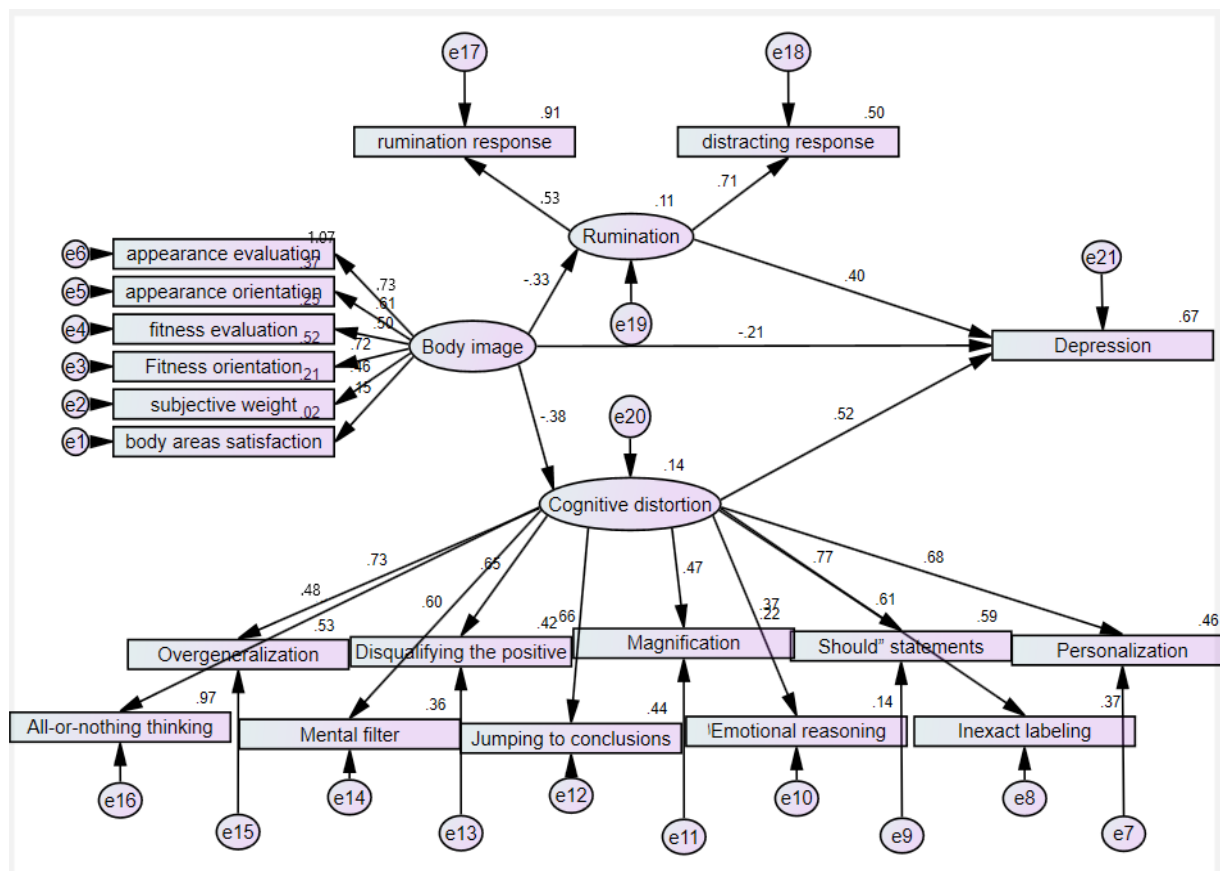
**Table 2.** Descriptive findings correlation coefficient between research variables (n=300)

Variables	Min-Max	Mean±SD	Skewness	Kurtosis	1	2	3	4
Depression	12-28	17.62±3.8	0.589	-0.291	1			
Rumination	25-63	47.60±8.3	-0.338	0.072	0.483**	1		
Cognitive distortion	32-91	57.72±12.6	0.489	-0.178	0.593**	0.129*	1	
Body Image	73-184	132.32±21.8	0.029	0.054	-0.571**	-0.237**	-0.283**	1

\*P<0.05, \*\*P<0.01.







**Figure 2.** Path diagram for the final model



Total, direct, and indirect association of the variables with depression are illustrated in Table 3.

Body image has a significant inverse association with both cognitive distortion (-0.38) and rumination (-0.33)

In contrast, cognitive distortion (0.51) and rumination (0.40) showed a significant direct association with depression. Body image has also significant indirect effect on depression through cognitive distortion (-0.19) and

**Table 3.** Standardized coefficient of direct, indirect, and total effect between research variables

Type of Effect	Paths	Beta	SE	P	95% Confidence Interval	
					Lower	Upper
Direct effects	Body image → cognitive distortion	-0.379	0.178	0.012	-0.486	-0.260
	Body image → depression	-0.214	0.330	0.015	-0.302	-0.135
	Body image → rumination	-0.335	0.610	0.014	-0.433	-0.230
	Cognitive distortion → depression	0.515	0.158	0.000	0.418	0.616
	Rumination → depression	0.405	0.0402	0.000	0.289	0.515
Indirect effects	Body image → cognitive distortion → depression	-0.195	0.036	0.000	-0.400	-0.258
	Body image → rumination → depression	-0.135				
Total effect	Body image → depression	-0.545	0.330	0.001	-0.649	-0.424



rumination (-0.13). The total effect of body image on depression (-0.54) was bigger than both direct and indirect effect revealing a protective effect of body image through its improvement and reducing rumination and cognitive distortion. The model accounted for 67% of the variance in depression.

## Discussion

The present study was conducted with the aim of determining the mediating role of rumination and cognitive distortions in the relationship between body image and depression. The results showed that there is a significant negative relationship between body image and rumination. That is, as satisfaction with body image increases, people's rumination decreases and vice versa. This result is in line with the findings of some studies [15, 31-33]. They concluded that rumination about negative body image can play an important role in the development and maintenance of body image disorder. In order to explain this hypothesis, it can be said that body image is a complex structure that includes thoughts, feelings, evaluations and behaviors related to a person's body. Body image is people's mental image of their own body, regardless of what their body actually looks like [34]. Ruminative response style may also play an essential role as a vulnerable factor in disorders related to body image. A negative evaluation of body image is triggered by the activation of negative mood and rumination [35]. Rumination acts as an avoidant coping strategy in people with body dysmorphic. When a person is faced with negative feelings and images related to the body, rumination acts as an avoidance strategy to reduce discomfort, and eventually the person engages in mental preoccupation related to body-dysmorphic [32]. A person suffering from body deformity disorder suffers from their perceived defects in various areas of life, and they are often attacked by disturbing and uninvited images and thoughts about their physical appearance, and as a result, the quality of their life processes and daily functioning decreases. Also, the results showed that there is a significant negative relationship between body image and cognitive distortions. That is, as body image satisfaction increases, people's cognitive distortions decrease and vice versa. These results were consistent with the results of some studies [36-38]. The structure of negative body image is described as body image disorder, dissatisfaction with the body and a lot of mental preoccupation with body image. A person with a negative body image may be eager to engage in behaviors that are detrimental to physical and mental health [4]. The more a person does not have a good body image towards himself and does

not have a good perception and feeling towards himself, the more cognitive distortions increase in him and he attributes more negative thoughts and emotions to himself. Inefficient attitudes are attitudes and beliefs that make a person susceptible to mental disorder. These beliefs, which are acquired as a result of experience about oneself and the world, prepare a person to interpret certain situations too negatively and ineffectively. According to Beck, dysfunctional attitudes are inflexible and perfectionistic criteria that a person uses to judge himself and others [39]. Since these attitudes are inflexible, extreme and resistant to change, they are considered ineffective or unproductive.

The results showed that there is a significant positive relationship between rumination and depression. That is, with the increase in rumination, the symptoms of depression become more severe. These results were in line with the research results of some studies [40-45].

In order to explain the result of this hypothesis, it can be said that rumination is an incompatible coping strategy that is used when facing a problem. Self-centered processing leads to the person getting stuck in pathological situations and increases the possibility of its recurrence. In ruminative response style, ruminative response can be defined as repetitive thoughts and behaviors that focus the depressed person's attention on the symptoms of depression, its causes and consequences [6]. Rumination can predict anxiety symptoms and mixed anxiety/depression disorder. He stated that rumination can partly explain depression and anxiety in all kinds of mental disorders.

The results showed that there is a significant positive relationship between cognitive distortions and depression. In this way, the increase in cognitive distortions causes the depression of people to increase. The results of this hypothesis are in line with some investigations [46, 47].

It can be said that cognitive distortions are exaggerated or illogical thinking patterns that are internalized for a person and cause an unpleasant psychological state of a person, especially depression, anxiety, etc. Cognitive distortions are thoughts that cause a person to not have a correct understanding of issues [48]. Dysfunctional attitudes are attitudes and beliefs that make a person susceptible to depression or mental disturbance in general. These beliefs, which are acquired as a result of experience about oneself and the world, prepare a person to interpret certain situations too negatively and ineffectively. Ellis has explained the confirmation of this process in



a flawed cycle; according to him, people blame themselves for being emotionally upset, then blame themselves for continuing to blame themselves, and again for seeking psychotherapy, and then conclude that somehow They have a frustrating problem and nothing can be done for them [48, 49].

The results showed that there is a significant negative relationship between body image and depression. In this way, the decrease in satisfaction with the body image causes the depression of people to increase. These results were consistent with the researches of [16, 35, 50]. Body image disorder can show itself in different ways in a person's life. This dissatisfaction with the body image can be manifested in ineffective perceptions, cognitions, emotions and behaviors that can affect a person's daily behavior and quality of life [51]. Following the feeling of dissatisfaction with the body image and the creation of a negative self-concept, a person will demand a change in his body image so that he can bring his real body image closer to his ideal body image [52]. According to Beck (1976), depressed people choose difficult goals for themselves and blame and humiliate themselves for not reaching these unrealistic goals [39]. Gradually, a feeling of helplessness comes to the depressed person, causing him to feel hopeless and completely defeated. It seems to be a basic feature, a kind of change in the intellectual and cognitive organization of the patient. A change that leads to creating negative views about oneself and one's past and future experiences. A depressed patient basically considers himself a bad person and a loser. Whatever he undertakes will result in nothing but failure and loss. Therefore, he refuses to accept any goal or take any constructive action and considers the whole future to be devoid of any pleasure or success [53]. When a person is not satisfied with his body, when a person has a lot of negative thoughts and feelings about his body and is not financially capable of cosmetic surgery, so he becomes isolated and tries to not be socialize. He is not present and is always sad. This negative self-concept and dissatisfaction with the appearance gradually remains in the mind as a great sadness and leads to depression.

The results showed that rumination and cognitive distortions play a mediating role in the relationship between body image and depression. Considering that the relationships between body image and rumination, the relationship between body image and cognitive distortions, the relationship between rumination and depression, cognitive distortions and depression, and the relationship between body image and depression were significant, so this hypothesis is confirmed; and rumination and cognitive distortions have a mediating role in the relationship

between body image and depression. The results of this hypothesis are in line with some studies [15, 16, 41].

People who have a negative body image feel less self-worth and are more likely to suffer from feelings of inadequacy. When people put their appearance against some illogical beliefs and make comparisons, they focus on the partial or imaginary defects of their appearance and ignore the positive features. People's dissatisfaction with their body image under the influence of personal and environmental factors can lead to incorrect evaluations, negative thoughts and emotions in them. One of the important aspects shaping people's health is their physical appearance and body image. Lower mental health in people with a negative body image is caused by negative self-concept and low self-respect, and irrational attitudes and beliefs about their appearance, which can lead to lower mental health and emotional disorders such as depression. In the ruminative response style theory, it is emphasized that ruminative responses are the opposite of effective and structured problem solving, that is, they prevent effective behaviors that can help treat depression [54].

The present research has faced the following limitations. This research was conducted only on the students of [Islamic Azad University-Tehran South Branch](#) in the field of psychology and its generalization to other educational levels and other cities should be done with caution. The participants in this research were selected through convenience sampling method, and this issue may limit the generalizability of the results. The generalizability of the results requires more research in this field. Therefore, it is suggested that the current research should be done at the country level and with this issue in the coming years and with other sampling methods. It is suggested to pay attention to the role of moderating factors such as gender, marital status, etc. in the investigation of relationships in future researches. It is suggested to hold workshops in counseling and psychotherapy centers in order to raise people's awareness in the field of body image dissatisfaction problems.

## Conclusion

This study revealed that body image can be inversely related to depression, because the image of a person's body may be disturbing to him and cause anxiety and depression of a person, and this phenomenon gradually leads to a person's rumination and causes a person to distort his perception of himself. When a person is immersed in rumination, he feels that he is in an uncontrollable situation that is dangerous; That is, negative beliefs about rumination arise and lead to depression.



## Ethical Considerations

### Compliance with ethical guidelines

This article was approved by the Department of Psychology, Faculty of Psychology and Educational Sciences, [South Tehran Branch, Islamic Azad University](#), Tehran, Iran (Code: 162596190).

### Funding

This article was taken from the master's thesis of Mohammad Saleh Kazem, approved by Department of Psychology, Faculty of Psychology and Educational Sciences, [South Tehran Branch, Islamic Azad University](#), Tehran, Iran (Code: 162596190).

### Authors' contributions

Conceptualization and supervision: Somaieh Salehi; Methodology and writing the original draft: Mohammad Saleh Kazem; Review and editing: Farnaz Shaygan Majd.

### Conflict of interest

The authors declared no conflict of interest.

### Acknowledgements

The authors are grateful to all the honorable people who participated in this research.

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