



Understanding the Pathology of Major Depression in a Non-clinical Student Sample: The Role of Mental Pain, Cognitive Emotion Regulation, Self-Compassion, and Anxiety

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Abstract

Background: Severe psychological or mental pain is an experience of discomfort that can be associated with mental illness (such as major depression) or loss (such as the death of a child).

Objectives: The aim of this study is to understand the pathology of major depression using a non-clinical student sample by assessing the roles of mental pain, cognitive emotion regulation, self-compassion, and anxiety.

Methods: This cross-sectional study selected a sample (n = 300) using a multi-stage random cluster sampling method. Data was collected using the Orbach & Mikulincer Mental Pain Questionnaire (OMMP), the Cognitive Emotion Regulation Questionnaire (CERQ), the Self-Compassion Scale-Short Form (SCS-SF), the Beck Anxiety Inventory (BAI), and the Beck Depression Inventory-II (BD-II).

Results: The results of the forward multiple linear regression model showed significant standardized beta coefficients for the following variables: Anxiety and depression ($\beta = 0.21, P = 0.002$), mental pain and depression ($\beta = 0.436, P < 0.001$), maladaptive cognitive emotion regulation strategies and depression ($\beta = 0.21, P = 0.002$), negative dimensions of self-compassion and depression ($\beta = 0.082, p = 0.041$), adaptive cognitive emotion regulation strategies and depression ($\beta = -0.135, P = 0.031$), and positive dimensions of self-compassion and depression ($\beta = -0.078, P = 0.042$). Additionally, the results indicated that 56% of the variance in depression is explained by mental pain, cognitive emotion regulation, self-compassion, and anxiety ($P < 0.001$).

Conclusions: The results of this study indicate that therapies focused on emotional regulation and self-compassion can effectively address emotional problems, anxiety, and depression in individuals with depression.

Keywords: Mental Pain, Emotion Regulation, Self-Compassion, Anxiety, Depression

1. Background

University students are one of the most important and dynamic groups in any society, usually aged 18 to 24. During their time at university, they typically have new experiences (1). Adapting to this changing era is a topic of constant interest for educational research. Depression is a common psychiatric condition among Iranian university students and deserves more

attention. Depression is a set of symptoms that lead to changes in a person's mood, thoughts, and activities, including feelings of sadness and loss of interest, coupled with changes in sleep patterns, food intake, energy levels, and motivation, which impair personal and social functioning (2). According to the World Health Organization, depression is a leading cause of disability worldwide (3). A study by Auerbach et al. suggests that common health problems among

students in developed countries account for 10 - 12 percent, making it one of the most important reasons for university expulsion, failures, and dropouts (4).

Shneidman was the first to use the term "mental pain" to describe intolerable psychological distress. He states that mental pain is a response to unmet basic needs such as being loved, having control, supporting self-image, avoiding shame, and feeling secure. When individuals do not feel self-consent, they cannot survive any longer (5). When these needs are not met, a combination of negative emotions such as guilt, shame, failure, humiliation, sadness, heartache, disappointment, and anger occur (6). A study by Meerwijk and Weiss (6) showed positive associations between executive functioning, depression, frustration, mental pain, and suicide. The results also showed that depression, despair, and suicide were positively associated with mental pain. A forward multiple linear regression model showed that mental pain, depression, and despair predicted 46% of the variance in suicide motivation. Studies have shown that patients with depression exhibit more emotional suppression, such as pain suppression, due to maladaptive emotion regulation; hence these patients report more pain (7).

Reviews have shown that people with depression tend to use maladaptive strategies of emotion regulation, such as rumination and catastrophizing, leading to anxiety, aggression, and other psychological symptoms (8). Some authors describe depression as a disorder of emotion regulation, resulting from dysfunction in emotion regulation (9). According to these theories, the signs and symptoms of depression are the result of a person's inability to regulate their emotions consistently and appropriately (10). Emotion regulation problems in cases such as mood and anxiety disorders are so noticeable that they are defined primarily on the basis of negative emotions (11). Emotion regulation is a process through which individuals adjust their conscious or unconscious motives to respond to various environmental demands (12). Maladaptive emotion regulation strategies, such as avoidance, are thought to increase the risk of emotional problems and psychological harm, whereas adaptive emotion regulation strategies, such as problem-solving, act as protective factors (13).

In other words, there is growing evidence that self-compassion is linked to mental health and serves as an important antidote to stress. Studies have shown that self-compassion is associated with reduced stress and depression (14). Neff et al. define self-compassion as "tolerance and suffering related to one's experiences, a sense of compassion and kindness toward oneself, an

understanding and open-minded attitude toward incompetence and failure of one's goals and destinies, knowing that experience is a part of human life" (15). In a meta-analysis by Muris and Petrocchi, it was concluded that measures of self-compassion (self-kindness, the common human experience, and mindfulness) were negatively associated with psychopathology. These results indicate that self-compassion plays a protective role (16). On the other hand, the negative aspects of self-compassion (self-blame, isolation, excessive identification) are positively associated with mental health problems. Studies also show that self-compassion is negatively associated with depression (17), irrational beliefs (18), suicidal ideation, rumination, and self-injury (19).

Patients with chronic pain report higher levels of depression, fear, and anxiety (20). Anxiety triggers unwanted thoughts and worries that occupy working memory (21). Anxiety can be described as the result of persistent tension experienced throughout one's life. It is an emotional and physiological response to internal threats (such as dysfunctional thoughts) that can be neutralized. Anxiety is associated with specific physical symptoms and serves as a warning sign of imminent danger, preparing the individual to deal with it (22). High levels of pain-related anxiety lead to the avoidance of activities thought to exacerbate pain, often resulting in poor physical condition, behavioral problems, and reduced social contact, ultimately creating a vicious cycle. Some researchers have shown that localized pain and muscle activity can induce responses to stress and anxiety, indicating that the body's response to chronic anxiety and pain is almost the same (23).

Typically, college admission is a very important moment in life for talented and active young people. Most students face challenges such as integrating into a larger educational environment, adapting to new social and cultural situations, economic problems, lack of interest in education, separation from family, changes in daily life, academic difficulties, and dealing with new people in the academic environment. These challenges are stressful and can affect the performance and efficiency of the students (24).

2. Objectives

To date, no studies have been conducted on variables such as psychological pain, cognitive emotion regulation strategies, and depression in Iranian students. There is a need for research on the consequences of depression in a non-clinical population because, due to the high prevalence of depression and a wide range of mental health symptoms among

students, they experience negative emotions such as anxiety, self-blame, blaming others, catastrophizing, lack of self-compassion, self-reported depression, and mental pain, as well as physical complaints.

3. Methods

3.1. Participants and Procedure

This cross-sectional study was approved by the medical ethics committee of Ahvaz Jondishapur University of Medical Sciences (IR.AJUMS.MEDICINE.REC.1400.072). The sample size consisted of 300 Iranian university students, including 147 males ($M = 22.52$, $SD = 2.95$) and 153 females ($M = 20.70$, $SD = 1.87$), aged 18 - 35 (mean age = 21). Participants were selected using cluster sampling. First, five colleges were randomly selected from three groups: Medicine, paramedicine, and midwifery. Then, two classes were randomly selected from each department.

The mean age (M) of the entire sample was 21.59 ($SD = 2.62$), and participants had graduated from an academic degree program ($M = 13.70$ years, $SD = 1.87$). Inclusion criteria included being a student at a public university and providing informed consent to participate in the study. Exclusion criteria included taking any psychiatric drugs, not completing the questionnaire, or having any vision and motor problems that would make participation difficult.

Participants were first briefed on the study's purpose, and after obtaining written consent, questionnaires were distributed. The researchers were two psychology master's students. The Soper formula was used to determine the sample size. Based on the anticipated effect size (f^2) of the regression model (0.15), the desired statistical power level (0.8), the number of predictors (4), and the significance level (0.05), the desired sample size was determined to be 84 (25). To increase external validity and generalizability, the sample size was increased to 300 participants. Inclusion criteria included being a student and completing all the questionnaires. The exclusion criterion included not completing one or more questions and/or random responding.

3.2. Measures

3.2.1. Demographic Data

The demographic form included personal information, such as age, gender, academic level, and marital status.

3.2.2. Beck Depression Inventory (BDI-II)

To measure participants' symptoms of depression, we used the 21-item self-report Beck Depression Inventory (BDI-II) (26). The internal consistency of the BDI ranges from 0.73 to 0.92, with a mean of 0.86 (27). The BDI has demonstrated high internal consistency, with alpha coefficients of 0.86 and 0.81 for psychiatric and non-psychiatric populations, respectively (27). In Iran, the BDI has shown significant test-retest reliability ($r = 0.64$) and good convergent validity with the GHQ-28 ($n = 209$, $r = 0.80$) (28).

3.2.3. Orbach and Mikulincer Mental Pain (OMMP)

We used a questionnaire developed by Orbach and Mikulincer to assess the severity of mental pain (29). This 44-item questionnaire was first examined in Brazil, and nine subscales were approved. Participants rated each statement using a 5-point Likert Scale (1 = strongly disagree, 2 = disagree, 3 = agree to some extent, 4 = agree, 5 = strongly agree). The nine subscales include irreversibility, loss of control, narcissistic wounds/worthlessness, emotional flooding, freezing, self-estrangement, confusion, social distancing, and emptiness. The lowest test-retest coefficient for the nine subscales was 0.79, and the highest was 0.94. Good convergent validity has been reported for this questionnaire, as all its subscales have shown a significant correlation with anxious and depressive cognitions (r 's ranging from 0.26 to 0.64 for depression and 0.27 to 0.50 for anxiety), although this correlation was not reported for the social distancing subscale. In the study by Karami et al., the Cronbach's alpha for this scale and its subscales ranged between 0.61 (lowest for freezing) and 0.96 (highest for total). Its convergent validity was reported as 0.43 (30). In the present study, its Cronbach's alpha was 0.96.

3.2.4. Cognitive Emotion Regulation Questionnaire (CERQ)

To investigate cognitive emotion regulation strategies, we used a 36-item questionnaire that participants answered using a 5-point Likert Scale (1: never, 5: always). This scale examines people's strategies for dealing with unpleasant life situations and includes the following: Self-blame, acceptance, rumination, putting into perspective, positive refocus, refocus on planning, positive reappraisal, catastrophizing, and blaming others. Cronbach's alpha coefficients for the subscales across various populations ranged between 0.68 and 0.86, indicating good internal consistency (31). A study with the general adult population yielded test-

retest correlations for subscales ranging between 0.48 (refocus on planning) and 0.65 (other-blame) (31). Its reliability in Iran was calculated using Cronbach's alpha, with values for the subscales ranging from 0.64 to 0.82 (32). In this study, the Cronbach's alpha for the scale was 0.94.

3.2.5. Self-Compassion Scale-Short Form (SCS-SF)

The SCS-SF includes 12 items measuring the same six components of self-compassion as the SCS-LF. This scale uses a five-point Likert Scale (0 = 'Almost never' to 5 = 'Almost always'). Its test-retest reliability was 0.92, and its convergent validity was 0.97 (33). The reliability in Iran, as calculated by Cronbach's alpha, was reported to be 0.84. Its divergent validity was -0.38 (34). In the present study, the scale's Cronbach's alpha was 0.84.

3.2.6. Beck Anxiety Inventory (BAI)

In this research, we used a reliable questionnaire to assess the anxiety of participants, applicable to both adults and adolescents (35). This 21-item tool, presented on a 4-point Likert Scale, has been studied in many countries and languages, including German, French, Chinese, Spanish, Persian, Nepali, Icelandic, and others, and has shown sufficient reliability. Raw scores range from 21 to 84. Investigations across different populations, including clinical and non-clinical samples, have demonstrated high internal consistency (0.91 for both clinical and non-clinical) and test-retest reliability (0.66 for clinical and 0.65 for non-clinical) (35).

3.3. Data Analysis

Data were analyzed using SPSS-25 software. In the descriptive statistics section, the standard deviation, mean, and Pearson correlation were reported. In the inferential statistics section, linear regression analysis was employed using the forward multiple linear regression method.

4. Results

Data screening was performed prior to data analysis to identify any violations of normality. The scatter plot showed that the linearity assumption is valid for the independent and dependent variables. Variance inflation factors (VIFs) and tolerance coefficients were used to examine the multicollinearity assumption. Since the VIFs for the independent variables (mental pain, cognitive emotion regulation, self-compassion, and anxiety) were less than 5 and none of the tolerance

values were less than 0.1, there was no multicollinearity among predictive variables. The results of the Durbin-Watson test indicated that the errors were independent. The assumption of normality of the data was tested using the Skewness and Kurtosis test, which showed that the assumption of normality in terms of gender was properly observed (36) (Table 1). The scatter plot showed that the variance of the dependent variable was constant for all values of the independent variables. Boxplots were used to identify 18 outliers, which were excluded from further analysis. Therefore, the final sample size for regression analysis was 300. Means, standard deviations, and Pearson's r correlations were calculated for all variables (Table 1).

Table 2 shows that the majority of participants were 26 - 29 years old, comprising 31% of the sample. In terms of gender, there were more females than males, accounting for 51% of the sample. Regarding marital status, the majority of participants were married. Additionally, most participants had graduated with a Bachelor's degree, making up 44% of the sample. The mean and standard deviation (SD) with the assumption of normality are given in Table 1.

As seen in Table 1, the mean (M) and standard deviation (SD) of the study variables are provided. Independent *t*-test results showed differences between male and female students in the components of anxiety, maladaptive cognitive emotion regulation strategies, adaptive cognitive emotion regulation strategies, and negative self-compassion. The observed skewness and kurtosis values for the variables in each group are within the range of (-2, 2), indicating that the variables are normal in terms of deviation and elongation and their distribution is symmetrical. Additionally, the results of the Kolmogorov-Smirnov test for all variables indicate that the assumption of normality is met. The summary of the forward multiple linear regression model is presented in Table 3.

Table 3 shows a summary of the results. The analysis of variance for the same model also indicated significant overall model fit ($\Delta R^2 = 0.56$, $P < 0.001$). The Durbin-Watson test result of 1.768 suggests the independence of variables from each other.

As shown in Table 3, mental pain, cognitive emotion regulation, self-compassion, and anxiety accounted for 56% of the variance in depression. Mental pain level was the most significant predictor, explaining 46% of the variance in the depression score ($\beta = -0.436$, R^2 change = 0.467). Anxiety ($\beta = 0.211$, R^2 change = 0.059) and negative self-compassion ($\beta = 0.082$, R^2 change = 0.010) were the next important predictors, together explaining

Table 1. Means, Standard Deviations, and Group Comparison Using Independent *t*-tests

Variables	Male		Female		Total		Kolmogorov-Smirnov (P-Value)
	Mean \pm SD	Skewness (Kurtosis)	Mean \pm SD	Skewness (Kurtosis)	Mean \pm SD	t (P-Value)	
Anxiety	50.82 \pm 13.28	0.134 (0.463)	53.56 \pm 8.97	-0.144 (0.926)	52.30 \pm 11.23	-2.33 (0.02)	0.177 (0.204)
Depression	30.99 \pm 9.57	0.839 (-0.177)	30.96 \pm 9.68	0.908 (-0.111)	30.98 \pm 9.61	0.02 (0.098)	0.116 (0.200)
Maladaptive cognitive emotion regulation strategies	41.56 \pm 10.56	-0.556 (-0.200)	45.56 \pm 9	-0.473 (0.917)	43.60 \pm 9.98	-3.53 (<0.001)	0.147 (0.098)
Adaptive cognitive emotion regulation strategies	60.46 \pm 18.96	-0.156 (-0.632)	68.28 \pm 12.73	-0.968 (0.350)	64.45 \pm 16.53	-4.206 (<0.001)	0.125 (0.200)
Mental pain	171.22 \pm 32.09	-0.918 (0.384)	174.77 \pm 29.34	-0.997 (0.315)	173.03 \pm 30.72	-1.021 (0.31)	0.144 (0.115)
Positive self-compassion	19.72 \pm 5.05	-0.064 (-0.208)	19.78 \pm 4.20	-0.040 (0.519)	19.75 \pm 4.63	-0.105 (0.916)	0.148 (0.093)
Negative self-compassion	16.56 \pm 4.85	0.438 (-0.069)	17.70 \pm 4.32	0.498 (-0.036)	17.14 \pm 4.62	-2.150 (0.033)	0.139 (0.146)

Table 2. Demographic Characteristics of the Sample

Demographic Variables	No. (%)
Age	
18 - 21	50 (17)
22 - 25	65 (22)
26 - 29	81 (27)
30 - 33	57 (19)
34 and Higher	47 (15)
Gender	
Male	147 (49)
Female	153 (51)
Marital status	
Married	164 (54)
Single	101 (33)
Widowed	35 (13)
Education level	
Bachelor's	132 (44)
MSc	93 (31)
PhD	75 (25)

9% of the variance in the depression score. Positive self-compassion, maladaptive cognitive emotion regulation strategies, and adaptive cognitive emotion regulation strategies explained an additional 4% of the variance in depression. Specifically, positive self-compassion ($\beta = -0.078$, R^2 change = 0.010) and adaptive cognitive emotion regulation strategies ($\beta = -0.135$, R^2 change = 0.009) were significantly associated with lower depression scores.

As shown in Table 4, the results of the forward linear regression method on the total scores of the research variables indicate that mental pain ($\beta = 0.436$), anxiety

($\beta = 0.211$), negative self-compassion ($\beta = 0.082$), positive self-compassion ($\beta = -0.078$), maladaptive cognitive emotion regulation strategies ($\beta = 0.210$), and adaptive cognitive emotion regulation strategies ($\beta = -0.135$) are the strongest predictors of depression. These findings demonstrate that mental pain and anxiety are stronger predictors than the other variables. Table 5 provides a summary of the standard coefficients of each subscale of the research in relation to depression.

As shown in Table 5, the results of the forward multiple linear regression model on the subscales of mental pain, anxiety, self-compassion, and emotion regulation strategies indicate that emptiness and

Table 3. Summary of Forward Multiple Linear Regression Model Results on the Total Scores of Variables

Variables	R	ΔR^2	Adjusted R	R Change	Std	F	P	DW
Mental pain	0.683	0.467	0.465	0.467	7.035	260.675	< 0.001	1.768
Anxiety	0.725	0.525	0.522	0.059	6.647	36.824	< 0.001	
Negative self-compassion	0.731	0.532	0.530	0.010	6.591	6.074	< 0.001	
Positive self-compassion	0.738	0.545	0.539	0.010	6.529	6.567	< 0.001	
Maladaptive cognitive emotion regulation strategies	0.745	0.555	0.547	0.010	6.469	6.560	< 0.001	
Adaptive cognitive emotion regulation strategies	0.751	0.564	0.555	0.009	6.417	5.735	< 0.001	

Table 4. The Results of Forward Linear Regression Method for the Relationship Between Total Score of Independent Variables and Depression

Variables	B	SE	B	t	P	Tolerance	VIF
Mental pain	0.136	0.016	0.436	8.554	< 0.001	0.575	1.740
Anxiety	0.168	0.035	0.211	4.784	0.002	0.762	1.312
Negative self-compassion	0.171	0.090	0.082	1.895	0.041	0.791	1.264
Positive self-compassion	-0.163	0.096	-0.078	-1.703	0.042	0.703	1.423
Maladaptive cognitive emotion regulation strategies	0.203	0.058	0.210	3.517	0.002	0.416	2.403
Adaptive cognitive emotion regulation strategies	-0.078	0.033	-0.135	-2.395	0.031	0.471	2.125

meaninglessness ($\beta = 0.376$, $P < 0.001$), other blame ($\beta = 0.164$, $P = 0.024$), anxiety ($\beta = 0.217$, $P = 0.002$), positive refocus ($\beta = -0.161$, $P = 0.025$), irreversibility ($\beta = 0.194$, $P = 0.003$), social distancing/self-estrangement ($\beta = 0.121$, $P = 0.036$), mindfulness ($\beta = -0.240$, $P < 0.001$), and isolation ($\beta = 0.133$, $P = 0.031$) are the strongest predictors of depression.

5. Discussion

The purpose of this study is to understand the impact of major depression in a non-clinical sample, focusing on the roles of mental pain, cognitive emotion regulation strategies, self-compassion, and anxiety. The results of the Pearson correlation coefficient showed a positive and significant correlation between mental pain and depression, consistent with previous studies (37-39).

Describing the results, we can say that individuals with high mental pain often act in a hostile, demanding, and critical manner towards themselves (40). They tend to reject their own thoughts, impulses, actions, and values, which can trigger the development of depression or exacerbate its symptoms. When faced with difficult situations, people experiencing severe mental pain usually feel isolated, ashamed of their flaws and feelings, and often try to hide their true selves. They may feel that they are the only ones suffering from incompetence and failure (41). As a result, they are more likely to suffer from depression, despair, and lower

psychological pain tolerance. Mental pain is a significant source of their self-judgment, which in turn contributes to their inner suffering and distress.

On the other hand, the results showed a significant negative association between adaptive emotion regulation strategies and depression, and a significant positive association between maladaptive emotion regulation strategies and depression. These results are consistent with previous studies (42-44). People who find their emotions unbearable or cannot regulate negative emotions appropriately often experience more depression and psychological distress. In other words, those who use maladaptive strategies such as self-blame tend to have more negative feelings and thoughts related to events, leading to increased tension and depression (31).

The Pearson correlation coefficient also showed a significant negative correlation between the positive components of self-compassion and depression, and a significant positive correlation between the negative components of self-compassion and depression. These findings are consistent with previous studies (16, 17, 45). Mindfulness, related to self-compassion, helps individuals avoid forming pessimistic thoughts and mental ruminations (46). Since rumination is a significant component of depression and other negative emotional conditions, mindfulness and interventions that reduce rumination can decrease negative emotions and, consequently, depression.

Table 5. The Results of Forward Linear Regression Method for the Relationship Between Subscales of Independent Variables and Depression

Variables	B	SE	β	t	P	Tolerance	VIF	(DW)
Emptiness	0.563	0.096	0.376	5.858	< 0.001	0.205	3.343	
Other blaming	0.460	0.114	0.164	4.054	0.024	0.749	1.334	
Anxiety	0.169	0.033	0.217	5.076	0.002	0.676	1.479	
Positive refocus	- 0.388	0.099	- 0.161	- 3.930	0.025	0.729	1.371	
Irreversibility	0.326	0.094	0.194	3.462	0.003	0.390	2.561	
Mindfulness	- 1.147	0.251	- 0.240	- 4.570	< 0.001	0.445	2.247	1.94
Catastrophizing	0.311	0.124	0.113	2.504	0.037	0.605	1.652	
Self-compassion	- 0.294	0.082	- 0.211	3.561	0.002	0.352	2.843	
Isolation	0.592	0.233	0.133	2.654	0.031	0.490	2.041	
Social distancing/self-estrangement	0.217	0.104	0.121	2.086	0.036	0.366	2.730	

Self-compassion also helps by normalizing negative events and recognizing that unpleasant experiences, suffering, and pain are common to humanity. This perspective helps individuals regulate their emotions and replace negative emotions with positive ones. High levels of self-compassion provide emotional resilience, protecting people from distressing events and depression. According to Leary et al., self-compassion plays a notable and supportive role in situations such as recalling past negative events, imagining negative events, and coping with negative emotions (47). Individuals with high self-compassion can accept their role in negative events, experience them fully, and understand their associated feelings. They are less likely to ruminate on negative events and face their mistakes with less negative emotion. At the core of depression is a distinct sense of loss of control, especially when confronted with challenges or potential threats. For these individuals, feelings of failure and weakness are symptoms of a perceived permanent inability to cope with inevitable negative events, accompanied by negative emotions (48, 49).

Healthy individuals tend to have more control over how they manage their lack of understanding and attribute these issues to temporary external or internal factors. In contrast, people with emotional disorders expect mistakes and failures when faced with threatening issues or challenges, indicating a chronic inability to cope with uncontrollable and unpredictable situations. This relates to their ability to react to negative emotions.

This study has several limitations that may affect the interpretation and generalization of the data. The equal numbers of boys and girls in the sample may have introduced some bias. Additionally, our data were obtained from a non-clinical population, so the results cannot be generalized to clinical populations. As a cross-

sectional study, no causal correlations can be established. Furthermore, the use of self-reported questionnaires may have introduced bias due to social desirability, questionnaire length, and participants' unconscious motivations. Consequently, the results may overestimate or underestimate the extent to which cognitive emotion regulation strategies are actually used. Future research should address questions about the correlation between mental pain, self-compassion, cognitive emotion regulation, symptoms of depression, and anxiety through other data sources such as interviews, judgments, or experimental studies. It is important to remember that no conclusions can be drawn about the direction of the effects. Future studies should use more balanced samples of boys and girls and replicate this research in a clinical sample that includes individuals with major depression and negative lifestyles.

Footnotes

Authors' Contribution: Study concept and design, M.R.; acquisition of data, E.M. and H.E.; analysis and interpretation of data, M.R. and M.B.; drafting of the manuscript, M.R., M.B., S.M. and F.R.; critical revision of the manuscript for important intellectual content, M.R., M.B., E.M., H.E., S.M. ,and F.R.; statistical analysis, M.R., M.B. ,and E.M.; administrative, technical, and material support, S.M. and F.R.; study supervision, M.R.

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References

- Di Benedetto M, Towt CJ, Jackson ML. A Cluster Analysis of Sleep Quality, Self-Care Behaviors, and Mental Health Risk in Australian University Students. *Behav Sleep Med*. 2020;**18**(3):309-20. [PubMed ID: 30821507]. <https://doi.org/10.1080/15402002.2019.1580194>.
- Sadock BJ. *Kaplan & Sadock's synopsis of psychiatry: behavioral sciences/clinical psychiatry*. Philadelphia: Wolters Kluwer; 2015.
- Goldman L. *What is depression and what can I do about it*. Brighton, East Sussex: Medical News Today; 2019, [cited 2023]. Available from: <https://www.medicalnewstoday.com/articles/8933>.
- Auerbach RP, Mortier P, Bruffaerts R, Alonso J, Benjet C, Cuijpers P, et al. WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *J Abnorm Psychol*. 2018;**127**(7):623-38. [PubMed ID: 30211576]. [PubMed Central ID: PMC6193834]. <https://doi.org/10.1037/abn0000362>.
- Shneidman ES. The psychological pain assessment scale. *Suicide Life Threat Behav*. 1999;**29**(4):287-94. [PubMed ID: 10636323].
- Meerwijk EL, Ford JM, Weiss SJ. Resting-state EEG delta power is associated with psychological pain in adults with a history of depression. *Biol Psychol*. 2015;**105**:106-14. [PubMed ID: 25600291]. [PubMed Central ID: PMC4336814]. <https://doi.org/10.1016/j.biopsycho.2015.01.003>.
- Pournaghash Tehrani S, Arabi E. [The mediating role of depression and pain intensity on the relationship between strategies of emotion regulation and quality of life in patients with chronic pain]. *J Psychological Sci*. 2016;**15**(58):235-46. Persian.
- Ferrari AJ, Charlson FJ, Norman RE, Patten SB, Freedman G, Murray CJ, et al. Burden of depressive disorders by country, sex, age, and year: findings from the global burden of disease study 2010. *PLoS Med*. 2013;**10**(11). e1001547. [PubMed ID: 24223526]. [PubMed Central ID: PMC3818162]. <https://doi.org/10.1371/journal.pmed.1001547>.
- Compare A, Zarbo C, Shonin E, Van Gordon W, Marconi C. Emotional Regulation and Depression: A Potential Mediator between Heart and Mind. *Cardiovasc Psychiatry Neurol*. 2014;**2014**:324374. [PubMed ID: 25050177]. [PubMed Central ID: PMC4090567]. <https://doi.org/10.1155/2014/324374>.
- O'Driscoll C, Laing J, Mason O. Cognitive emotion regulation strategies, alexithymia and dissociation in schizophrenia, a review and meta-analysis. *Clin Psychol Rev*. 2014;**34**(6):482-95. [PubMed ID: 25105273]. <https://doi.org/10.1016/j.cpr.2014.07.002>.
- Sloan DM, Kring AM. *Intodaction and overview. Emotional regulation and psychopathology: A transdiagnostic approach to etiology and treatment*. New York: Guilford Press; 2010.
- Gross JJ. *Handbook of emotion regulation*. New York: Guilford; 2013.
- Martins EC, Freire M, Ferreira-Santos F. Examination of adaptive and maladaptive cognitive emotion regulation strategies as transdiagnostic processes: Associations with diverse psychological symptoms in college students. *Studia Psychologica*. 2016;**58**(1):59-73.
- Luo Y, Meng R, Li J, Liu B, Cao X, Ge W. Self-compassion may reduce anxiety and depression in nursing students: a pathway through perceived stress. *Public Health*. 2019;**174**:1-10. [PubMed ID: 31265974]. <https://doi.org/10.1016/j.puhe.2019.05.015>.
- Neff KD, Kirkpatrick KL, Rude SS. Self-compassion and adaptive psychological functioning. *J Res Pers*. 2007;**41**(1):139-54. <https://doi.org/10.1016/j.jrp.2006.03.004>.
- Muris P, Petrocchi N. Protection or Vulnerability? A Meta-Analysis of the Relations Between the Positive and Negative Components of Self-Compassion and Psychopathology. *Clin Psychol Psychother*. 2017;**24**(2):373-83. [PubMed ID: 26891943]. <https://doi.org/10.1002/cpp.2005>.
- Kehtary L, Heshmati R, Pour Sharifi H. [Investigating Structural Pattern of Depression Based on Experiential Avoidance and Emotional Repression: The Mediating Role of Self-Compassion]. *Iran J Psychiatry Clin Psychol*. 2018;**24**(3):284-97. Persian. <https://doi.org/10.32598/ijpcp.24.3.284>.
- Stephenson E, Watson PJ, Chen ZJ, Morris RJ. Self-Compassion, Self-Esteem, and Irrational Beliefs. *Curr Psychol*. 2017;**37**(4):809-15. <https://doi.org/10.1007/s12144-017-9563-2>.
- Cleare S, Gumley A, O'Connor RC. Self-compassion, self-forgiveness, suicidal ideation, and self-harm: A systematic review. *Clin Psychol Psychother*. 2019;**26**(5):511-30. [PubMed ID: 31046164]. <https://doi.org/10.1002/cpp.2372>.
- Levi Y, Horesh N, Fischel T, Treves I, Or E, Apter A. Mental pain and its communication in medically serious suicide attempts: an "impossible situation". *J Affect Disord*. 2008;**111**(2-3):244-50. [PubMed ID: 18436309]. <https://doi.org/10.1016/j.jad.2008.02.022>.
- Mohammadyfar MA, Azizpour M, Najafi M, Nooripour R. Comparison of audio-visual short-term and active memory in multiple sclerosis patients and non-patients regarding their depression, stress and anxiety level. *Nordic Psychol*. 2017;**70**(2):115-28. <https://doi.org/10.1080/19012276.2017.1362989>.
- Metzler DH, Mahoney D, Freedy JR. Anxiety Disorders in Primary Care. *Prim Care*. 2016;**43**(2):245-61. [PubMed ID: 27262005]. <https://doi.org/10.1016/j.pop.2016.02.002>.
- Ghatreh Samani M, Najafi M, Rahimian Bouger I. Comparing the effectiveness of acceptance and commitment therapy and physiotherapy on quality of life and pain catastrophizing in patients with chronic pain. *J Shahrekord Univ Med Sci*. 2019;**21**(6):271-5. <https://doi.org/10.34172/jsums.2019.47>.
- Gedik Z. Self-compassion and health-promoting lifestyle behaviors in college students. *Psychol Health Med*. 2019;**24**(1):108-14. [PubMed ID: 30070924]. <https://doi.org/10.1080/13548506.2018.1503692>.
- Soper D. *A-priori sample size calculator for multiple regression*. DanielSoper.com; 2014, [cited 2023]. Available from: <https://www.danielsoper.com/statcalc/default.aspx>.
- Beck AT, Steer RA, Brown GK. *Beck depression inventory*. New York: Harcourt Brace Jovanovich; 1987.
- Beck AT, Steer RA, Carbin MG. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clin Psychol Rev*. 1988;**8**(1):77-100. [https://doi.org/10.1016/0272-7358\(88\)90050-5](https://doi.org/10.1016/0272-7358(88)90050-5).
- Hamidi R, Fekrizadeh Z, Azadbakht M, Garmaroudi G, Taheri Tanjani P, Fathizadeh S, et al. [Validity and reliability Beck Depression Inventory-II among the Iranian elderly population]. *J Sabzevar Univ Med Sci*. 2015;**22**(1):189-98. Persian.
- Orbach I, Mikulincer M, Gilboa-Schechtman E, Sirota P. Mental pain and its relationship to suicidality and life meaning. *Suicide Life Threat Behav*. 2003;**33**(3):231-41. [PubMed ID: 14582834]. <https://doi.org/10.1521/suli.33.3.231.23213>.
- Karami J, Bagian M, Momeni K, Elahi A. [Measurement of mental pain: Psychometric properties and confirmatory factor analysis of multidimensional mental pain questionnaire]. *Health Psychol*. 2018;**7**(25):146-72. Persian.
- Garnefski N, Kraaij V. Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Pers Individ Differ*. 2006;**40**(8):1659-69. <https://doi.org/10.1016/j.paid.2005.12.009>.

32. Abdi S, Taban S, Ghaemian A. Cognitive emotion regulation questionnaire: Validity and reliability of Persian translation of CERQ-36 item. *Procedia-Soc Behav Sci.* 2012;**32**:2-7. <https://doi.org/10.1016/j.sbspro.2012.01.001>.
33. Raes F, Pommier E, Neff KD, Van Gucht D. Construction and factorial validation of a short form of the Self-Compassion Scale. *Clin Psychol Psychother.* 2011;**18**(3):250-5. [PubMed ID: 21584907]. <https://doi.org/10.1002/cpp.702>.
34. Khanjani S, Foroughi AA, Sadghi K, Bahrainian SA. [Psychometric properties of Iranian version of self-compassionscale (short form)]. *Pajoohande.* 2016;**21**(5):282-9. Persian.
35. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol.* 1988;**56**(6):893-7. [PubMed ID: 3204199]. <https://doi.org/10.1037//0022-006x.56.6.893>.
36. Kline RB. *Principles and practice of structural equation modeling.* New York City: Guilford; 2023.
37. Pereira EJ, Kroner DG, Holden RR, Flamenbaum R. Testing Shneidman's model of suicidality in incarcerated offenders and in undergraduates. *Pers Individ Differ.* 2010;**49**(8):912-7. <https://doi.org/10.1016/j.paid.2010.07.029>.
38. Landi G, Furlani A, Boccolini G, Mikulincer M, Grandi S, Tossani E. Tolerance for Mental Pain Scale (TMPS): Italian validation and evaluation of its protective role in depression and suicidal ideation. *Psychiatry Res.* 2020;**291**:113263. [PubMed ID: 32623264]. <https://doi.org/10.1016/j.psychres.2020.113263>.
39. Meerwijk EL, Weiss SJ. Does suicidal desire moderate the association between frontal delta power and psychological pain? *PeerJ.* 2016;**4**:e1538. [PubMed ID: 26793422]. [PubMed Central ID: PMC4715463]. <https://doi.org/10.7717/peerj.1538>.
40. Rajabi M, Khanjani S, Mousavi Asl E, Nezafat Ferizi J, Bagian Kulehmarzi MJ. The Risk Factors of Suicidal Motivations during COVID-19 Pandemic: Confirmation of Psychological Pain Theory, Psychological Symptoms, and Early Life Experiences. *Evidence Based Care.* 2023;**13**(3):59-69.
41. Bagian Kulehmarzi MJ, Sarani Yaztappeh J, Khanjani S, Abasi I, Rajabi M, Mojahed A. A Study of Early Life Experiences, Temperament, Character, and Psychological Pain in Suicide Attempters and Normal Individuals. *Middle East J Rehabil Health Stud.* 2023;**10**(1). <https://doi.org/10.5812/mejrh-126887>.
42. Costa J, Pinto-Gouveia J. Acceptance of pain, self-compassion and psychopathology: using the chronic pain acceptance questionnaire to identify patients' subgroups. *Clin Psychol Psychother.* 2011;**18**(4):292-302. [PubMed ID: 20806418]. <https://doi.org/10.1002/cpp.718>.
43. Wren AA, Somers TJ, Wright MA, Goetz MC, Leary MR, Fras AM, et al. Self-compassion in patients with persistent musculoskeletal pain: relationship of self-compassion to adjustment to persistent pain. *J Pain Symptom Manage.* 2012;**43**(4):759-70. [PubMed ID: 22071165]. <https://doi.org/10.1016/j.jpainsymman.2011.04.014>.
44. Edwards KA, Pielech M, Hickman J, Ashworth J, Sowden G, Vowles KE. The relation of self-compassion to functioning among adults with chronic pain. *Eur J Pain.* 2019;**23**(8):1538-47. [PubMed ID: 31115099]. <https://doi.org/10.1002/ejp.1429>.
45. Hasking P, Boyes ME, Finlay-Jones A, McEvoy PM, Rees CS. Common Pathways to NSSI and Suicide Ideation: The Roles of Rumination and Self-Compassion. *Arch Suicide Res.* 2019;**23**(2):247-60. [PubMed ID: 29791304]. <https://doi.org/10.1080/13811118.2018.1468836>.
46. Neff KD, Vonk R. Self-compassion versus global self-esteem: two different ways of relating to oneself. *J Pers.* 2009;**77**(1):23-50. [PubMed ID: 19076996]. <https://doi.org/10.1111/j.1467-6494.2008.00537.x>.
47. Leary MR, Tate EB, Adams CE, Allen AB, Hancock J. Self-compassion and reactions to unpleasant self-relevant events: the implications of treating oneself kindly. *J Pers Soc Psychol.* 2007;**92**(5):887-904. [PubMed ID: 17484611]. <https://doi.org/10.1037/0022-3514.92.5.887>.
48. Paulus DJ, Vanwoerden S, Norton PJ, Sharp C. From neuroticism to anxiety: Examining unique contributions of three transdiagnostic vulnerability factors. *Pers Individ Differ.* 2016;**94**:38-43. <https://doi.org/10.1016/j.paid.2016.01.012>.
49. Rajabi M, Sarani Yaztappeh J, Khanjani S, Mohebi MD, Kulehmarzi MJ. [The Pathology of Borderline Personality Disorder Symptomatology in a Nonclinical Sample: The Role of Mental Pain, Cognitive Emotion Regulation, Self-compassion, and Depression]. *Iran Rehabil J.* 2023;**21**(2):337-46. Persian. <https://doi.org/10.32598/irj.21.2.1579.1>.