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Research Paper

Comparison of the Effectiveness of Compassion-focused Therapy and Mindfulness-based Stress Reduction in Reducing Type D Personality Traits in Patients With Coronary Heart Disease

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ABSTRACT

Background and Aim: Coronary patients with type D personality have high stress and inhibit negative emotions. Despite receiving similar medical procedures as other coronary patients they show a slower recovery process and recurrent heart attacks. This study aimed to compare the effectiveness of compassion-focused therapy (CFT) and mindfulness-based stress reduction (MBSR) in reducing type D personality traits in patients with coronary heart disease.

Materials and Methods: The present research method was quasi-experimental with a pre-test-post-test-follow-up design with a control group. The statistical population of this study was all patients with coronary heart disease in Rajai Alborz Hospital in Karaj City, Iran, in 2019. A total of 45 people were selected by convenience sampling and randomly assigned to three groups under the title of CFT, MBSR, and control group. Subjects responded to the type D personality scale by Denollet (2005) for pre-test, post-test, and follow-up. CFT and MBSR were each held in 8 sessions of 90 minutes. In the present study, the statistical method of repeated measure analysis of variance in SPSS software, version 18, was used to analyze the data with 0.05 and 0.01 significance levels.

Results: After the intervention, the average score of type D traits symptoms of the test group (73.26 with a standard deviation of 4.49) was significantly lower than the control group (53.36 with a standard deviation of 27.4). CFT and MBSR had a reducing effect on type D personality traits over time ($P<0.001$). Also, a significant difference was observed between the effectiveness of CFT and MBSR in reducing type D personality traits ($P=0.020$).

Conclusion: CFT and MBSR are both effective in treating patients with type D personality but CFT is more effective.

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1. Introduction

Coronary heart disease is one of the main causes of death and disability in the world [1]. This disease is caused by the blockage of the coronary arteries causing heart dysfunction [2]. Among personality dimensions, type D personality is a strong predictor of heart disease [3]. Several factors influence treatment adherence, based on the biological-psychosocial model, which is a dominant pattern in health psychology. The role of type D personality on treatment adherence can be pointed out [4]. The theoretical basis of this type of personality was the result of a study on heart patients, in which the role of personality traits in the outcomes of heart patients was studied. The harmful role of this personality type in psychological and physiological dimensions is based on two general and constant personality traits. These characteristics include negative emotions and social inhibition. Negative emotions mean a person's tendency to experience negative emotions in different times and situations; while social inhibition refers to a person's tendency to avoid expressing these negative emotions in social interactions [5]. It is assumed that type D personality can increase negative emotions, predict anxiety and depression, and create stress. Stress increases cortisol levels and the combination of stress and high cortisol may hurt the heart. Negative emotions increase cortisol levels; therefore, people who experience negative emotions are more susceptible to high blood pressure and heart disease. In other words, stress hormones, such as cortisol may be improperly regulated in patients with type D personality, causing blood pressure to raise blood vessels. The blocked arteries do not allow oxygen-rich blood to reach the heart sufficiently. On the other hand, patients with type D personality may have a more active immune system and more inflammation which can damage the blood vessels and cause the collapse of atherosclerosis plaques. The blood plaques may stick and they are likely to form clots in the heart vessels [6].

The significant increase in the incidence of heart disease and its negative consequences for the individual and the family has forced many researchers and psychologists to try to invent and provide effective methods of treatment in this field. New treatments in the field of psychological variables related to the treatment of heart diseases are growing and developing. A wide range of these treatments includes mindfulness therapy and compassion-focused therapy (CFT) [7]. Mindfulness is awareness of the present moment without judgment. This awareness leads to the surrounding environment, thoughts, and feelings of the person, without fixing anything or considering it good or bad. Therefore, mindfulness also involves the regulation of cognitive evaluations and objective observation of experiences [8]. In addition, mindfulness provides the possibility of more adaptive coping and management of adverse stimuli. People who have higher mindfulness report better emotional and behavioral self-regulation and show more compassion [9]. In this regard, Azimian [10] concluded that cognitive therapy based on mindfulness has a significant effect in reducing the components of type D personality and increasing the sense of coherence in patients with coronary arteries. Gu and Zhu [11] suggested that compared to conventional medical care, mindfulness-based stress reduction (MBSR) reduces blood pressure and insulin resistance components of metabolic syndrome as well as autonomic nervous system reactivity.

Positive mindfulness by increasing self-compassion can be considered as an emotion regulation strategy, during which the experience of painful and unpleasant emotions is not prevented [12]; but, it is tried to deal with feelings and emotions very kindly as they are and accept them. It is in such a situation that negative feelings give their position to positive feelings and the person will be able to use constructive and new coping strategies [13]. Therefore, in this process, by practicing attention [14] and by challenging the content of thoughts and emotions, the person overcomes problems [15]. People who have high self-compassion are more willing to accept their responsibility for negative life events, understand negative events as they are without adopting a judgmental approach towards themselves, and at the same time, think about negative events less.

Self-compassion is a powerful predictor of mental health. Self-compassion is an important human force that includes kindness traits, fair judgment, and connected emotions, as well as helping people find hope and giving meaning to life when faced with problems. It means simply directing kindness to oneself, experiencing, and being affected by others' suffering. At the same time, self-compassion requires that people do not avoid their painful feelings and do not suppress them [16, 17]. Positive mindfulness with increasing self-compassion can be considered as an emotion regulation strategy in which the experience of annoying and undesirable emotions is not prevented; rather, it is tried to accept the feelings kindly. Therefore, negative emotions change to positive emotions and the person finds new ways to cope [18]. In this regard, Abolghasemi et al. [19] found that

type D personality, self-compassion, and social support are the most influential variables in the health behaviors of coronary heart patients. Also, Krieger et al. [20] reported the effect of compassion therapy in increasing positive emotions and reducing negative emotions.

These results had crucial implications in the field of self-compassion training and therapeutic interventions to improve the quality of life of coronary heart patients. Bagheri et al. [21] have mentioned the relationship between self-compassion and type D personality with self-care behaviors and perceived stress in cancer patients.

Cardiovascular diseases are among the most common diseases in developed societies and are increasing rapidly in other countries. Since cardiovascular disease is considered a psychosomatic disease, a combination of biological and psychological factors should be considered in the investigation of the effective factors in its occurrence [22]. Considering the acute conditions of cardiac patients, choosing the preferred treatment, or combining treatments to be more effective for the mental conditions of these patients is a vital issue that should be further investigated. Therefore, the present study aimed to answer the opposite question: Is the effectiveness of CFT different from mindfulness therapy on type D personality traits in patients with coronary heart disease?

2. Materials and Methods

The research method was a quasi-experimental pre-test-post-test and follow-up design with a control group. The statistical population of this research was all coronary heart patients of Rajaei Alborz Hospital in Karaj City in 2018. Since some researchers have recommended sample size of 15 people for each group for quasi-experimental studies [23], 45 qualified volunteers were included in the study and homogenized by age and duration of care in two experimental groups and a control group. The inclusion criteria included those patients whose coronary heart disease was confirmed by a cardiologist, considering characteristics such as having at least elementary education and age over 18 years. They had the desire to participate in the study and the motivation to interview and cooperate. They did not suffer from mental retardation, chronic physical illness other than heart disease, or mental disorders as well. Also, the exclusion criteria included the deterioration of the disease or other reasons of personal problems to make patients unable to cooperate, incomplete delivery of each questionnaire due to reasons such as physical fatigue and impatience, being absent in more than two treatment sessions, and the loss of any of the conditions for entering the study during the interview (Table 1).

Instruments

Type D personality scale

Denollet's type D personality scale [23] was used to evaluate type D personality. This self-reporting tool contains 14 questions that evaluate 2 subscales of negative affect (2, 4, 5, 7, 9, 12) and social inhibition (1, 3, 6, 8, 10, 11, 14) on one Likert scale. Statements 1 and 3 are scored inversely. Denollet [23] reported Cronbach alpha coefficients of 0.88 and 0.86 for negative affect and social inhibition subscales. Denollet [24] reported a correlation coefficient of 0.68 between negative affect and neuroticism and -0.59 between social inhibition and extroversion. Dadashzadeh [25] reported a Cronbach alpha coefficient of 0.79 for the negative affective subscale and 0.83 for the social inhibition subscale and the correlation of this tool with depression as an indicator of concurrent validity of the tool.

After obtaining permission from the hospital, obtaining the informed consent of the participants, and assuring the patients about the confidentiality of the research information to comply with ethical considerations, as well as explaining the intervention process and answering the questionnaires, 45 patients with homogenous gender were placed in two experimental groups and one control group. CFT and MBSR were held during 8 weekly sessions each for 90 minutes for 2 experimental groups at the Aramesh Bartar counseling center in Karaj and the third group, the control group, was not under any of the interventions. One week after the end of the training sessions, the participants completed the research tool for the post-test and after three months for the follow-up. The control group did not receive treatment during this period but after the end of the treatment period of the experimental group and the implementation of the post-test and follow-up, the control group underwent psychological treatment which had the greatest effect.

In the current research, to describe and analyze the data, a variety of statistical methods in SPSS software, version 18, was used. analysis of variance, Chi-square, Shapiro-Wilk, Levene, Mbox, Greenhouse-Geisser method, Bonferroni post hoc test, and the repeated measure of analysis of variance with providing preconditions of the test including the normality of data distribution, homogeneity of error variance, intra-subject variances, variance-covariance matrix, and linearity. The significance level was set at 0.05.

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Table 1. Summary of CFT and MBSR Sessions

Sessions	Compassion-focused Therapy	Mindfulness-based Stress Reduction Therapy
1st	Establishing basic communication, grouping, reviewing the structure of meetings, familiarity with the general principles and distinguishing compassion from self-pity, assessment of emotional abuse, description and CFT treatment, explanation of emotional abuse and factors related to its symptoms, and conceptualization of self-compassion education.	Explaining the nature of the meeting, introducing and familiarizing members with each other, and discussing educational information about stress, including the psychology of stress, response to stress, and the effect of assessment on stress perception.
2nd	Mindfulness training along with physical examination and breathing exercises, familiarity with brain devices based on compassion, and empathy training; education to understand that people feel following up on things with an empathetic attitude and homework.	Physical examination exercises and discussing the experiences of the previous week, especially those related to homework.
3rd	The gentle and mindful movements of yoga are proposed as a way of calming the physical symptoms of stress and becoming aware of the body's subtle movements.	Familiarity with the characteristics of people with compassion, compassion towards others, fostering warmth and kindness feelings towards oneself, nurturing and understanding that others also have defects and problems, fostering a sense of human commonality against self-destructive feelings and shame, teaching empathy, and providing homework
4th	Reviewing the practice of the previous session, encouraging the subjects to self-identify and examine their personality according to educational topics, self-identification as non-compassionate or compassionate; As a person who values self-pity, empathy and sympathy, fostering a compassionate mind, applying the exercises to himself and others, teaching the physiotherapist metaphor, teaching forgiveness, and homework.	The sitting meditation practice began with an emphasis on understanding bodily sensations as simply feelings (as opposed to interpretations and thoughts about feelings, such as catastrophizing).
5th	Exercises for fostering a compassionate mind, reviewing the practice of the previous session, familiarity and application (forgiveness, non-judgmental acceptance, influenza metaphor education, and tolerance education), education accepting problems, accepting upcoming changes and enduring challenging conditions, paying attention to the variability of the life process, and facing people with different challenges and homework.	In this meeting, there was an exchange of views regarding the completion of half of the route. Discussing the requirement of homework and the effect of this program so far. Extension of sitting meditation to awareness of thoughts that enter and leave the mind.
6th	Reviewing the practice of the previous session, the practical practice of creating compassionate images, teaching styles, and methods of expressing compassion (verbal compassion, practical compassion, partial compassion, and continuous compassion), and applying these methods in everyday life for the spouse, children, parents, friends, teachers, and acquaintances, teaching the development of valuable and sublime feelings and homework.	Discussion about homework and practicing sitting meditation deeply for a long time in this session. The content of the session included conscious attention to the sounds of the environment.
7th	Review of the previous session's exercise, teaching how to write compassionate letters for yourself and others, training and recording daily notes of real situations based on compassion and the person's performance in the method of that situation.	Complete mindfulness, which included a brief review of the previous session, training sessions 4, 5, and 6
8th	Training and practicing skills, reviewing and practicing the skills presented in the previous sessions for helping the subjects cope with the different conditions of their lives in different ways, and finally summarizing and providing solutions to maintain and apply this therapy method in everyday life.	Summing up the things mentioned in the previous meetings, applying mindfulness in all aspects of life.

Table 2. Mean±SD and Shapiro-Wilk Test for type D personality in the CFT group and the control group in three stages of pretest-post-test-follow-up

Stage	Group	Mean±SD	Shapiro-Wilk Test		
			Statistics	df	Sig.
Pre-test	Compassion	36.00±4.08	0.929	15	0.261
	Mindfulness	36.33±4.32	0.906	15	0.118
	Control	36.33±3.97	0.906	15	0.118
Post-test	Compassion	21.20±3.76	0.897	15	0.100
	Mindfulness	26.23±3.43	0.898	15	0.088
	Control	36.53±4.27	0.898	15	0.088
Follow-up	Compassion	20.73±3.76	0.891	15	0.100
	Mindfulness	26.26±3.53	0.908	15	0.124
	Control	35.93±4.02	0.908	15	0.124

3. Results

In the present study, 10 women (66.67%) and 5 men (33.33%) were included in all three groups of CFT, mindfulness therapy, and control groups. In the CFT group, 5 people (33.33%) were in the age range of 30-35 years, 5 people (33.33%) in the age range of 36-40 years, 3 people (20%) in the age range of 41-45 years, and 2 people (13.33%) were in the age range of 46-50 years. In the mindfulness therapy group, 6 people (40%) were in the age range of 30-35 years, 4 people (26.67%) in the age range of 36-40 years, 3 people (20%) in the age range of 41-45 years, and 2 (13.33%) were in the age range of 46-50 years. In the control group, 4 people (26.67%) were in the age range of 30-35 years, 6 people (40%) in the age range of 36-40 years, 2 people (13.33%) in the age range of 41-45 years, and 3 people (20%) were in the age range of 46-50 years. In the CFT group, 4 people (26.67%) were single, 10 people (66.67%) were married, and 1 person (67.6%) was divorced. In the mindfulness therapy group, 5 people (33.33%) were single and 10 people (66.67%) were married. In the control group, 5 people (33.33%) were single and 10 people (66.67%) were married. In the CFT group, 2 people (13.33%) had a diploma and under-diploma education, 8 people (53.33%) had an associate degree and bachelor's education, and 5 people (33.33%) had an education level higher than a bachelor's degree. In the mindfulness therapy group, 1 person (67.6%) had a diploma or under-diploma education, 9 people (60%) had an associate degree or bachelor's education, and 5 people (33.33%) had an education level higher than a bachelor's degree. In the control group, 1 person (6.67%)

Table 3. Results of Leven's and Mauchly's test for following treatment in experimental and control groups

Assumption	Stage	df1	df2	F	Sig.
Homogeneity of variances	Pre-test	2	42	0.025	0.976
	Post-test	2	42	0.802	0.455
	Follow-up	2	42	0.495	0.613

Variable	Sig.	df	Chi-square Statistics	Mauchly's Statistics
Variance within subjects	0.001	2	68.53	0.188

Table 4. Results of mixed variance analysis with repeated measures in explaining intragroup, intergroup, and interactive effects

Source of Effect		Sum of Squares	df	Mean Squares	F	Sig.	Eta Square
Time	Intergroup	2119.64	1.10	1920.44	316.24	0.001	0.883
Time×Groups	Intergroup	1158.17	2.20	524.66	86.39	0.001	0.804
Group	Within group	2449.37	2	1224.68	31.07	0.001	0.597

had a diploma or under-diploma education, 9 people (60%) had an associate degree and bachelor's education, and 5 people (33.33%) had an education level higher than a bachelor's degree.

Table 2 presents that the average type D personality in the experimental groups was different in the post-test and follow-up. Table 2 also presents the distribution of the participants' scores in the pretest, post-test, and follow-up stages for the type D personality.

Table 3 presents that MBox and Levene's tests were not significant for any of the stages of the research; therefore, the condition of homogeneity of variance-covariance matrices and the assumption of homogeneity of variance for the type D personality variable were met in three steps. Examining the results of Mauchly's sphericity test in Table 3 showed that the assumption of the equality of variances within the subjects for the type D personality variable was not established. Since the value of epsilon <0.75 was obtained for the Greenhaus-Geisser test of positive cognitive regulation, this test was used to check type D personality.

Table 4 displays that the effect of time and the interaction effect of time and groups were significant for the type D personality variable. Therefore, the Bonferroni test was used to compare the effectiveness of CFT and mindfulness group training on type D personality.

Table 5. The Bonferroni test for pairwise comparisons of means of group effect, time, and time×groups

Effect of Time		Difference of Mean	Sig.	Difference of Times		Difference of Mean	SE	Sig.
Compassion	Mindfulness	-3.62	0.026	Pre-test	Post-test	8.22	0.451	0.001
Compassion	Control	-10.28	0.001		Follow-up	8.57	0.478	0.001
Mindfulness	Control	6.64	0.001	Post-test	Post-test	0.356	0.125	0.020

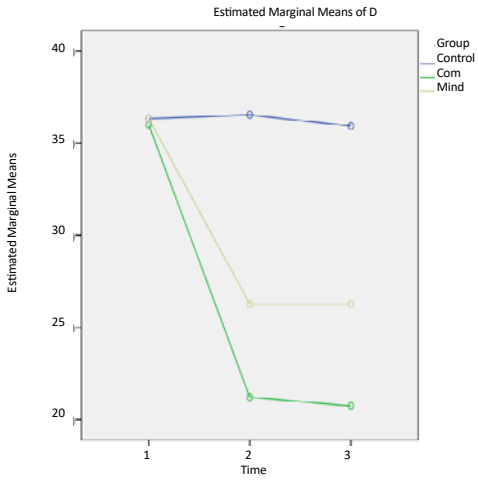

Figure 1. Effectiveness of CFT and mindfulness group training on type D personality in three stages of pretest, posttest, and follow-up

As shown in Table 5, the results of the Bonferroni post hoc test indicated a significant difference between the averages of the experimental and control groups, as well as the pre-test stage with the post-test and pre-test with follow-up for the variable of adherence to the treatment and indicated the effectiveness of CFT and the mindfulness group training on type D personality in the experimental groups and the continuation of these effects in the follow-up phase. However, the results of Table 5 indicated a significant difference between the CFT and mindfulness group training on type D personality. Therefore, it was concluded that a difference is observed between the effectiveness of CFT and mindfulness group training on type D personality in patients with coronary heart disease.

4. Discussion

The results of the present study showed that both CFT and mindfulness group training were effective on type D personality traits; however, no difference was observed between the effectiveness of CFT and mindfulness group training on type D personality in patients with coronary artery disease and the CFT was more effective.

In explaining the effectiveness of mindfulness therapy, it can be said that mindfulness can be interpreted as attention and mental preparation that enable a person to understand and process the events that happen around him to be able to make wise decisions and show the best reaction to difficult life conditions [9]. For this reason, mindfulness interventions are known as interventions that focus on the sensory circles and can pay attention to emotions deeply and explain the relationship between cognition and emotion. Some of these studies have shown that mindfulness interventions not only improve emotional capabilities but also improve people's emotions (positive and negative) directly and indirectly via emotional self-discipline [15]. Meditation practice where mental experiences and sensory information are metacognitively explored without evaluation or interpretation fosters this state and has positive regulatory effects on emotions [12]. Those who receive the attention of awareness are instructed to act consciously and agreeably against resistance or avoidance of the experience of the mind. Theorists state that the development of the non-evaluative state of awareness may increase cognitive flexibility and, as a result, improve cognitive and emotional processes [13]. Also, the results of experimental studies show that mindfulness has a positive effect on the functions related to selective and sustained attention [14].

To explain the effectiveness of CFT and the difference between the effect of CFT and MBSR therapy, it can be said that heart patients with higher self-compassion experience have less negative emotions, pessimistic thoughts, and rumination in experiencing unpleasant events and are better able to balance their emotions [26]. CFT is suitable, especially for treating people who experience high negative emotions, have a lot of shame and self-criticism, as well as those who have difficulty feeling gentle and kind to themselves or others just like people with type D personality. These problems related to shame and self-criticism are often rooted in abuse, neglect, or lack of love in the family. Using compassion, such people can be taught to feel more secure and gentle in interacting with themselves and others. According to the approach of self-compassion, external soothing thoughts, factors, images, and behaviors should be internalized. The human mind, as it reacts to external factors, will also calm down when faced with internal factors [27] and in this way, self-compassion helps patients to foster a non-judgmental and non-blaming perspective. When these people experience problems with the feeling of attack on themselves, self-compassion can help them find the uses and possible origins of these attacks [28]. When the self has been harshly judged, the self-awareness becomes more intense and the sense of self-intensified acts more to serve the feeling of isolation. People, who cannot raise self-compassion in themselves, feel that they are more distant from the ideal state, and their rumination process increases [27].

Self-compassion is a form of self-acceptance that expresses the degree of acceptance of the undesirable aspects of oneself and the living environment, which causes the teenager to respond to unpleasant events not with anger and self-blame but with kindness, and consider these events and experiences part of common human experiences [29]. People who have self-compassion understand that imperfection, failure, and hard life experiences are inevitable. Therefore, when they face difficult life experiences, instead of getting frustrated for not reaching their ideals, they tend to treat themselves with kindness [30]. Self-compassion can have positive psychological consequences for people with heart disease. Heart patients who need help with treatment must be able to understand the need for treatment. Realizing the need and being aware of the conditions of one's illness and its complications and taking it seriously are among the variables that are especially emphasized in the role and importance of the common-sense model. If the patient is not aware of his illness status, many stimuli and messages may be

ignored and the treatment program may not be considered. How people experience the symptoms of their illness and how much they feel they need medical and therapeutic help play a vital role in their adherence to treatment [31]. Patients with type D personality do not care much about following the treatment because they are worried and disappointed about their physical condition. Self-compassion has the advantage of attracting the patient's attention to his physical health, thus making the person aware of the need to follow the treatment and the importance of the treatment plan as well as facilitating coping behaviors such as self-care behaviors, which ultimately leads to the reduction of problems caused by heart disease and manifestations of type D personality and prevents advancement of problems in these patients.

5. Conclusion

Heart disease is a chronic disease that affects all aspects of a patient's life. Considering the increase of coronary artery disease and the importance of timely and effective psychological interventions, psychological and personality assessments of patients when admitted to hospitals and treatment centers are highly essential. Also, considering the economic, social, and psychological burden that heart disease imposes on individuals, families, and society, the results of this research can be promising for heart disease patients, health, and mental health specialists. Due to the high prevalence of heart diseases and the lack of psychologists and mental health specialists, to prevent an increase in treatment-care costs for patients, providing psychological treatments in a group and short-term manner can be beneficial and help to solve patients' problems. In Iran, it is necessary to include psychological interventions to control and reduce harmful personality variables in the treatment protocol for coronary artery patients. According to the findings of this research which indicated the encouraging results of the effectiveness of CFT and MBSR in type D personality, it is recommended for specialists to use these types of psychological interventions along with medical interventions. Every research has its limitations. Among the limitations of the current research is using a self-report tool through which respondents may have consciously or unconsciously tried to show themselves in a good state and deny their problems. It is also possible that the demographic characteristics of the participants, such as socioeconomic class have affected the number of problems and the results of the present study. It is suggested that future researchers investigate type D personality in cardiac patients by conducting qualitative research using in-depth interviews. It is suggested that the present research be conducted on people of different socio-economic classes. Also, in future studies, it is suggested to investigate the effectiveness of other psychological treatments, such as acceptance and commitment-based therapy and schema therapy.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

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References

[1] Musunuru K, Qasim AN, Reilly MP. 7 - Genetics and genomics of atherosclerotic cardiovascular disease. In: Pyeritz RE, Korf BR, Grody WW, editors. Emery and rimoin's principles and practice of medical genetics and genomics. Cambridge: Academic Press; 2020. [DOI:10.1016/B978-0-12-812532-8.00007-0]

[2] Müller-Nordhorn J, Willich SN. Coronary heart disease. In: Quah SR, editor. International encyclopedia of public health (Second Edition). Cambridge: Academic Press; 2017. [DOI:10.1016/B978-0-12-803678-5.00090-4]

[3] Aluja A, Malas O, Lucas I, Worner F, Bascompte R. Assessment of the Type D personality distress in coronary heart disease patients and healthy subjects in Spain. Personality and Individual Differences. 2019; 142:301-9. [DOI:10.1016/j.paid.2018.08.011]

[4] Li X, Zhang S, Xu H, Tang X, Zhou H, Yuan J, et al. Type D personality predicts poor medication adherence in Chinese patients with type 2 diabetes mellitus: A six-month follow-up study. PLoS One. 2016; 11(2):e0146892. [PMID] [PMCID]

[5] Allen MT, Handy JD, Blankenship MR, Servatius RJ. The distressed (Type D) personality factor of social inhibition, but not negative affectivity, enhances eyeblink conditioning. Behav Brain Res. 2018; 345:93-103. [PMID]

[6] Kupper N, Denollet J. Type D personality as a risk factor in coronary heart disease: A review of current evidence. Curr Cardiol Rep. 2018; 20(11):104. [PMID] [PMCID]

[7] Sirois FM. The association between self-compassion and self-rated health in 26 samples. BMC Public Health. 2020; 20(1):74. [PMID] [PMCID]

[8] Gardhouse K, Segal Z. Mindfulness. In: Wright JD, editor. International encyclopedia of the social & behavioral sciences (Second Edition). Amsterdam: Elsevier; 2015. [DOI:10.1016/B978-0-08-097086-8.14148-0]

[9] Wilson JM, Weiss A, Shook NJ. Mindfulness, self-compassion, and savoring: Factors that explain the relation between perceived social support and well-being. Pers Individ Dif. 2020; 152:109568. [DOI:10.1016/j.paid.2019.109568]

[10] Azimian T. [The effectiveness of mindfulness-based cognitive therapy training in improving type d personality components and increasing the sense of cohesion in patients with coronary artery disease (Persian)] [MA thesis]. Tehran: Tehran University; 2014. [Link]

[11] Gu Y, Zhu Y. TCTAP A-138 effects of mindfulness-based stress reduction on components of the metabolic syndrome in patients with coronary heart disease: A randomized controlled trial. J Am Coll Cardiol. 2018; 71(16, Supplement):S38. [DOI:10.1016/j.jacc.2018.03.125]

[12] Jankowski T, Holas P. Metacognitive model of mindfulness. Conscious Cogn. 2014; 28:64-80. [PMID]

[13] Morgan LPK, Danitz SB, Roemer L, Orsillo SM. Mindfulness approaches to psychological disorders. In: Friedman HS, editor. Encyclopedia of mental health (Second Edition). Cambridge: Academic Press; 2016. [DOI:10.1016/B978-0-12-397045-9.00264-0]

[14] Wimmer L, Bellingrath S, von Stockhausen L. Mindfulness training for improving attention regulation in university students: Is it effective? and do yoga and homework matter? Front Psychol. 2020; 11:719. [PMID]

[15] Jalali D, Aghaei A, Talebi H, Mazaheri M. Comparing the Effectiveness of Natived Mindfulness-based Cognitive Training (MBCT) and Cognitive-Behavioral Training on Dysfunctional Attitudes and Job Affects in Employees. Research in Cognitive and Behavioral Sciences. 2015; 5(1):1-20.

[16] Brophy K, Brähler E, Hinz A, Schmidt S, Körner A. The role of self-compassion in the relationship between attachment, depression, and quality of life. J Affect Disord. 2020; 260:45-52. [PMID]

[17] Fresnics AA, Wang SB, Borders A. The unique associations between self-compassion and eating disorder psychopathology and the mediating role of rumination. Psychiatry Res. 2019; 274:91-7. [PMID]

[18] Lienhart C. WITHDRAWN: The relationship between mindfulness, self-compassion and body appreciation. EXPLORE. 2019. [DOI:10.1016/j.explore.2019.09.003]

[19] Abolghasemi A, Taghipour M, Narimani M. [The relationship of type "D" personality, self-compassion and social support with health behaviors in patients with coronary heart disease (Persian)]. Q J Health Psychol. 2012; 1(1):5-19. [Link]

[20] Krieger T, Altenstein D, Baettig I, Doerig N, Holtforth MG. Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. Behav Ther. 2013; 44(3):501-13 [PMID]

[21] Baqeri S, Masiri F, Masiri L, Moradi K. [The relationship between D type personality and self-compassion with health behaviors in women with breast cancer: Moderating role of perceived stress (Persian)]. J Contemp Psychol. 2019; 14(1):1-11. [DOI:10.29252/bjcp.14.1.1]

[22] Joehanes R. Transcriptome and epigenome applications for coronary heart disease research. In: Vasan RS, Sawyer DB, editors. Encyclopedia of cardiovascular research and medicine. Amsterdam: Elsevier; 2018. [DOI:10.1016/B978-0-12-809657-4.99574-7]

[23] VanVoorhis W, Morgan BL. Understanding power and rules of thumb for determining sample sizes. Tutor Quant Methods Psychol. 2007; 3(2):43-50. [DOI:10.20982/tqmp.03.2.p043]

[24] Denollet J. DS14: Standard assessment of negative affectivity, social inhibition, and Type D personality. Psychosom Med. 2005; 67(1):89-97. [PMID]

[25] Dadashzadeh. Validity and reliability of the Persian version of the Type D Personality Questionnaire in heart patients. Tabriz: Tabriz University of Medical Sciences; 2013.

[26] Raes F. Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. Pers Individ Dif. 2010; 48(6):757-61. [DOI:10.1016/j.paid.2010.01.023]

[27] Gilbert P. The Compassionate Mind: A New Approach to Life's Challenges. Oakland, California, United States: New Harbinger Publications; 2010. [Link]

[28] Gilbert P. The origins and nature of compassion focused therapy. Br J Clin Psychol. 2014; 53(1):6-41. [PMID]

[29] Kamalinasab Z, Mohammadkhani P. A comparison of self-compassion and self-esteem based on their relationship with adaptive and maladaptive emotion regulation strategies. Pr Clin Psychol. 2018; 6(1):9-20. [DOI:10.29252/nirp.jpcp.6.1.9]

[30] Klimecki OM, Singer T. Compassion. In: Toga AW, editor. Brain mapping. Cambridge: Academic Press; 2015. [DOI:10.1016/B978-0-12-397025-1.00178-0]

[31] Mikaili N, Ghasemi MA, Salari S, Sakeni Z. [Theoretical and practical dimensions of adherence to treatment in patients: A review study (Persian)]. Med J Mashhad Univ Med Sci. 2019; 62(2):1403-19. [Link]

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