

The Effectiveness of Self-compassion Therapy on Self-efficacy and Rumination in Patients with Irritable Bowel Syndrome

Fatemeh Darabi¹, Golestan Nazari^{2*}, Davoud Zamani Khormandichali³, Mohammad Vahidi⁴

¹Department of psychology, Allameh Tabataba'i University, Tehran, Iran

²Farhangian University, Ilam, Iran

³Department of psychology, Sari Branch, Islamic Azad University, Sari, Iran

⁴Department of Psychology and Counselling, Faculty of Humanities, North Tehran Branch, Islamic Azad University, Tehran, Iran

* **Corresponding author:** Golestan Nazari, Ph.D.in Counselling, Farhangian University, Ilam, Iran. Email: g.nazari@cfu.ac.ir

Received 2021 November 23; Accepted 2023 May 25.

Abstract

Background: It is necessary to help people with irritable bowel syndrome to solve the problems related to this disease, identifying the factors affecting self-efficacy and rumination of these people, which can be improved by using different approaches.

Objectives: The purpose of this study was to evaluate the impact of self-compassion therapy on rumination and self-efficacy in patients with irritable bowel syndrome.

Methods: The current study consisted of a control group pre-test, post-test, and follow-up. Patients with irritable bowel syndrome who were referred to medical facilities in Tehran in 2020 made up the statistical population of this study. Of these, 30 subjects were selected by available sampling based on inclusion and exclusion criteria and were placed in an experimental group and one control group (each group of 15). The experimental group received self-compassion therapy in 10 sessions based on Gilbert (2009) training package. Data were collected using the self-efficacy questionnaire (1982) and rumination scale (1999). Data analysis was performed by repeated measure analysis of variance and Bonferroni test in SPSS software version 22.

Results: The results of this study showed that self-compassion therapy affected self-efficacy ($P < 0.01$) and rumination ($P < 0.01$) in IBS patients.

Conclusion: It can be concluded that self-compassion therapy is about self-efficacy and rethinking in patients with irritable bowel syndrome, so these abilities and training should be used to plan health measures. mental health, especially for patients with irritable bowel syndrome.

Keywords: IBS ,Rumination, Self-efficacy, Self-compassion

1. Background

One of the most prevalent functional digestive disorders is irritable bowel syndrome (IBS), which, while not life-threatening, can have a significant impact on patients' quality of life. Studies have shown that these patients are 3-4 times more likely to be absent from work than healthy people (1). The chronic and relapsing nature of this disease has greatly impacted the quality of life of these patients. This is similar to the impact of clinical depression on an individual's quality of life (2), and more like that of type 2 diabetes. myocardial infarction to patient quality of life (3). This syndrome has a significant impact on the patient's quality of life. This is similar to the impact depression has on an individual's quality of life, with these patients being four to three times more likely than healthy people to be absent from work and education. Not surprisingly, health-related quality of life in irritable bowel disorder is considered the most important goal in the treatment of this disease (4).

Low self-efficacy is another factor that helps patients with irritable bowel syndrome. Self-efficacy is a key element in influencing patients' self-care habits. Higher self-efficacy patients are better at managing their own care (5). A lot of education professionals have been interested in the concept of self-efficacy, which refers to a person's confidence in

their ability to deal with specific circumstances that affect people's attitudes, behaviors, and emotions. Self-efficacy is more important than judgment in determining how someone begins working on a task and how persistent they are in finishing it. A person's perception of his or her own personal and physical qualities, including what they can do, is referred to as a person (6). According to the study's findings, having self-efficacy as a personal coping mechanism can help with this process, making abdominal surgery easier to accept, and improve compliance (7). Albert Bandura's social learning theory served as the foundation for the psychological notion of self-efficacy, which stresses people's awareness of their aptitude for putting on a passable performance. In other words, self-efficacy influences how well people comprehend the environmental, behavioral, and practice goals that they strive to achieve (8).

Patients with irritable bowel syndrome experience disturbing thoughts and ruminations about the disease and its effects due to the physical problem they face (9). Rumination is known as permanent employment to a thought or subject and thinking about it and is a class of conscious thoughts that are identified around an axis and are repeated without dependence on environmental demands (10). Rumination in these patients is defined as refractory and relapsing thoughts that revolve around a common topic. These thoughts involuntarily

enter into consciousness, diverting attention from the current subjects and objectives (11). Many studies have shown that patients with irritable bowel syndrome also experience some emotional disorders due to discomfort with their posture, which affects and impairs the self-efficacy of these patients (12).

One of the therapies created by cognitive behavioral therapy is compassion-based therapy. The use of and research into the idea of compassion and self-compassion as an active process in psychotherapy have grown over the first ten years of the twenty-first century. When things go wrong, self-compassion is a favorable attitude toward oneself. Self-compassion is seen as an adverb and a powerful protective element for promoting emotional adaptability. Therapeutic techniques have been created recently to enhance self-compassion (13). Self-compassion is a good predictor of positive communication behaviors. For example, self-compassion is associated with social connections and life satisfaction (meaningful parts of life) (14). It can also help meet your needs (15).

The necessity and importance of this study lies in the fact that self-efficacy and rumination are international issues and the greatest research challenges. Although many studies have been conducted on the prevention and treatment of anxiety with reasonably good results, these studies have not examined the effectiveness of self-compassion therapy on self-efficacy and rumination in people with IBS.

2. Objectives

The purpose of the current study was to evaluate the impact of self-compassion therapy on rumination and self-efficacy in patients with irritable bowel syndrome.

3. Methods

The current study consisted of a pre-test, a post-test and a follow-up with a control group. Patients with irritable bowel syndrome who were referred to health facilities in Tehran in 2020 formed the statistical population for this study. Using inclusion and exclusion criteria, 30 of them were selected using a convenient sampling approach. They were randomly assigned to one of two groups (15 in the experimental group and 15 in the control group) based on inclusion and exclusion criteria. The required sample size was set to 30 based on the following calculation.

Effect size = 0.40, $\alpha = 0.05$, $1 - (\text{err prob}) = 0.80$ Test performance and 10% loss for each group. The process of this study was that at first, in coordination with the researcher, it was sent to the authorities of the psychosomatic department, physicians, and nurses related to the medical centers. After attracting

cooperation with specialist physicians to extract the names of patients from the discharge and archive unit, action was taken. Then, based on the inclusion criteria, the subjects were invited to participate in the briefing. Due to a large number of patients, two briefing sessions were held for them. After explaining the current study process and how the project was conducted, holding training sessions for them, and the possibility of positively influencing the treatment methods in the process of their disease, they were asked to participate in the present research and cooperate in completing the questionnaires. At the end of the session, the rumination questionnaire and self-efficacy questionnaire were completed before the intervention and determination of experimental and control groups by clinical psychologists. After grouping the subjects, they were invited to participate in training sessions in a separate session. Then, cognitive-behavioral therapy training sessions were put on the agenda. At the end of the training sessions, demographic information questionnaire, rumination questionnaire, and self-efficacy questionnaire were completed again by patients with irritable bowel syndrome to investigate the effect of the interventional method taught on them. Also, follow-up of treatment status of these patients was performed one and a half months after the study.

Patients with irritable bowel syndrome (based on medical records) between the ages of 30 and 60 were eligible for the study if they met the following criteria: They were able to attend therapy sessions. They had no acute psychosis (based on medical records). They had no neurological conditions such as brain injury, stroke, Alzheimer's disease, or Parkinson's disease (based on medical records). They could read and write. And they gave their informed consent. Exclusion criteria are: Refusal to complete a project or course. incapacitating physical illness; and refusal to continue attending. The investigation lasted for 2.5 months. The participants in the experimental group received ten sessions of self-compassion-based treatment; however, the control group received no training. Then, post-test certificates and experimental group participants were collected.

Ethical considerations for this study include: All subjects received written information about the study and participated in the study if they wished. This assurance gives individuals that all information is confidential and will be used for research purposes. Participants' first and last names are not registered for data protection reasons. Patients in the control group continued to receive more effective treatment after the study ended. We used the following tools for our research.

Rumination Response Questionnaire

This scale was designed and developed by Hoxma and Marr (16) to measure rumination. This study aimed to introduce rumination within the framework

of response styles theory and its consequences for sad mood and depression disorder. This questionnaire has 22 questions and the score of the questionnaire is from (never. sometimes. The low score=22, the upper limit of scores=88, the score between 22 and 33 is low rumination. The score between 33 and 55 is moderate rumination and the score is higher than 55 high rumination levels. Bagherinejad et al. (17) reported Cronbach's alpha of this questionnaire 0.90 for total score and 0.89 to 0.92 for its subscales. In this study, Cronbach's alpha coefficient for this questionnaire was 0.86.

Self-efficacy Questionnaire

This questionnaire was created by Scherer and his colleagues in 1982 (18) and has 17 items. The self-efficacy questionnaire measures the individual's beliefs about his or her ability to overcome different

situations. The options of each item in this questionnaire are based on Likert's five-rank scale so that the complete opposite answer of score 1 will get the completely agreeable answer of 5. The highest self-efficacy score on this scale was 85 and the lowest was 17. Higher scores indicate stronger and lower scores indicate weaker self-efficacy (18). The reliability coefficient of the scale was 0.76 using Guttman's double-halves test and 0.79 Cronbach alpha coefficient. The reliability coefficient of the test was obtained by the Spearman-Brown method with an unequal length of 0.76 and with Guttman's double-halves method was 0.76. Cronbach's alpha or homogeneity of all questions was 0.79, which is satisfactory (19). Keramati and Shahraray (20) reported its reliability coefficient by Cronbach's alpha method of 0.85. In this study, Cronbach's alpha coefficient for this questionnaire was 0.82.

Table 1. Self-compassion therapy sessions

Session	Content
Session 1	Provide in simple terms a theoretical basis for compassion-focused treatment in relation to the mental health issues faced by people with IBS
Session 2	Teaching Clients Compassion Qualities, Training Threat-Focused Minds and Compassion Minds (with Emphasis on Client-Specific Issues), Teaching Compassion Qualities, Teaching Compassion Skills
Session 3	Personal mental preparation and training
Session 4	Relationships
Session 5	Announcement of illustration model
Session 6	Illustration of a safe place
Session 7	Growing compassionate
Session 8	Understanding the characteristics of compassionate people, having empathy for others, developing sentiments of warmth and kindness towards oneself, and nurturing and realizing that others also have flaws and issues (fostering a sense of human commonality) as opposed to self-destructive feelings. Training for more warmth and vitality, awareness, acceptance, strength and wisdom, warmth, and lack of judgment.
Session 9	Teaching many ways of expressing compassion (such as spoken compassion, pragmatic compassion, cross-sectional compassion, and continuous compassion), and using these techniques for parents, friends, and acquaintances as well as in daily life
Session 10	presenting a summary, drawing a conclusion, responding to members' queries, rating the entire meeting, thanking the attendees, and administering the post-test.

Data were analyzed using Bonferroni's test, repeated measures analysis of variance, mean, and standard deviation. It is worth noting that the assumptions were tested using the Levene test (to test the homogeneity of the variances), the Kolmogorov-Smirnov test (to test the normality of the data distribution), the Mbox test, and the Mauchly sphere test. It is important. of the review reasoning test. The chi-square test was used to compare the demographics (gender, marital status, age, and education) of the two groups. The statistical analysis program SPSS version 22 was used for the analysis.

4.Results

The following tables provide descriptive results from the current study, including means, Standard Deviation (SD), sample size, frequency distributions, and percentages.

A Multivariate Analysis of Covariance (MANCOVA) was performed to assess the statistical significance of the differences in self-efficacy and rumination scores among the three study groups (compassion-focused therapy and control). Before running MANCOVA, the results of the Box's M test and the Levene's test were

Table 2. Frequency distribution of the participants' demographic characteristics

Demographic Variables	Compassion-focused Therapy	Control	p-value
Gender	Female	11 (73.3)	0.75
	Male	10 (66.7)	
Marital Status	Single	5 (33.3)	1.00
	Married	1 (6.7)	
Age	<30 years	15 (100)	0.43
	30-39 years	2 (13.3)	
	40-49 years	14 (93.3)	
		0 (0)	
		10 (66.7)	
		5 (33.3)	

Table 3. Mean (SD) of the participant's scores on the research variables

Variable	Group	Pre-test		Post-test		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
Self-efficacy	CFT	31	3.81	36.66	3.95	35.93	3.69
	Control	30.60	4.13	31.26	4	31.46	3.96
Rumination	CFT	53.33	10.23	46.74	8.27	45.21	7.54
	Control	52.29	10.05	51.10	9.26	52.80	9.20

examined to ensure they met the study's presumptions. Since none of the research variables passed Box's M test with significant results (Box's M = 10.99; df = 12; $p > 0.05$), the assumption of matrix homogeneity of the set variance is respected. The lack of significance for one of the variables in Levene's test demonstrated that the assumption of equality of variance between groups was also satisfied and that the amount of error variance in the dependent

variable was comparable. between groups. The results demonstrated that self-efficacy and trust were statistically different between the two compassion-focused treatment groups and the control group. Notably, the results of the Wilks Lambda test (0.06) and the F test (34.67) showed a significant difference in rethinking and self-efficacy between the three groups. received therapy focused on compassion, control, and these groups ($p < 0.0001$).

Table 4. Multivariate analysis of covariance comparing pre-test and post-test scores in the two groups

Group	Source of Effect	SS	df	MS	F	p	Eta Square
Group	self-efficacy	503.30	2	251.65	89.24	0.001	0.77
	rumination	181.84	2	90.92	68.18	0.001	0.61

According to Table 4, the variables self-efficacy ($F=89.24$; $p < 0.001$) and rumination ($F=68.18$; $p < 0.001$) both had statistically significant F-test findings. The outcomes demonstrated that rumination and self-efficacy in patients with irritable bowel syndrome improved with self-compassion therapy.

5. Discussion

This study looked at the effects of self-compassion therapy on self-efficacy and rumination in people with irritable bowel syndrome. The outcomes showed that self-compassion therapy decreased rumination and self-efficacy in patients with irritable bowel syndrome. The findings of this study were consistent with those of Alighanavati et al (14) and Qasem-Abadi et al (15), who found that self-compassion was beneficial in reducing worry and rumination in breast cancer patients and that compassion-based therapy was effective in reducing marital conflict in married women.

In explaining this finding, it can be said that since compassion involves the same behavior that you have failed when you spend a bad time, you have failed, or you notice something that you do not want to happen to you. Instead of cruelly judging yourself and criticizing yourself for your disabilities and impedances, compassion for yourself causes you to be kind to yourself and understand yourself when faced with personal problems in general, who has said that you should be perfect? You can change in a way that you can be healthier and happier, but this happens because you value and accept yourself for being human. Things don't always work out. You are faced with unexpected events, you are harmed, you make mistakes, you break your limits, you cannot find your ambition. That's what the human condition is like, it's a fact that applies to all of us. Instead of constantly fighting against this reality, the

more you put your heart into it, the more you can have compassion for yourself and all your fellow human beings in the experience of life (14). According to Neff's description (22), this variable consists of three components: self-kindness vs self-judgment, a sense of human connection versus isolation, and consciousness versus enhanced cloning (23).

They learn how to identify their erroneous and unfair judgments and take action to change them through self-compassion-based education, which lowers stress and improves quality of life. They also learn to love their social interactions, jobs, and leisure activities (22). The nature of group education itself can have a positive effect on increasing the quality of life. It is useful in lowering the psychological strain and lowering the negative mood and so boosting the acceptance of reality and coping with it because of the gathering of individuals in the group and the fact that everyone thinks that others have the same issues as them. Self-compassion-based education can thereby enhance one's quality of life or ability to cope with challenging circumstances.

Self-compassion training makes patients with irritable bowel syndrome as kind to themselves as they are with others. Also, the learnings of this treatment cause people to behave in real terms and put aside the ideal and self-ideal self-imposed on them by others and thus gain more peace. As opposed to being harshly chastised or judged, the kindness component refers to one's propensity to take care of himself and his understanding in the face of aspects of his personality that he finds unlikable. Instead of berating and fighting themselves for their flaws, patients with irritable bowel syndrome behave kindly and calmly around their flaws and speak to themselves in an emotionally helpful manner. They display a warm and inconsistent acceptance of themselves. Additionally, IBS sufferers focus on the inside to comfort themselves rather than

concentrating just on exterior tasks and attempting to control or fix the issue when living situations become challenging and uncomfortable. Self-compassion is the ability to transition with one's mental pressure as one lessens the misery one is going through (11). Another aspect of self-compassion is the awareness of our shared humanity, which includes the knowledge that we are all fallible, prone to error, and capable of engaging in unhealthy habits. Self-compassion connects unique failure experiences to universal human experiences, just as universal traits do for all people.

Human struggles and conflicts also become universal human experiences, making suffering a person feel connected to others. However, most of the time, when people consider their flaws, they feel isolated and alienated from others in a way that they believe their flaws have been a line that humans do not share. Additionally, when people face challenging circumstances in life, they frequently fall prey to the illusion that they are the only ones struggling, leading them to feel alone and cut off from those who are likely to carry on living happy, fulfilling lives. The third element of self-compassion is consciousness, which is a clear, balanced awareness of what is happening right now. In order to avoid ignoring or dwelling on aspects of one's personality or life that one does not like (9). This treatment leads to acceptance of the individual's true self and also improves self-efficacy and rumination in patients with irritable bowel syndrome and provides the ability to successfully adapt to irritable bowel syndrome conditions for patients.

The use of self-report techniques is one of the research's drawbacks. It's possible that the comments, thoughts, and self-reports people give about themselves on these exams differ from what we can observe in their activities and behavior. In this study, environmental and familial factors such as family dynamics, parental status, and socioeconomic position were not taken into account. To reduce the probability of bias in the research, the researcher would profit from training as a professional therapist and from therapeutic experience. It is advised that this investigation be carried out in the other sample group, and that its findings be assessed and contrasted with those of this study.

6. Conclusion

According to the findings of this study, self-compassion therapy had a favourable effect on rumination and self-efficacy in individuals with irritable bowel syndrome.

Acknowledgments

All the people who helped us in this study are grateful and gratitude. This paper has the code of ethics IR.IAU.SARI.REC.1399.214 from Islamic Azad University of Sari.

Conflicts of interest

The authors declare no conflict of interest.

References

1. Mars RA, Yang Y, Ward T, Houtti M, Priya S, Lekatz HR, et al. Longitudinal multi-omics reveals subset-specific mechanisms underlying irritable bowel syndrome. *Cell*. 2020;**182**(6):1460-73. doi: [10.1016/j.cell.2020.08.007](https://doi.org/10.1016/j.cell.2020.08.007). [PubMed: [32916129](https://pubmed.ncbi.nlm.nih.gov/32916129/)].
2. Ng QX, Soh AY, Loke W, Lim DY, Yeo WS. The role of inflammation in irritable bowel syndrome (IBS). *J Inflamm Res*. 2018;**11**(2):345-9. doi: [10.2147/JIR.S174982](https://doi.org/10.2147/JIR.S174982). [PubMed: [30288077](https://pubmed.ncbi.nlm.nih.gov/30288077/)].
3. Vich Vila A, Imhann F, Collij V, Jankipersadsing SA, Gurry T, Mujagic Z, et al. Gut microbiota composition and functional changes in inflammatory bowel disease and irritable bowel syndrome. *Sci Translat Med*. 2018;**10**(472):19-28.
4. Pittayanon R, Lau JT, Yuan Y, Leontiadis GI, Tse F, Surette M, et al. Gut microbiota in patients with irritable bowel syndrome—a systematic review. *Gastroenterology*. 2019;**157**(1):97-108. doi: [10.1053/j.gastro.2019.03.049](https://doi.org/10.1053/j.gastro.2019.03.049). [PubMed: [30940523](https://pubmed.ncbi.nlm.nih.gov/30940523/)].
5. Mohagheghi H, Mahdikhani M, Parsinejad Z, Ashori A. The effectiveness of dialectic behavior therapy on pain self-efficacy and experiential avoidance in mothers with irritable bowel syndrome. *J Psychol Sci*. 2020;**19**(88):439-49.
6. Tomlinson RM, Bax KC, Ashok D, McMurtry CM. Health-related quality of life in youth with abdominal pain: An examination of optimism and pain self-efficacy. *J Psychosom Res*. 2021;**147**:110531. doi: [10.1016/j.jpsychores.2021.110531](https://doi.org/10.1016/j.jpsychores.2021.110531)
7. Peters M, Potter CM, Kelly L, Fitzpatrick R. Self-efficacy and health-related quality of life: a cross-sectional study of primary care patients with multi-morbidity. *Health Qual Life Outcomes*. 2019;**17**(1):1-1. doi: [10.1186/s12955-019-1103-3](https://doi.org/10.1186/s12955-019-1103-3).
8. Rudnik A, Piotrowicz G, Rydzewska G, Bidzan M, Ozgo E. P410 Could the disease become 'a friend'? The mediating role of illness acceptance on self-efficacy and quality of life of gastroenterological patients. *JCC*. 2020;**14**(1):376-7. doi: [10.1093/ecco-jcc/jjz203.539](https://doi.org/10.1093/ecco-jcc/jjz203.539).
9. Robles A, Romero YA, Tatro E, Quezada H, McCallum RW. Outcomes of treating rumination syndrome with a tricyclic antidepressant and diaphragmatic breathing. *The American J Med Sci*. 2020;**360**(1):42-9. doi: [10.1016/j.amjms.2020.04.003](https://doi.org/10.1016/j.amjms.2020.04.003).
10. Milad M, Quezada H, Alvarado B, McCallum RW. Rumination Syndrome: The Spectrum of Clinical Presentations and Efficacy of Treatment Options—a Single-Center Experience: 452. *American Journal of Gastroenterology*. 2017;**112**:240-49. doi: [10.14309/0000434-201710001-00452](https://doi.org/10.14309/0000434-201710001-00452)
11. Alioto A, Di Lorenzo C. Long-term follow-up of adolescents treated for rumination syndrome in an inpatient setting. *Journal of pediatric gastroenterology and nutrition*. 2018;**66**(1):21-5. doi: [10.1097/MPG.0000000000001632](https://doi.org/10.1097/MPG.0000000000001632).
12. Nakagawa K, Sawada A, Hoshikawa Y, Nikaki K, Sonmez S, Woodland P, et al. Persistent postprandial regurgitation vs rumination in patients with refractory gastroesophageal reflux disease symptoms: identification of a distinct rumination pattern using ambulatory impedance-pH monitoring. *Am J Gastroenterol*. 2019;**114**(8):1248-55. doi: [10.14309/ajg.0000000000000295](https://doi.org/10.14309/ajg.0000000000000295)
13. Au TM, Sauer-Zavala S, King MW, Petrocchi N, Barlow DH, Litz BT. Compassion-based therapy for trauma-related shame and posttraumatic stress: Initial evaluation using a multiple baseline design. *Behav Ther*. 2017;**48**(2):207-21. doi: [10.1016/j.beth.2016.11.012](https://doi.org/10.1016/j.beth.2016.11.012).
14. Alighanavati S, Bahrami F, Godarzi K, Rouzbahani M. Effectiveness of compassion-based therapy on rumination and concern of women with breast cancer. *Quarterly J Health Psychol*. 2018;**7**(27):152-68. doi: [10.30473/hpj.2018.38658.3886](https://doi.org/10.30473/hpj.2018.38658.3886).

15. Qasem-Abadi E, Khalatbari J, Ghorban-Shiroudi SH, Rahmani MA. Effectiveness of schema and commitment therapy, compassion-based therapy, and dialectical behavior therapy on marital conflict among married women in Social Emergency Services of Tonekabon and Ramsar. *J Soc Health*. 2019;**6**(2):157-64.
16. Nolen-Hoeksema S, Davis CG. « Thanks for sharing that»: Ruminators and their social support networks. *J Pers Soc Psychol*. 1999;**77**(4):801-12. doi: [10.1037/0022-3514.77.4.801](https://doi.org/10.1037/0022-3514.77.4.801).
17. Bagherinezhad M, Salehi Fadardi J, Tabatabayi SM. Relationship between rumination and depression in a sample of Iranian students. *Stud Educ Psychol*. 2010;**11**(1):38-21. doi: [10.22067/IJAP.V11I1.6910](https://doi.org/10.22067/IJAP.V11I1.6910).
18. Sherer M, Maddux JE, Mercandante B, PrenticeDunn S, Jacobs B, Rogers RW. The Self-Efficacy Scale: Construction and Validation. *Psychol Rep*. 1982;**51**(2):663-71. doi: [10.2466/pro.1982.51.2.663](https://doi.org/10.2466/pro.1982.51.2.663).
19. Bakhtiyari BS. Research in the relationship between the simple and multiple efficacy, self-esteem, and self-discovery variants with educated function in students of the third grade of a new system in Ahvaz [dissertation]. Ahvaz: Chamran University; 1997.
20. Keramati H, Shahrarai M. Investigating the relationship between self-perceived efficacy and performance on mathematics among junior high school students. *Educ Innovations*. 2004;**3**(10): 103-15.
21. Gilbert P. Introducing compassion-focused therapy. *Adv Psychiatr Treat*. 2009;**15**(3):199-208. doi: [10.1192/apt.bp.107.005264](https://doi.org/10.1192/apt.bp.107.005264).
22. Neff KD, Whittaker TA, Karl A. Examining the factor structure of the Self-Compassion Scale in four distinct populations: Is the use of a total scale score justified?. *J Pers Assess*. 2017;**99**(6):596-607. doi: [10.1080/0022891.2016.1269334](https://doi.org/10.1080/0022891.2016.1269334).
23. Halamová J, Kanovský M, Petrocchi N, Moreira H, López A, Barnett MD, et al. Factor structure of the self-compassion scale in 11 international samples. *Meas Evaln Couns Dev*. 2021;**54**(1):1-23. doi: [10.1080/07481756.2020.1735203](https://doi.org/10.1080/07481756.2020.1735203).