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Comparison of the Effectiveness of Acceptance and Commitment Therapy and Mindfulness-Based Cognitive Therapy on Alexithymia in Patients with Gastrointestinal Diseases: An Experimental Study

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Quantitative Study

Abstract

Background: Today, many people suffer from digestive system diseases. It seems that sufficient attention has not been paid to the role of psychological treatment methods in reducing the pain of these patients. The present study was conducted with the aim to compare the effectiveness of acceptance and commitment therapy (ACT) and mindfulness-based cognitive therapy (MBCT) on alexithymia in patients with gastrointestinal disease.

Methods: This semi-experimental research was performed with a pretest-posttest design and an unequal control group. The sample was selected using convenience sampling and consisted of 45 people (ACT, MBCT, and control groups). The intervention groups participated in ACT (Hayes et al, 2012) and MBCT (Crane, 2017) sessions. The control group did not receive any intervention. All participants completed the Toronto Alexithymia Scale (TAS-20) (Bagby, James, Parker, Graeme, & Taylor, 1994) in the pretest and posttest. The statistical method used in this research was univariate analysis of covariance. The data were analyzed in SPSS software.

Results: ACT and MBCT treatment methods significantly reduce alexithymia ($P < 0.0001$). However, there was no difference between the effects of the two treatment methods in alexithymia recovery.

Conclusion: Based on the results of this study, both treatments can reduce the symptoms of emotional dyslexia in patients with gastrointestinal tract diseases. The results of this study can be useful to specialists in this field, and show the necessity of using psychological services to reduce psychosocial problems.

Keywords: Acceptance and commitment therapy; Mindfulness; Cognitive behavioral therapy; Alexithymia; Gastrointestinal diseases

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Introduction

Patients suffering from gastrointestinal symptoms constitute a large number of clients referring to therapeutic clinics (Hayashi et al., 2021). Physiologically, the gastrointestinal system can present all disorders related to the digestive system, including diseases of the esophagus, stomach, the first, second, and third parts of the duodenum, jejunum, cecum, large intestine complex (including the ascending, transverse, descending, sigmoid, and rectum) (Burisch, Jess, Martinato, & Lakatos, 2013; Labanski, Langhorst, Engler, & Elsenbruch, 2020). It seems that in addition to the physical causes demonstrated for the occurrence of gastrointestinal diseases, psychological factors are also highly influential in the occurrence of such problems (Labanski et al., 2020). This is evident, as patients with gastrointestinal disease experience more psychological problems such as depression, stress, and anxiety during their illness (Tshabalala, Tomita, & Ramlall, 2019). Moreover, due to the low level of social support of these patients, their general health is at greater risk (Kani et al., 2019; Ross, Cassisi, Joseph, Dunn, & Jex, 2022).

Gastrointestinal disorders cause many psychological pressures for patients including chronic pain, fatigue, discomfort, and psychological illnesses (Feingold, Murray, & Keefer, 2019). The connection between digestive diseases and psychological disorders is related to the special connection between the brain and the gut, which is labeled the brain-gut axis. The amygdala, hippocampus, and prefrontal cortex regions can, on the one hand, modulate gut function, and on the other hand, regulate emotions such as mood, anxiety, negative emotions, and pain, and cognitive behaviors such as problem-solving, design, and information seeking, which ultimately can be effective in cultivating social behaviors, coping skills, and psychological well-being (Feingold et al., 2019; Sorboni, Moghaddam, Jafarzadeh-Esfehani, & Soleimanpour, 2022).

One of the variables that can be studied in connection with the creation and continuation of psychological problems, and consequently, psychosomatic diseases is alexithymia (Shibata et al., 2014). Sifneos (2000) first used alexithymia to illustrate a group of cognitive and emotional characteristics observed among patients with psychosomatic disorders (Morie et al., 2021). Alexithymia is a type of mood deficiency that causes the inability to cognitively process emotional information and regulate emotions (Scheerer, Boucher, & Iarocci, 2021; Ahmadi Doulabi, Sajedi, Vameghi, Mazaheri, Akbarzadeh, Afraz, 2019). A previous research has illustrated that alexithymia, disease perception, and resiliency have significant connection with the quality of life (QOL) of patients with gastrointestinal disease (Morr, Lieberz, Dobbelstein, Philipsen, Hurlemann, & Scheele, 2021). Moreover, Kano, Endo, and Fukudo (2018) showed that alexithymia is an important risk factor in patients with gastrointestinal disease.

Researchers have stated the need for designing psychiatric and psychotherapy interventions for the reduction of the symptoms of the disease and enhancement of the QOL of patients with gastrointestinal disease (Jin, Singh, Ha, Zogg, Park, & Ro, 2021). A wide range of psychological treatments including hypnotherapy, biofeedback, cognitive behavioral therapy (CBT), and stress relief training has been effective in treating and reducing the symptoms of patients with gastrointestinal disease (Boraschi, Giugliano, Mercogliano, Donati, Romano, & Neri, 2021). One of the new psychotherapies is acceptance and commitment therapy (ACT), which has been shown be practical in enhancing the QOL of people with functional digestive disorders (Li, Wong, Jin, Chen, Chong, & Bai, 2021; Trindade et al., 2021). ACT was

created by Steven Hayes in 1986 and is rooted in a philosophical theory called functional contextualism (Li et al., 2021; Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). This therapeutic approach has six central processes, which are acceptance, being present in the moment, defusion, self as context, values, and committed action, which ultimately lead to psychological flexibility (Hayes et al., 2004). Various researches have been conducted on the effect of ACT on alexithymia (Martino, Caputo, Vicario, Catalano, Schwarz, & Quattropani, 2020; Kinnaird, Stewart, & Tchanturia, 2019; Tang, Hu, Yang, & Xu, 2020; Sfeir, Geara, Hallit, & Obeid, 2020; Shank et al., 2019). For example some researches showed that ACT was effective in increasing psychological flexibility and reducing emotional dyslexia (Sfeir et al., 2020; Shank et al., 2019).

Another new psychotherapy is mindfulness-based cognitive therapy (MBCT), which is considered as one of the third generation or third-wave cognitive behavioral therapies (Savnikova & Khaustova, 2021; Kirschner, Kuyken, & Karl, 2022; Burgess, Selchen, Diplock, & Rector, 2021; Williams, Elliott, Barnhofer, Zahn, & Anderson, 2021). This treatment has been effective in reducing the general symptoms of some psychosomatic diseases such as irritable bowel syndrome (IBS) and increasing the patients' QOL (Henrich, Gjelsvik, Surawy, Evans, & Martin, 2020). MBCT has been adapted from the stress reduction model based on the Kabat-Zinn mindfulness method and the principles of cognitive therapy have been added to it (Ni, Ma, & Li, 2020). Therefore, MBCT can significantly reduces alexithymia (Hazlett-Stevens, Singer, & Chong, 2019; Seritan, Prakash, Wang, Eisendrath, & Iosif, 2022). Furthermore, the literature review showed that MBCT has a negative relationship with alexithymia and can reduce it (Yuksel & Bahadir, 2020). In addition, it indicated the effect of mindfulness on reducing alexithymia (Namjoo, Seirafi, Assarzadegan, & Borjali, 2019; Taghizadeh & Dalvand, 2020)**.** Theoretically, the goal of treatment based on acceptance and commitment is to create and improve the patient's cognitive flexibility, and the main advantage of this treatment method compared to other treatments is the consideration of motivational aspects along with cognitive elements, in order to influence the continuation of the effectiveness of the treatment, but cognitive therapy based on mindfulness can help therapy seekers recognize incorrect thoughts and evaluations, become aware of the present without judgment, and realize their personal values (Thompson, Destree, Albertella, & Fontenelle, 2021).

Gastrointestinal diseases are one of the most major and frequent chronic non-communicable conditions, which impose a great health burden and medical pressure on communities and healthcare services. Alexithymia is one of the factors that can be seen in people with digestive problems (Kano et al., 2018). Moreover, due to the fact that most of the variables examined in this study have a psychological burden in some way, and most gastrointestinal problems are considered psychosomatic diseases, addressing such issues has important value in this study. Our research was conducted with the aim to compare of ACT and MBCT alexithymia in patients with gastrointestinal disease.

Methods

The current semi-experimental, cross-sectional research was performed with a pretest-posttest design, and an unequal control group, in 2018-19. The statistical population of this research included all gastroenterology patients referred to Imam Khomeini Hospital in Sari, Iran, in 2019. They were selected from the list of patients referred to the gastroenterology ward using convenience sampling method**.** In order

to determine the sample size, Gpower software was used. The effect size factors of significance level was considered to be 0.24, the significance level and test power were considered to be 0.05 and 0.8 based on previous studies, and the number of investigation groups was 3. Accordingly, the sample size was 45 people (15 people in the first intervention group, 15 people in the second intervention group, and 15 people in the control group). According to the nature of the community and the clinical nature of the samples, and due to the availability of patients with gastrointestinal disease in the hospital, available sampling method was used to select the participants.

Inclusion and Exclusion criteria

The inclusion criteria included willingness to participate in the study, ability to share information and experiences, suffering from a digestive disease as diagnosed by a gastroenterologist, illness duration of at least 1 year, age range of 20-50 years, and having a digestive disease in the last 5 years. The study **exclusion criteria** were diagnosis of comorbidity with psychiatric disorders, history of hospitalization using diagnostic interview, use of other treatment methods during the research such as other psychological treatments, and absence from virtual training sessions.

Procedure and study setting

This randomized, double-blind, clinical trial with parallel-group was performed during 8 weeks (from February 2020 to April 2020) in Imam Khomeini Hospital affiliated with Mazandaran University of Medical Sciences, Iran. All procedures of this trial have been approved by the ethics committee of the Islamic Azad University of Boroujerd, Iran, (Approval ID: IR.IAU.B.REC.1399.046). Patients' symptoms were assessed at the baseline and posttest. A written informed consent form was obtained from every participant. Moreover, the right to leave the trial for any cause was explained to the participants. In this way, by making the necessary arrangements, the volunteers participating in this study were asked to complete the study questionnaires. After discarding the distorted questionnaires due to the lack of cooperation of some participants, 80 completed questionnaires remained. We analyzed the people who scored higher on the pretest [the range of the overall score of the Cognitive Emotion Regulation Strategies Questionnaire is 36-180, people who obtained higher scores were included in the this study, and the range of the overall score of the Toronto Alexithymia Scale (TAS-20) is 20-100, and people with higher scores were selected as participants), 45 people were randomly divided into experimental group and control groups. An experimental group underwent ACT for 8 weekly 90-minute sessions online and through video and audio communication, and the other experimental group underwent 8 weekly 60-minute sessions of MBCT through visual and audio communication, while the participants in the control group did not receive any training. All the subjects completed the research consent form and all subjects were assured that their private information would remain completely confidential. In addition, due to the COVID-19 epidemic, the meetings were held online.

ACT for patients with gastrointestinal disease: The treatment plan based on acceptance and commitment presented to one of the experimental groups in 8 weekly 90-minute sessions is presented in table 1 (Hayes, Pistorello, & Levin, 2012).

Mindfulness-based cognitive therapy protocols for gastrointestinal diseases: The MBCT plan presented to the other experimental group in 8 weekly 60-minute sessions is presented in table 2.

Toronto Alexithymia Scale: The primary form of the TAS contains 26 parts with a similar number of negatively and positively keyed items to control for agreement (Carnovale, Taylor, Parker, Sanches, & Bagby, 2021).

Table 1. Content of the treatment sessions based on acceptance and commitment therapy (Hayes et al., 2012)

Session	Content
1	Introducing the members, discussing the rules of the meetings, expressing the goals and philosophy of intervention, explaining acceptance and commitment, introducing creative helplessness and ineffective systems
2	Presenting the concept of controlling the problem, not controlling the solution, explaining the effect of ineffective coping, avoiding and controlling unwanted mental experiences, strengthening the management of experiences and emotion control strategies
3	Acceptance and willingness to control unwanted mental experiences
4	Training cognitive impairment and frequent observation of unpleasant thoughts
5	Explaining self as a context, self as a process of dynamic self-awareness, self-conceptualized and self-observant, and distinguishing between types of self to break thoughts and feelings
6	Distinguishing between feelings and values
7	Training committed action, facing to achieve goals, increasing mental flexibility, and recognizing obstacles to committed action with examples such as memories and thoughts, lack of social skills, and lack of support resources
8	Evaluation of the committed action, the expression of the skills learned by the subjects, training how to deal with possible failures after the end of the treatment, and presentation of a summary of the content of the previous sessions

Factor analysis presented 4 factors for the TAS-26 including (a) the capacity to recognize and differentiate between feelings and bodily sensations, (b) the capacity to express feelings, (c) daydreaming, and (d) external-oriented thinking (EOT). Subsequently, an abstracted form was provided, the TAS-R with 23 items and an intended two-dimensional structure (Bagby, Parker, Onno, Mortezaei, & Taylor, 2021). The authors proposed that the TAS-20 (Carnovale et al., 2021) had better psychometric properties than the other versions of the TAS series.(Carnovale et al., 2021), which had better psychometric properties than the other versions of the TAS series. Presently, 25 years after its initial presentation, the TAS-20 is the most commonly-used measure in this regard (Bagby et al., 2021). This scale was designed to measure the three elements of (a) difficulty identifying feelings (DIF), (b) difficulty describing feelings (DDF), and (c) externally oriented thinking (EOT).

SPSS software (version 21; IBM Corp., Armonk, NY, USA) was used for analysis of the data.

Table 2. Mindfulness-based cognitive therapy sessions

Session	Content
1	Acquainting the members with the goals of the program, stating the rules, and training them to know when their mind goes into automatic guidance so that they can control it
2	Education in relation to the problems that may arise in the practice of physical examination and how depression causes a vicious cycle, which is difficult to challenge
3	Awareness of how the mind can often be busy and scattered, and learning to focus deliberately and be aware of breathing to facilitate the possibility of being more focused and integrated.
4	Creating abilities in a person to be able to look at events from another angle and have a broad and different view of them
5	Teaching acceptance of unpleasant experiences and feelings and creating a different relationship with experience
6	Learning to unite oneself with thoughts and attitudes, so that one can establish a better relationship with them
7	Explaining that awareness alone cannot solve one's problems and one must gradually learn how to take care of oneself and value moment-to-moment experience.
8	Informing and encouraging people to let go of feelings of disappointment and regret about the past, and discussing the importance of staying in the present moment and how to free the mind from past and future regrets and worries

Categorical variables were considered and mean ± SD were considered as continuous variable (95% = CIs). In order to analyze the data, descriptive statistics such as mean and standard deviation were used. The assumptions of covariance analysis were assessed, and due to the existence of the pretest and a dependent variable of the univariate covariance analysis method in was considered. Moreover, Bonferroni's post hoc test was used to compare the effect of independent variables.

Results

The demographic information of the experimental and control groups are presented in table 3. Chi-square test results show that there was no significant difference between the two groups in terms of the demographic characteristics before the intervention.

To check the homogeneity of variance of the three groups in the posttest stage, Levene's homogeneity of variances test was used. Levene's test calculated for the alexithymia variable was not statistically significant [P = 0.58; F = 3.9 (42, 2)]. Therefore, the assumption of homogeneity of variances was confirmed. The assumption of homogeneity of regression coefficients was confirmed by examining the interaction effect of the independent variable, and the results indicated that the F level was significant at the level of 0.05 (P = 0.39; F = 1.102). The Shapiro-Wilk test was used to determine the distribution of the population (normality of the data), which was 0.95 (P = 0.33) and 0.88 for the variable of emotional ataxia in the pretest and posttest of the first experimental group (ACT) and 0.80 (P=0.89) in the pretest and posttest of the second experiment group (MBCT). Furthermore, in the pretest and posttest of the control group, it was 0.93 (P = 0.92) and 0.92 (P = 0.44), respectively. According to the assumptions of univariate covariance analysis, the use of this test is allowed.

Table 4 shows the pretest and posttest means of the subscales of alexithymia of patients with gastrointestinal disease in the intervention groups.

The results of examining the simultaneous effect of ACT and MBCT on flexibility subscales using the multivariate covariance analysis test are presented in table 5. The results of Wilks' Lambda Trace statistical characteristic show that the intervention effect is not significant in at least one of the flexibility subscales (P < 0.05). Therefore, multivariate analysis of covariance (MANCOVA) was used.

Table 6 illustrated the results of MANCOVA in the subscales of alexithymia (P < 0.05). Therefore, in response to research question number three, it can be said that there is no significant difference between ACT and MBCT in terms of the subscales of emotional ataxia (diagnosis, description, and objective thinking).

Table 3. Demographic characteristics of the participants

Variables	Groups	Control group	Experimental group	Chi-square	P-value
Gender	Male	6	7	1.333	0.512
	Female	9	8		
Age (year)	< 35	8	7	1.250	0.123
	35 <	7	8		
Marital status	Single	2	4	1.301	0.563
	Married	13	11		
Education	Doctorate	1	1	1.414	0.301
	Masters	6	7		
	the expert	8	7		

Table 4. Pretest and posttest means of the subscales of alexithymia of patients with gastrointestinal disease in the intervention groups

Groups	Pretest (mean ± SD)			Posttest (mean ± SD)		
	Diagnosis	Description	Objective Thinking	Diagnosis	Description	Objective Thinking
ACT	17.00 ± 9.12	15.53 ± 4.96	20.93 ± 4.76	13.00 ± 7.09	11.20 ± 4.43	20.80 ± 4.39
MBCT	17.00 ± 8.56	12.93 ± 4.89	23.60 ± 2.95	16.20 ± 6.20	13.13 ± 4.87	21.33 ± 4.10
Control	15.53 ± 6.66	13.27 ± 5.70	21.73 ± 3.13	15.93 ± 6.42	12.67 ± 4.43	22.73 ± 3.17

ACT: Acceptance and commitment therapy; MBCT: Mindfulness-based cognitive therapy

Discussion

The present study was conducted with the aim of comparing the effectiveness of ACT and MBCT in reducing emotional dyslexia in patients with gastrointestinal disease**.** Considering the issues that patients with gastrointestinal disease and their families face and their need for effective methods to reduce their psychological challenges, the present study was conducted to compare ACT and MBCT. The results of the present study indicate that the two treatment methods were different from the control group, but they were not significantly different from each other. ACT and MBCT have many common components, including awareness of one's thoughts, feelings, and behavior, acceptance, non-avoidance, non-fusion, and distinguishing thought from reality, and these common cores are probably why there is no significant difference between these two treatments. Our results are consistent with that of the studies by Burisch et al. (2013), Feingold et al. (2019), Morr et al. (2021), Crane (2017), and Black, Yiannakou, Guthrie, West, Houghton, and Ford (2021) and inconsistent with the studies by Jin et al. (2021), and Costa and Pinto-Gouveia (2011).

In MBCT, the concept of cognitive defusion is the degree of influence that thought has on behavior. Context-dependent behavior and thought-dependent behavior are located in the continuum between the cognitive defusion and when a person is mixed with his/her thoughts, and he/she cannot distinguish his/her subjective judgment of reality from reality itself. Furthermore, in ACT, people realize their abilities in the field of identifying and describing emotions and their motivation to accurately express emotions increases. People, who have the ability to recognize their emotions and emotions and their emotional states in a more effective way, report that they can better face problems and be more successful in adapting to the environment and others, and as a result, these people will have more mental health (Costa & Pinto-Gouveia, 2011).

The results showed that patients with gastrointestinal disease are not aware of the existence of their positive and negative emotions, and they cannot use their emotions well in different life situations, because their problems make them evaluate themselves negatively, but MBCT and wise awareness makes them aware of the existence of negative emotions and their negative impact on themselves, and thus, they try to keep themselves emotionally healthy by re-evaluating their emotions in different situations (George & de Guzman, 2015).

Table 5. Examining the effects of groups on the components of emotional-cognitive non-adaptive strategies

Source	Test type	F	P
Pretest	Pillai-Bartlett Trace	0.851	0.475
	Wilks' Lambda Trace	0.851	0.475
	Hotelling Trace	0.851	0.475
	Roy's Largest Root	0.851	0.475
Group	Pillai-Bartlett Trace	0.636	0.701
	Wilks' Lambda Trace	0.624	0.710
	Hotelling Trace	0.612	0.720
	Roy's Largest Root	0.982	0.411

Table 6. Examining the effects of groups on the components of emotional-cognitive non-adaptive strategies

Source	Dependent Variables	df	SS	MS	F	P-value	Eta
Pretest	Diagnosis	1	81.348	81.348	1.919	0.173	0.045
	Description	1	28.641	28.641	1.377	0.247	0.032
	Objective Thinking	1	15.509	15.509	1.007	0.321	0.024
Group Membership	Diagnosis	2	90.674	45.337	1.070	0.353	0.050
	Description	2	28.418	14.209	0.683	0.511	0.032
	Objective Thinking	2	32.03	16.015	1.040	0.362	0.048

df: Degree of freedom; SS: Sum of Squares; MS: Mean Squares

In this treatment method, patients learn that, despite their problems, they can enjoy life, their lives become meaningful and they are satisfied with themselves, and this psychological progress will reduce the symptoms of diseases such as depression and anxiety, as well as reduce sleep disorders and psychosomatic diseases. Moreover, through acceptance and cognitive defusion in this treatment method, patients learnt to not respond to thoughts, feelings, memories, desires, and symptoms despite being dissatisfied with their health status or their surroundings and having a problem, and to behave in such a way that they move according to the path of their values, which will improve their QOL in general (Feingold et al., 2019). ACT, due to the mechanisms of acceptance, increased awareness, presence in the present moment, non-judgmental observation, and committed action, their values, and refraining from experiential avoidance, can equip patients with beliefs, behaviors, and values that arise when unpleasant emotions threaten the emotional well-being,, teach them to become aware of their emotions, have more control over them, and regulate them constructively (Burisch et al., 2013; Kirschner et al., 2022).

In addition, the results of the present study indicate the impact of MBCT on alexithymia, and these results are in line with the studies by Burisch et al. (2013), Ahmadi Doulabi et al. (2019), Morr et al. (2021), Crane (2017). Practicing mindfulness skills promotes patients' capacity to cope with negative emotional conditions and enables them to solve them (Burgess et al., 2021). It seems that such a state can increase the QOL. In fact, continuous practice of mindfulness increases awareness and awareness of the body, emotions, and thoughts. In mindfulness, paying attention to the body and breathing is practiced, and awareness of the different sensations experienced in the body, and even breathing itself, is obtained. By performing yoga exercises, attention to the body is experienced more and more, and this awareness. In fact, it seems that mindfulness exercises effect the cognitive system and information processing by enhancing people's awareness of the present moment, through the techniques of attention to breathing and the body, and being present in the moment. Therefore, due to the effectiveness of this type of training, the widespread use of this method is recommended, and mindfulness can help patients to recognize incorrect thoughts and evaluations so that they become aware of the present moment without judgment (Williams et al., 2021; Seritan et al., 2022). Therefore, the increasing of psychological flexibility in MBCT can improve dyslexia in patients with gastrointestinal disease.

The current research had some limitations. The most important limitations of the research included the sudden outbreak of corona virus and the limitation on face-to-face meetings with the participants. It is suggested that these effective approaches be used in support and treatment centers. It is recommended that researchers choose a larger sample, other variables, samples from other chronic diseases, or hospitals other

than those in Mazandaran province, and use other psychological treatments in conducting future researches in order to achieve broader results.

Conclusion

It can be concluded that both treatments can reduce the symptoms of emotional dyslexia in patients with gastrointestinal tract diseases. The results showed that the two methods of ACT and cognitive therapy were not significantly different in terms of reducing the symptoms of ataxia of the subjects. Therefore, each of these methods can be an effective psychological treatment in improving the emotional states of these patients.

Conflict of Interests

Authors have no conflict of interests.

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References

Ahmadi Doulabi, M., Sajedi, F., Vameghi, R., Mazaheri, M. A., Akbarzadeh, B. A., & Afraz, F. (2019). Marital satisfaction and depression in mothers of 3-4 year old children with developmental delay in comparison with mothers of normal children. *Iran J Child.Neurol., 13*(4), 91-108. doi:ijcn-13-091 [pii]. Retrieved from PM:31645870

Bagby, R. M., Parker, J. D. A., Onno, K. A., Mortezaei, A., & Taylor, G. J. (2021). Development and psychometric evaluation of an informant form of the 20-item Toronto alexithymia scale. *J Psychosom.Res, 141*, 110329. doi:S0022-3999(20)30891-6 [pii];10.1016/j.jpsychores.2020.110329 [doi]. Retrieved from PM:33316631

Black, C. J., Yiannakou, Y., Guthrie, E. A., West, R., Houghton, L. A., & Ford, A. C. (2021). A Novel Method to Classify and Subgroup Patients With IBS Based on Gastrointestinal Symptoms and Psychological Profiles. *Am.J Gastroenterol., 116*(2), 372-381. doi:00000434-202102000-00029 [pii];10.14309/ajg.0000000000000975 [doi]. Retrieved from PM:33110014

Boraschi, P., Giugliano, L., Mercogliano, G., Donati, F., Romano, S., & Neri, E. (2021). Abdominal and gastrointestinal manifestations in COVID-19 patients: Is imaging useful? *World J Gastroenterol., 27*(26), 4143-4159. doi:10.3748/wjg.v27.i26.4143 [doi]. Retrieved from PM:34326615

Burgess, E. E., Selchen, S., Diplock, B. D., & Rector, N. A. (2021). A brief mindfulness-based cognitive therapy (MBCT) intervention as a population-level strategy for anxiety and depression. *Int J Cogn Ther, 14*(2), 380-398. doi:105 [pii];10.1007/s41811-021-00105-x [doi]. Retrieved from PM:33897938

Burisch, J., Jess, T., Martinato, M., & Lakatos, P. L. (2013). The burden of inflammatory bowel disease in Europe. *J Crohns.Colitis., 7*(4), 322-337. doi:S1873-9946(13)00030-5 [pii];10.1016/j.crohns.2013.01.010 [doi]. Retrieved from PM:23395397

Carnovale, M., Taylor, G. J., Parker, J. D. A., Sanches, M., & Bagby, R. M. (2021). A bifactor analysis of the 20-item Toronto Alexithymia Scale: Further support for a general alexithymia factor. *Psychol Assess., 33*(7), 619-628. doi:2021-31512-001 [pii];10.1037/pas0001000 [doi]. Retrieved from PM:33793263

Costa, J., & Pinto-Gouveia, J. (2011). Acceptance of pain, self-compassion and psychopathology: using the chronic pain acceptance questionnaire to identify patients' subgroups. *Clin Psychol Psychother., 18*(4), 292-302. doi:10.1002/cpp.718 [doi]. Retrieved from PM:20806418

Crane, R. (2017). *Mindfulness-based Cognitive Therapy: Distinctive Features*. London, UK: Routledge.

Feingold, J., Murray, H. B., & Keefer, L. (2019). Recent advances in cognitive behavioral therapy for digestive disorders and the role of applied positive psychology across the spectrum of GI care. *J Clin Gastroenterol., 53*(7), 477-485. doi:10.1097/MCG.0000000000001234 [doi]. Retrieved from PM:31169757

George, B., & de Guzman, R. (2015). Effectiveness of acceptance and commitment therapy based intervention program (ACTP) on perceived stress and emotion regulation among alcoholics in Kerala, India. *Indian Journal of Positive Psychology, 6*(1), 10-18.

Hayashi, Y., Wagatsuma, K., Nojima, M., Yamakawa, T., Ichimiya, T., Yokoyama, Y. et al. (2021). The characteristics of gastrointestinal symptoms in patients with severe COVID-19: a systematic review and meta-analysis. *J Gastroenterol., 56*(5), 409-420. doi:10.1007/s00535-021-01778-z [pii];1778 [pii];10.1007/s00535-021-01778-z [doi]. Retrieved from PM:33759041

Hayes, S. C., Strosahl, K. D., Bunting, K., Twohig, M., & Wilson, K. G. (2004). What Is Acceptance and Commitment Therapy? In S.C. Hayes & K. D. Strosahl (Eds.), *A Practical Guide to Acceptance and Commitment Therapy* (pp. 3-29). Boston, MA: Springer US.

Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist, 40*(7), 976-1002. doi:10.1177/0011000012460836 [doi].

Hazlett-Stevens, H., Singer, J., & Chong, A. (2019). Mindfulness-based stress reduction and mindfulness-based cognitive therapy with older adults: A qualitative review of randomized controlled outcome research. *Clin Gerontol., 42*(4), 347-358. doi:10.1080/07317115.2018.1518282 [doi]. Retrieved from PM:30204557

Henrich, J. F., Gjelsvik, B., Surawy, C., Evans, E., & Martin, M. (2020). A randomized clinical trial of mindfulness-based cognitive therapy for women with irritable bowel syndrome-Effects and mechanisms. *J Consult.Clin Psychol, 88*(4), 295-310. doi:2020-15199-002 [pii];10.1037/ccp0000483 [doi]. Retrieved from PM:32134291

Jin, B., Singh, R., Ha, S. E., Zogg, H., Park, P. J., & Ro, S. (2021). Pathophysiological mechanisms underlying gastrointestinal symptoms in patients with COVID-19. *World J Gastroenterol., 27*(19), 2341-2352. doi:10.3748/wjg.v27.i19.2341 [doi]. Retrieved from PM:34040326

Kani, H. T., Dural, U., Kani, A. S., Yanartas, O., Kiziltas, S., Enc, F. Y. et al. (2019). Evaluation of depression, anxiety, alexithymia, attachment, social support and somatization in functional dyspepsia. *Psychiatry and Clinical Psychopharmacology, 29*(1), 45-51. doi:10.1080/24750573.2018.1480081 [doi].

Kano, M., Endo, Y., & Fukudo, S. (2018). Association between alexithymia and functional gastrointestinal disorders. *Front.Psychol, 9*, 599. doi:10.3389/fpsyg.2018.00599 [doi]. Retrieved from PM:29922191

Keefer, L., Bedell, A., Norton, C., & Hart, A. L. (2022). How should pain, fatigue, and emotional wellness be incorporated into treatment goals for optimal management of inflammatory bowel disease? *Gastroenterology, 162*(5), 1439-1451. doi:S0016-5085(21)04073-7 [pii];10.1053/j.gastro.2021.08.060 [doi]. Retrieved from PM:34995528

Kinnaird, E., Stewart, C., & Tchanturia, K. (2019). Investigating alexithymia in autism: A systematic review and meta-analysis. *Eur.Psychiatry, 55*, 80-89. doi:S0924-9338(18)30177-9 [pii];10.1016/j.eurpsy.2018.09.004 [doi]. Retrieved from PM:30399531

Kirschner, H., Kuyken, W., & Karl, A. (2022). A biobehavioural approach to understand how mindfulness-based cognitive therapy reduces dispositional negative self-bias in recurrent depression. *Mindfulness, 13*(4), 928-941. doi:10.1007/s12671-022-01845-3 [doi].

Labanski, A., Langhorst, J., Engler, H., & Elsenbruch, S. (2020). Stress and the brain-gut axis in functional and chronic-inflammatory gastrointestinal diseases: A transdisciplinary challenge. *Psychoneuroendocrinology, 111*, 104501. doi:S0306-4530(19)31243-0 [pii];10.1016/j.psyneuen.2019.104501 [doi]. Retrieved from PM:31715444

Li, H., Wong, C. L., Jin, X., Chen, J., Chong, Y. Y., & Bai, Y. (2021). Effects of Acceptance and Commitment Therapy on health-related outcomes for patients with advanced cancer: A systematic review. *Int J Nurs Stud., 115*, 103876. doi:S0020-7489(21)00008-0 [pii];10.1016/j.ijnurstu.2021.103876 [doi]. Retrieved from PM:33517079

Martino, G., Caputo, A., Vicario, C. M., Catalano, A., Schwarz, P., & Quattropani, M. C. (2020). The relationship between alexithymia and type 2 diabetes: A systematic review. *Front.Psychol, 11*, 2026. doi:10.3389/fpsyg.2020.02026 [doi]. Retrieved from PM:32982843

Morie, K. P., Potenza, M. N., Beitel, M., Oberleitner, L. M., Roos, C. R., Yip, S. W. et al. (2021). Alexithymia and pain experience among patients using methadone-maintenance therapy. *Drug Alcohol.Depend., 218*, 108387. doi:S0376-8716(20)30552-4 [pii];10.1016/j.drugalcdep.2020.108387 [doi]. Retrieved from PM:33168339

Morr, M., Lieberz, J., Dobbelstein, M., Philipsen, A., Hurlemann, R., & Scheele, D. (2021). Insula reactivity mediates subjective isolation stress in alexithymia. *Sci Rep., 11*(1), 15326. doi:10.1038/s41598-021-94799-w [pii];94799 [pii];10.1038/s41598-021-94799-w [doi]. Retrieved from PM:34321519

Namjoo, S., Seirafi, M. R., Assarzadegan, F., & Borjali, A. (2019). Efficacy of mindfulness-based cognitive therapy on headache considering the moderating role of alexithymia: A randomized controlled trial. *Journal of Inflammatory Diseases, 22*(6), 150-163. doi:10.32598/JQUMS.22.6.150 [doi].

Ni, Y., Ma, L., & Li, J. (2020). Effects of mindfulness-based stress reduction and mindfulness-based cognitive therapy in people with diabetes: A systematic review and meta-analysis. *J Nurs Scholarsh., 52*(4), 379-388. doi:10.1111/jnu.12560 [doi]. Retrieved from PM:32406186

Ross, E. J., Cassisi, J. E., Joseph, D., Dunn, M. E., & Jex, S. (2022). Cross-lagged analyses between gastrointestinal symptoms, psychological distress, and disability in emerging adults. *Appl.Psychol Health Well.Being., 14*(3), 920-936. doi:10.1111/aphw.12358 [doi]. Retrieved from PM:35318797

Savnikova, A., & Khaustova, O. (2021). Alexithymia and gambling: Psychotherapy to differentiate feelings. *Eur Psychiatry, 2021/08/13*(S1), S494-S495. doi:10.1192/j.eurpsy.2021.1322 [doi].

Scheerer, N. E., Boucher, T. Q., & Iarocci, G. (2021). Alexithymia is related to poor social competence in autistic and nonautistic children. *Autism Res, 14*(6), 1252-1259. doi:10.1002/aur.2485 [doi]. Retrieved from PM:33616273

Seritan, A., Prakash, P., Wang, S., Eisendrath, S., & Iosif, A. M. (2022). Mindfulness-based Cognitive Therapy for People with Parkinson's Disease during the COVID-19 Pandemic. *The American Journal of Geriatric Psychiatry, 30*(4, Supplement), S66. doi:10.1016/j.jagp.2022.01.059 [doi].

Sfeir, E., Geara, C., Hallit, S., & Obeid, S. (2020). Alexithymia, aggressive behavior and depression among Lebanese adolescents: A cross-sectional study. *Child.Adolesc.Psychiatry Ment Health, 14*, 32. doi:338 [pii];10.1186/s13034-020-00338-2 [doi]. Retrieved from PM:32939221

Shank, L. M., Tanofsky-Kraff, M., Kelly, N. R., Jaramillo, M., Rubin, S. G., Altman, D. R. et al. (2019). The association between alexithymia and eating behavior in children and adolescents. *Appetite., 142*, 104381. doi:S0195-6663(19)30638-5 [pii];10.1016/j.appet.2019.104381 [doi]. Retrieved from PM:31344421

Shibata, M., Ninomiya, T., Jensen, M. P., Anno, K., Yonemoto, K., Makino, S. et al. (2014). Alexithymia is associated with greater risk of chronic pain and negative affect and with lower life satisfaction in a general population: the Hisayama Study. *PLoS.One., 9*(3), e90984. doi:PONE-D-13-41543 [pii];10.1371/journal.pone.0090984 [doi]. Retrieved from PM:24621785

Sifneos, P. E. (2000). Alexithymia, clinical issues, politics and crime. *Psychother.Psychosom., 69*(3), 113-116. doi:pps69113 [pii];10.1159/000012377 [doi]. Retrieved from PM:10877675

Sorboni, S. G., Moghaddam, H. S., Jafarzadeh-Esfehani, R., & Soleimanpour, S. (2022). A Comprehensive Review on the Role of the Gut Microbiome in Human Neurological

Disorders. *Clin Microbiol.Rev, 35*(1), e0033820. doi:00338-20 [pii];cmr.00338-20 [pii];10.1128/CMR.00338-20 [doi]. Retrieved from PM:34985325

Taghizadeh, M. E., & Dalvand, A. (2020). The effectiveness of mindfulness- based cognitive therapy on Alexithymia and cognitive impairment in women with Depressive disorder. *Shenakht, 7*(5), 117-129. doi:10.52547/shenakht.7.5.117 [doi].

Tang, W., Hu, T., Yang, L., & Xu, J. (2020). The role of alexithymia in the mental health problems of home-quarantined university students during the COVID-19 pandemic in China. *Pers Individ.Dif., 165*, 110131. doi:S0191-8869(20)30320-2 [pii];110131 [pii];10.1016/j.paid.2020.110131 [doi]. Retrieved from PM:32518435

Thompson, E. M., Destree, L., Albertella, L., & Fontenelle, L. F. (2021). Internet-based acceptance and commitment therapy: A transdiagnostic systematic review and meta-analysis for mental health outcomes. *Behav Ther, 52*(2), 492-507. doi:S0005-7894(20)30100-3 [pii];10.1016/j.beth.2020.07.002 [doi]. Retrieved from PM:33622516

Trindade, I. A., Guiomar, R., Carvalho, S. A., Duarte, J., Lapa, T., Menezes, P. et al. (2021). Efficacy of online-based acceptance and commitment therapy for chronic pain: A systematic review and meta-analysis. *J Pain, 22*(11), 1328-1342. doi:S1526-5900(21)00207-8 [pii];10.1016/j.jpain.2021.04.003 [doi]. Retrieved from PM:33892153

Tshabalala, S. J., Tomita, A., & Ramlall, S. (2019). Depression, anxiety and stress symptoms in patients presenting with dyspepsia at a regional hospital in KwaZulu-Natal province. *S.Afr.J Psychiatr., 25*, 1382. doi:SAJPsy-25-1382 [pii];10.4102/sajpsychiatry.v25i0.1382 [doi]. Retrieved from PM:31745439

Williams, K., Elliott, R., Barnhofer, T., Zahn, R., & Anderson, I. M. (2021). positive shifts in emotion evaluation following mindfulness-based cognitive therapy (MBCT) in remitted depressed participants. *Mindfulness, 12*(3), 623-635. doi:10.1007/s12671-020-01521-4 [doi].

Yuksel, A., & Bahadir, Y. E. (2020). The effects of group mindfulness-based cognitive therapy in nursing students: A quasi-experimental study. *Nurse.Educ Today, 85*, 104268. doi: S0260-6917(19)30352-1 [pii];10.1016/j.nedt.2019.104268 [doi]. Retrieved from PM:31765872