DOI: http://dx.doi.org/10.22122/ijbmc.v10i3.468 Published by Vesnu Publications

International Journal of Body, Mind and Culture

Effectiveness of Integrated TransDiagnostic Group Therapy in Reducing Symptoms of Chronic Pain, Depression, and Anxiety among Cancer Patients

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Quantitative Study

Abstract

Background: Cancer is usually caused by malfunctioning of regulatory mechanisms of cell growth and division, and this malfunction itself is caused by genetic damage that is often caused by chemicals, hormones, and sometimes viruses. The purpose of this study was to assess the effectiveness of integrated transdiagnostic group therapy in reducing the symptoms of chronic pain, depression, and anxiety among cancer patients.

Methods: The present research method was semi-experimental with a pretest-posttest design, and a control group. For this purpose, 62 cancer patients were selected from the treatment centers for cancer patients according to the objectives of the research and the study inclusion criteria, and were randomly divided into two control and experimental groups. The tools used in this research were the Chronic Pain Acceptance Questionnaire (CPAQ), Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI) (McCracken, Vowles, & Eccleston, 2004), which was completely optional. The research data were analyzed using analysis of covariance in SPSS software at a significance level of 0.05.

Results: The results obtained from the data analysis showed that the integrated transpersonal treatment significantly reduced the symptoms of depression ($F = 129.05$; $P < 0.01$), anxiety ($F = 20.94$; $P < 0.01$), and chronic pain ($F = 123.65$; $P < 0.01$).

Conclusion: These findings indicate that the components affecting the mechanism of action in integrated transdiagnostic treatment can have a significant effect on reducing the level of chronic pain symptoms and depression and anxiety in cancer patients through the modification of emotional and cognitive systems.

Keywords: Anxiety; Depression; Chronic pain; Cancer; Patients

Citation: Kamalinedjad F, Talaei A. **Effectiveness of Integrated TransDiagnostic Group Therapy in Reducing Symptoms of Chronic Pain, Depression, and Anxiety among Cancer Patients.** Int J Body Mind Culture 2023; 10(3): 355-65.

Received: 01 Jan. 2023
Accepted: 28 June 2023

Introduction

It is believed that depression results from negative and ineffective cognitive actions. Cognitive theories emphasize the role of negative cognitions in depression. Perveen (2015) hypothesized that people with a background of attributing adverse life events to stability (permanence) and global causes (extensive) are more prone to depression. According to the model of depression presented by Abramson et al., Shultz, Rahtz, and Sirgy (2017), and Hamilton and Sandelowski (2004) found in their research that cognitive styles are directly related to depression symptoms. Of course, this is a two-way relationship, meaning that depression also affects people's cognitive performance. Its mechanism of action is that depressed people are often not aware of their thought patterns and are also unaware of their effects on their mental health, and since irrational thoughts often play a crucial role in many mental disorders, these thoughts create a feeling like depression and behavioral conditions that often require therapeutic intervention (Garcia-Escalera, Valiente, Sandin, Ehrenreich-May, Prieto, & Chorot, 2020).

Many psychological disorders (e.g., anxiety, depression, stress, and dysfunctional metacognitive beliefs) play an essential role in the occurrence and exacerbation of joint diseases. Various studies show the relationship and overlap of these psychological factors with obsessive personality disorder and obsessive beliefs. Rheumatic diseases are a type of musculoskeletal disease considered connective tissue disorders. They are among the most common causes of people's disabilities in work, family, and social life (Behzadi & Rahmati, 2016). Considering that psychological problems are mainly seen in people with joint diseases (Lawrence et al., 2008), a wide range of psychosocial issues, such as chronic stress and anxiety, are seen in these people (Cunha, Ribeiro, & Andre, 2016).

Psychological approaches have determined the damaging factors in a disaster and the pain intensity. Identifying these factors and their mechanisms in the experience of pain can identify the antecedents and factors affecting the experience of physical pain from the perspective of psychological factors. Be of great help. Since the relationship between chronic pain and psychological signs and symptoms is still not completely clear, it can be said that it is probably a bidirectional relationship (Gormsen, Rosenberg, Bach, & Jensen, 2010). At first glance, abnormality in mood and pain-regulating systems in the brain and spinal cord is considered a common mechanism (Murphy, Sacks, Brady, Hootman, & Chapman, 2012). However, it seems that depression and anxiety can mutually or independently affect the clinical condition resulting from physical pain. Anxiety and depression are associated with pain catastrophizing and poor treatment prognosis in chronic pain sufferers (Bair, Robinson, Katon, & Kroenke, 2003). Research shows that about 90% of patients with chronic pain have symptoms of depression, and even in 65% of cases, these two problems may occur simultaneously (Wilson, Mikail, D'Eon, & Minns, 2001). Moreover, about 35% of people with chronic pain have anxiety symptoms (Knaster, Karlsson, Estlander, & Kalso, 2012). Thus, it seems that anxiety, depression, and psychological pressures cause a decrease in descending inhibition, causing a reduction in the central sensitivity threshold and increase in pain intensity (Zhu et al., 2014).

Diagnosis of cancer causes despair in patients, who feel that they are in an uncontrollable and challenging situation (Norton & Barrera, 2012). They are stuck and feel like they are rolling a big stone in the sea (Alloy, Abramson, Whitehouse, Hogan, Panzarella, & Rose, 2006). Psychological complications result from cancer diagnosis and treatments, with a prevalence of 14 to 38% during the disease

(Hosogoshi et al., 2020). Psychological complications have been reported in 70% of cancer patients (Barlow et al., 2010). Studies have confirmed that the primary and most common complaint of these patients is adjustment disorder with anxiety, depression, and anxiety. The research by McLaughlin and Nolen-Hoeksema (2011) showed that people who cannot effectively manage their emotional responses to everyday events experience more intense and extended periods of psychological distress. For this reason, people need to acquire skills to think in more adaptive ways and act more resiliently when faced with problems and stressful situations.

Integrated protocol therapy capitalizes on the achievements of cognitive-behavioral theories by extracting and integrating common principles of existing psychological treatments that have been empirically validated. These common principles include reconstructing maladaptive cognitive evaluations, changing the desire to act related to emotions, preventing emotional avoidance, and using methods of dealing with emotions. In addition, treatment with an integrated protocol emphasizes the adaptive and functional nature of emotions, and increasing the patient's awareness of the role of cognitions and emotions, bodily sensations, and behaviors. Recent developments in single protocols and integrated treatments suggest that a transdiagnostic approach may be more efficient and effective than treating comorbid disorders separately and sequentially (Kessler, Stang, Wittchen, Ustun, Roy-Burne, & Walters, 1998). According to these developments, Barlow et al. (2011) have established an integrated protocol for the transdiagnostic treatment of emotional disorders.

The logic behind the formation of transdiagnostic treatments has been based on theoretical concepts and experimental results regarding the existence of common factors between emotional disorders, and they were designed mainly to target these causative factors (Barlow, Allen, & Choate, 2004). Met diagnostic protocols target cognitive and behavioral processes involved in various psychological disorders (Barlow et al., 2004). Among others, we can mention the integrated transdiagnostic treatment protocol of Barlow et al., which was presented for people with anxiety and unipolar mood disorders with potential applicability to other emotional disorders (McLaughlin & Nolen-Hoeksema, 2011)

Met diagnostic therapy is an emotion-based therapeutic approach. That is, the treatment is designed to teach patients how to face and experience their unpleasant emotions and respond to their feelings more adaptively (Sajadian, Dokanei Fard, & Behboodi, 2016) while modifying habits. The emotional regulation of patients is the focus of treatment and its goal is to reduce the intensity and occurrence of incompatible emotional experiences and improve patients' functioning (Otared, Mikaeili, Mohajeri, & Vojoudi, 2017). The integrated protocol is a cognitive-behavioral therapy (CBT) based on confrontation, which primarily emphasizes changing maladaptive responses to emotional experiences (Khakpoor, Saed, & Armani, 2019). By integrating the typical components of CBT for emotional disorders and using the latest developments in emotion science, this treatment method targets the main processes that cause emotional diseases. Research findings show the effectiveness of integrated transdiagnostic treatment on the cognitive regulation of obsessive-compulsive patients, emotional regulation of students, alexithymia, and anxiety and depression syndromes. Previous researches have confirmed the significant effectiveness of integrated transdiagnostic treatment on depression and anxiety of treatment seekers. For example, in a study conducted on 34 patients diagnosed with depression and anxiety, Sherman, Tonarely, and Ehrenreich-May

(2018) found that integrated transdiagnostic treatment can improve symptoms in these people by affecting the cognitive and emotional indicators that cause these diseases. These findings were confirmed by the study of Hooman, Mehrabizadeh Honarmand, Zargar, and Davodi (2015) on a sample of 45 patients with a definitive diagnosis of depression and anxiety. Otared et al. (2017) also examined and confirmed the effectiveness of this treatment in a sample of people with concurrent anxiety and depression disorders. Garcia-Escalera et al., 2020), Hosogoshi et al. (2020), Khakpoor et al. (2019), and Sherman et al. (2018) also reported similar results. Therefore, the purpose of this study was to study the effectiveness of integrated transdiagnostic group therapy in reducing the symptoms of chronic pain, depression, and anxiety among cancer patients.

Methods

The present research method was semi-experimental with a pretest-posttest design, and a control group. The statistical population of this research consists of cancer patients of Mashhad, Iran, in the year 2021. Considering the statistical population and the extent and spread of the participants, and since this study was a pilot study, using the available sampling method, 100 people were selected after examining the conditions of the individuals and considering the inclusion criteria. They were randomly divided into the experimental (n = 35) and control (n = 35) groups. In the research conducted by Sajadian et al. (2016), the mean and standard deviation of depression in people with breast cancer in the experimental and control groups were 15.28 ± 3.3 and 14.32 ± 2.9, respectively. Using these values, and according to the formula for determining sample size in two-group studies, the sample size was calculated to be 29 people in each group. Considering the possible loss of samples, this number was increased to 35 people in each group.

The initial interview was conducted by the researcher and an assistant to confirm people with definite symptoms of chronic pain, depression, and anxiety. This interview was based on ICD-10 indicators, which determines whether the individual has symptoms and a definitive diagnosis of chronic pain, depression, and anxiety or not. One of the most important points in the results of this interview was that if the severity of the symptoms of depression and anxiety was such that the individual required drug treatment, he/she was referred to a psychiatrist, but was not included in the research. The placement of participants in the experimental and control groups was done using random blocks. Random Allocation Software was used to determine the samples through random block method with blocks of 4 and using a table of random numbers. Moreover, blocking and allocation sequence for concealment was done by a person not involved in the research. The allocation ratio of the samples was one to one and they were placed into two experimental and control groups.

A questionnaire was created by a researcher and has 21 questions related to personal information (such as age, gender, marital status, and education level), demographic information (such as income level, employment status, and the type of insurance used), and medical information (such as the type and grade of cancer, duration, incidence, stage of the disease, family history, type of treatment, courses and duration of treatment, physical and mental diseases, and the level of awareness of the person about cancer). The tools used in the present research include the Chronic Pain Acceptance Questionnaire (CPAQ), Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI).

Chronic Pain Acceptance Questionnaire: The CPAQ evaluates the desired

component in the form of the two subscales of commitment to activity (11 items) and satisfaction with pain (9 items). The items of the commitment to activity and satisfaction with pain subscales are scored on a 7-point Likert scale ranging from 0 (not at all) to 6 (always), and inversely from 6 (not at all) to 0 (always), respectively. To calculate the total acceptance score, the scores obtained from the two subscales are added together. The total score of this scale ranges between 0 and 120. The cut-off point of the CPAQ is 60, according to which scores above 60 indicate pain (McCracken, Vowles, & Eccleston, 2004). Chronicity and severity of symptoms, which will indicate greater acceptance of pain. In examining the psychometric properties of the Persian version of the CPAQ, Cronbach's alpha coefficient was 0.89 and the test-retest coefficient was 0.71.

Beck Depression Inventory: The BDI contains 21 items scored on a 4-point scale ranging from 0 to 3, and each item measures one symptom. The symptoms of this test are divided into 3 groups of 7 items including emotional and emotional symptoms, motivational symptoms, cognitive symptoms, physical symptoms, and vegetative symptoms. They separate from each other. In general, the BDI is a short and easy tool for measuring the severity of depression in clinical research. In a study conducted at Tehran University of Medical Sciences (Ruzbeh Hospital), Iran, its reliability was shown in a healthy and clinical population. The classification presented by Beck and Steer for the severity of depression in this scale is as follows: no symptoms (0-9), mild depression (10-18), moderate depression (19-29), and severe depression (30-63). In Iran, various kinds of research have been conducted to measure the psychometric properties of this tool. Of these researches, we can mention the research by Tashri and Mehyar (2013), which obtained a reliability coefficient of 0.78 for the BDI in Iran.

Beck Anxiety Inventory: The BAI was designed by Beck et al. (1988) to measure the level of anxiety and it contains 21 items. Each item reflects one of the symptoms of anxiety. These symptoms are usually experienced by two groups, those who are clinically anxious or those who are in an anxious state. To implement the questionnaire, a person must read the list of symptoms and rate the symptoms quantitatively. The range of changes is from zero to 63. Thus, its cut-off point is 31, and scores higher than 31 indicate more intense anxiety. Beck et al. (1988) reported the internal consistency of this scale to be between 0.73 and 0.92. They reported a similar reliability for the short form. Marnat (1990) reported the test-retest reliability of the Beck Depression Questionnaire to be between 0.48 and 0.86 based on the type of population.

After obtaining the necessary permits and determining the sample size while complying with ethical principles, the questionnaires were presented to the selected sample of the current research. The members of both groups, before participating in the intervention sessions, completed the research tools at the hospital before receiving chemotherapy. The researcher helped the individuals who were unable to complete the questionnaires due to reasons such as low literacy or disability. After that, the members of the experimental group took part in the intervention program, which was integrated meta-diagnostic treatment. Since the treatment sessions were in group form, the general rules of group therapy sessions were followed. In total, 12 face-to-face sessions were held at Firouzgar Hospital in Tehran, Iran. The average duration of each group session was 90 minutes. This number of sessions was separate from interviews and observations and even the first tests and posttest sessions. The members of the control group did not receive any training during the period of the intervention, because the intervention conditions were controlled by the researcher. However, as soon as the intervention was over and the posttest was taken, they

benefited from group therapy intervention just like the members of the experimental group. The leader of the therapy group was the researcher himself, which will be done according to the history of therapy experiences and passing professional training courses. The extra diagnostic treatment intervention program was based on the protocol provided by Leandro et al. (2019) and Frank and Davidson (2014), which is presented below in table 1).

The ethical principles taken into consideration include coordinating and obtaining permission to enter the research environment, and explaining the purpose of the research and the method of completing the questionnaires to the participants, the right of the participants to decide whether to participate in the study or not, assuring the participants of the confidentiality of their personal information, and obtaining informed consent for participation in in the study.

Results

The mean (standard deviation) age was 45.78 (7.29) years in the experimental group and 46.85 (7.44) years in the control group. The two groups were not statistically different in terms of age. Table 2 shows the pretest and posttest results of the study groups.

Table 2 shows descriptive statistics related to the research variables in the two groups. Descriptive statistics include the mean, standard deviation, and the result of checking the normality of the distribution of observations. Moreover, evaluation of the homogeneity of the regression slope between the variables, which is one of the assumptions of this test, showed that the homogeneity of the regression slope is established. Furthermore, the assumption of the equality of variances was also approved.

Table 1. Extra diagnostic treatment program

Session	Content
First	Increasing motivation, motivational interviewing to motivate patients' participation and involvement in the course of treatment, providing a therapeutic approach, and determining treatment goals
Second	Providing psychological training, recognizing emotions and tracking emotional experiences, and teaching the three-component model of emotional experiences and Attachment, Regulation, and Competency (ARC) model
Third and Fourth	Teaching emotional awareness, and learning to observe emotional experiences (emotions and reactions to emotions), especially using mindfulness techniques
Fifth	Cognitive re-evaluation, creating awareness of the interrelationship between thoughts and emotions, identifying automatic inconsistent evaluations and common thinking traps, cognitive re-evaluation, and increasing flexibility in thinking
Sixth	Identifying emotion avoidance patterns, getting familiar with different emotion avoidance strategies and its impact on emotional experiences, and finding out about the contradictory effects of emotion avoidance
Seventh	Examining the behaviors caused by emotion-driven behaviors (EDBs), identifying behaviors caused by emotion and understanding their impact on emotional experiences, and identifying incompatible EDBs and creating alternative action tendencies by facing the behaviors
Eighth	Awareness and tolerance of physical feelings, increasing awareness of the role of physical feelings in emotional experiences, performing exposure exercises or visceral confrontation in order to become aware of physical feelings and increase tolerance of these symptoms
Ninth-Eleventh	Visceral dreams and dreams with emotions based on the situation, becoming aware of the logic of emotional dreams, teaching how to prepare the hierarchies of fear and avoidance, designing visual and objective emotional exposure exercises, and preventing avoidance
Twelfth	Overview of treatment concepts, and discussion of patient's treatment progress and relapse prevention

Table 2. Descriptive statistics of research variables by group and implementation time

Measurement time	Group	Mean ± SD	Kolmogorov-Smirnov	
			Z	P-value
Chronic pain pretest	Experimental	82.677 ± 10.912	0.161	0.20
	Control	81.354 ± 8.109	0.180	0.20
Chronic pain posttest	Experimental	76.483 ± 7.518	0.172	0.20
	Control	81.096 ± 7.700	0.238	0.20
Depression pretest	Experimental	47.129 ± 1.892	0.183	0.20
	Control	43.193 ± 1.904	0.141	0.20
Depression posttest	Experimental	41.774 ± 2.692	0.190	0.20
	Control	48.516 ± 2.063	0.157	0.20
Anxiety pretest	Experimental	46.161 ± 3.706	0.163	0.20
	Control	45.161 ± 6.346	0.209	0.20
Anxiety posttest	Experimental	42.290 ± 5.087	0.164	0.20
	Control	47.354 ± 5.828	0.178	0.20

SD: Standard deviation

As shown in the table 3, the main effect is significant in the variables of chronic pain, depression, and anxiety. This means that the difference between the average of the experimental and control groups in the posttest in the variables of chronic pain ($P < 0.001$; $F = 123.659$), depression ($P < 0.001$; $F = 129.058$), and anxiety ($P < 0.001$; $F = 20.941$) was significant. Moreover, the effect coefficient for chronic pain (ETA = 0.677), depression (ETA = 0.686), and anxiety (ETA = 0.462) indicated that the difference between the pretest and posttest averages can be reliably determined. In the experimental group, the difference between the posttest of the experimental group and the posttest of the control group was the result of the interventions.

Discussion

This research was conducted with the aim to compare the effectiveness of integrated transdiagnostic treatment on chronic pain, depression, and anxiety in cancer patients. For this purpose, 62 patients with cancer were examined according to the study inclusion criteria, and the results obtained from the data analysis show the effectiveness of the interventions on the improvement of chronic pain, depression, and anxiety. Symptoms in the members of the experimental group in comparison it was with members of the control group. These findings are in line with the studies of Hooman et al. (2015), Otared et al. (2017), Garcia and Scarella (2020), Hosogoshi et al. (2020), Khakpoor et al. (2019), and Sherman et al. (2018).

In explaining this finding, it can be stated that the main field of diagnosis and intervention in extra-diagnostic treatments is the simultaneous attention to cognitive components and emotional components (Ehring, Tuschen-Caffier, Schnulle, Fischer, & Gross, 2010).

Table 3. Analysis of covariance between the experimental and control groups in the posttest of the research variables

Variable	Source of changes	SS	df	MS	F	P-value	Eta
Chronic pain	pretest	523.97	1	523.97	27.54	0.001	0.31
	Group	462.23	1	462.23	123.65	0.001	0.67
	Error	1122.26	59	19.02			
Anxiety	pretest	444.59	1	444.59	14.65	0.001	0.19
	Group	469.47	1	469.47	20.94	0.001	0.46
	Error	1350.88	59	22.89			
Depression	pretest	110.78	1	110.78	27.88	0.001	0.32
	Group	512.68	1	512.68	129.05	0.001	0.68
	Error	234.37	59	3.97			

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

In other words, in integrated meta-diagnostic treatment, the therapist's emphasis is on emotional components, so that the patient can recognize emotional patterns and emotional maladaptive behaviors and their impact on mental states, and then, take action to correct or change them (Barlow et al., 2010). Since the foundation of emotion regulation is based on the use of thoughts and behaviors that affect human emotions (Mugglin et al., 2012), it can be said that people who have anxiety and mood disorders face challenges and everyday tensions, they use maladaptive emotional regulation strategies, which results in the continuity of their disorder symptoms (Barlow et al., 2004). Based on this, the focus of transdiagnostic treatment is on teaching the patient to learn how to face and experience unpleasant emotions, and provide more adaptive responses to them. Moreover, in this treatment, the effort is to increase the level of emotional awareness of the patient so that he/she gains more knowledge and insight into his/her emotions and does not have a judgmental view of them (Barlow et al., 2010).

In this treatment, the therapist seeks to teach the patient how to challenge negative spontaneous thoughts and cognitive errors through cognitive and behavioral strategies (Farchione et al., 2012). In other words, people in anxiety situations have a cognitive background that gives them the ability to interpret the physical, psychological, and social consequences of anxiety experiences that they usually perceive as annoying and dangerous behaviors (Szpunar, 2010). The negative and catastrophic evaluations and interpretations of a person's internal feelings that have a physical background become a kind of quick launch for anxiety and anxious feelings, thus; it depends greatly on what explanations and interpretations a person provides for a stressful situation under the influence of anxiety sensitivity (Sari, Amin, & Hidayati, 2020). Therefore, integrated meta-diagnostic treatment helps the patient to observe and meditate on the interaction of thoughts, feelings, and behaviors with negative cognitive evaluations that show his/her feelings and emotions, and as a result, to be able to examine them and make the necessary corrections and changes in the system of negative cognitive evaluations. These changes will reduce the level of sensitivity to anxiety situations (Farchione et al., 2012).

In addition, in explaining the effectiveness of integrated transdiagnostic treatment on chronic pain symptoms, it can be stated that creating the ability to manage emotions in the patient is critical in transdiagnostic treatment. This goal is achieved through focusing on common factors between emotional disorders and emphasizing that experiences and reactions are emotional (Barlow et al., 2010). Considering that, in the integrated transdiagnostic treatment, the patient tries to choose appropriate strategies for facing stressful situations by creating accurate cognitive and emotional evaluations. Regarding chronic pain, after drug treatments alone failed to show improvement in this field, psychological treatments have emerged in this area for the purpose of self-management of pain and the disability caused by it (Ekhtiari, Majlessi, Foroushani, & Shakibazadeh, 2014). Therefore, in accordance with the cognitive patterns, the patient should be able to obtain effective coping responses and control strategies through changing and correcting misplaced interpretations, guiding negative self-talk, and changing and revising irrational and ineffective thoughts. Moreover, ineffective avoidance through the development of strategies that increase psychological flexibility, empower the patient to accept pain and experience pain without trying to control it, and focus on improving the patient's quality of life (QOL) instead of controlling pain.

Conclusion

One of the limitations of the current research was factors that reduce internal validity, such as the drop in subjects and the lack of control over the economic status of patients. Therefore, it is suggested that in future research, attention be paid to the improvement of the research variables through therapeutic interventions through this approach as an intervention to improve the treatment conditions of cancer patients. Moreover, more research should be done regarding the effectiveness of integrated transdiagnostic treatment in other variables related to people with cancer to increase the generalizability of the findings.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

The authors wish to thank all the people who cooperated in advancing the goals of this research.

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