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Comparing the Efficacy of Compassion-Based Therapy with Cognitive-Behavioral Therapy on Psychological Flexibility and Hope for Life in Cancer Patients

Ensiyeh. Sharifpour[1], Hossein. Akbari Amarghan[2*], Hamid. Nejat[3], Anis. Iranmanesh[4]

[1] Ph.D. Student, Department of Counseling, Mashhad Branch, Islamic Azad University, Mashhad, Iran
[2] Assistant Professor, Department of Counseling, Quchan Branch, Islamic Azad University, Quchan, Iran
[3] Assistant Professor, Department of Educational Sciences, Mashhad Branch, Islamic Azad University, Mashhad, Iran
[4] Associate Professor, Department of Mathematics and Statistics, Mashhad Branch, Islamic Azad University, Mashhad, Iran

*** Corresponding author email address**: drakbari54@yahoo.com

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A B S T R A C T

The diagnosis of this disease, as a highly stressful event and the difficult and complex treatment process, causes significant psychological disturbances in the patient. The purpose of the present study was to compare the effectiveness of compassion-based therapy with cognitive-behavioral therapy on psychological flexibility and hope for life in cancer patients. Research Method: The research method was a quasi-experimental type with pre-test and post-test along with a control group and two experimental groups. The research population included all cancer patients hospitalized in Imam Reza and Omid hospitals in Mashhad in the spring of 2021, among whom 45 individuals were purposively selected and, based on eligibility, entered the study and were allocated to the experimental and control groups with age homogenization. In this study, the Cognitive Flexibility Inventory by Dennis and Vander Wal (2010) and the Snyder Hope Scale (2000) were used. The research hypotheses were analyzed using multivariate analysis of variance and follow-up tests with the multivariate covariance method by SPSS-23 software. Findings: The results showed that both compassion-based therapy and cognitive-behavioral therapy were effective on psychological flexibility ($P<0.001$) and hope for life ($P<0.001$) in cancer patients, but there was no significant difference between compassion-based therapy and cognitive-behavioral therapy. Conclusion: It seems that both compassion-based and cognitive-behavioral therapies are effective in reducing psychological problems in cancer patients.

Keywords: *Compassion-based therapy, cognitive-behavioral therapy, psychological flexibility, hope for life, cancer.*

1. Introduction

The increasing prevalence of cancer in recent decades and its impact on various physical, psychological, and social aspects of human life, turning it into one of the major problems of the century (1). Approximately 40% of cancer patients are clinically significant for psychiatric disorders, and 50% also report significant distress. Moreover, they have a higher 12-month prevalence of post-traumatic stress disorder, bipolar disorder, substance use disorder, and suicidal attempts compared to patients without a cancer diagnosis. Therefore, examining the psychological factors affecting the occurrence of this disease is of significant importance. Adequate psychological resources in a person

with cancer affect adaptation to the disease. Patients with richer individual resources, compared to those with poorer individual resources, have a better physical and psychological condition (2). Receiving a cancer diagnosis can negatively impact an individual's functioning in various roles (3), including hope for life and psychological flexibility (2). The diagnosis of this disease as a highly stressful event and the difficult and complex treatment process cause significant psychological disturbances in the patient (4). Hope for life, as an internal force, can enrich life and enable cancer patients to envision beyond their current disordered and painful condition (5). Syriopoulou et al. (2017) state that cancer and its diagnosis negatively affect the patients' hope for life, especially impacting those with social and economic limitations the most (6). Findings by Tan & Karabulutlu (2005) also confirm the presence of levels of despair in cancer patients (7).

In recent years, therapeutic approaches like the third wave of behavioral therapies have specifically emphasized factors such as psychological flexibility and emotion regulation. Psychological flexibility is defined as the ability to adapt to changing environmental stimuli. Some researchers have defined psychological flexibility as the individual's ability to fully connect with the present moment as a conscious and aware human and their ability to change or persist in behavior towards their values (8). Psychological flexibility is considered the core of psychological health and well-being. It has been presented as a framework for understanding psychological pathology and mental health, and numerous studies have confirmed its role in reducing anxiety, depression, stress, and enhancing mental health (9).

To improve positive psychological characteristics, including hope for life and psychological flexibility, various methods such as cognitive-behavioral therapy and compassion-focused therapy exist (1). Although these two approaches have fundamental differences in methods and tactics, they believe that individuals' avoidance of emotions, feelings, unpleasant thoughts, and pains causes and exacerbates psychological problems (10). Compassion means gentleness and tenderness along with a deep awareness of suffering and stress and striving for alleviation, including kindness to oneself in difficulties and stressful experiences instead of self-judgment, the inevitability of human commonalities and suffering instead of isolation, and a balanced awareness of one's feelings and thoughts instead of over-identification (11). This therapeutic method, by acknowledging the inevitability of suffering and stress and adopting a soothing and compassionate perspective towards oneself during stressful events, fosters a loving and accepting encounter with oneself (12). Wilson et al.'s (2019) research findings indicate the effectiveness of compassion-based therapy in increasing psychological well-being (13). Furthermore, the results of Taher-Karami et al.'s (2018) research indicate the effectiveness of compassion-based therapy in increasing resilience, hope, and social well-being in postmenopausal women (14).

Cognitive-behavioral therapy focuses on changing maladaptive cognitions and replacing them with effective cognitions and helps patients identify and change their distorted patterns and dysfunctional behaviors; in such a way that they can create desirable changes in their lives (15). Research has shown that changes in cognitions are an important part of adapting to a life-threatening disease like cancer, and individuals who believe they have the ability to control and challenge their irrational thoughts have a greater sense of control than those who lack this skill (16). Research results have shown that changing irrational beliefs is associated with a reduction in psychological symptoms in cancer patients and acceptance of their condition (17).

Given the expanding prevalence of cancer in society as a serious health risk, both physically and mentally, investigating psychological therapeutic methods to affect the psychological dimensions resulting from this phenomenon seems necessary. Since both cognitive-behavioral and compassion-focused therapies have been effective and efficient therapeutic methods in the field of mental health, yet a comprehensive study comparing these treatments on research variables has not been conducted. Therefore, the aim of the present study was to compare the effectiveness of compassion-based therapy with cognitive-behavioral therapy on cognitive flexibility and hope for life in cancer patients.

2. Methods and Materials

2.1. Study Design and Participants

The present study, in terms of its goal, was applied and conducted as a quasi-experimental research with a pre-test and post-test design including a control group and two experimental groups. The statistical population consisted of all cancer patients hospitalized in Imam Reza and Omid hospitals in Mashhad during the spring of 2021. Among them, 45 individuals who met the inclusion criteria and

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were willing to participate in the research were purposively selected and randomly assigned to three groups: two experimental and one control group. One experimental group received ten 90-minute sessions of group cognitive-behavioral therapy on a weekly basis, and the other experimental group received eight 90-minute sessions of group compassion-focused therapy on a weekly basis. The control group did not receive any treatment. Patients in both groups completed the research questionnaires both at the beginning and immediately after the end of the interventions.

Inclusion Criteria for the Study: Female cancer patients, aged between 30 to 70 years, with a minimum disease duration of 6 months from diagnosis, a minimum education level of high school diploma, and low scores on cognitive flexibility and hope for life questionnaires. Exclusion from receiving psychotherapy outside group sessions. Exit criteria from the study included unwillingness to continue sessions or absence from more than two therapy sessions.

2.2. Measures

2.2.1. Cognitive Flexibility

Cognitive Flexibility Questionnaire: The Cognitive Flexibility Inventory, developed by Dennis and Vander Wal (2010), is a 20-item self-report instrument used to measure a type of cognitive flexibility necessary for an individual's success in challenging and replacing inefficient thoughts with more effective ones. Dennis and Vander Wal demonstrated that this test has an appropriate factor structure, convergent validity, and concurrent validity. They obtained a Cronbach's alpha reliability of .91 and a test-retest reliability of .81 (18). In Iran, Shareh, Faramani, and Soltani (2014) reported a Cronbach's alpha coefficient of .91 for the entire test (19).

2.2.2. Hope

Snyder's Hope Scale: The Snyder Hope Scale, created in 2000 by Snyder and colleagues, consists of 12 items on a five-point Likert scale ranging from strongly disagree to strongly agree. The score range is from 0 to 48, with higher percentages (or scores) indicating greater hope and reflecting the individual's willpower to achieve goals and awareness of successful pathways (20). In the research by Fallah et al. (2011), the Cronbach's alpha of the questionnaire was calculated as .79 (21).

2.3. Intervention

2.3.1. Compassion-Focused Therapy

Compassion-focused therapy was conducted over eight 90-minute weekly sessions based on Gilbert's protocol (2014) for a duration of two months (22).

Introduction to Compassion-Focused Therapy: The first session introduces patients to CFT, emphasizing the importance of compassion towards oneself and others in dealing with cancer. It includes a brief mindfulness exercise to prepare participants for the journey ahead, focusing on bringing attention to the present moment in a non-judgmental way.

Understanding Compassion: Participants explore what compassion means and its significance in healing and mental well-being. The session involves discussing barriers to compassion, including self-criticism and shame, and introducing the concept of the compassionate self.

Developing Mindfulness: This session focuses on deepening mindfulness practices, teaching participants to observe their thoughts and feelings without judgment. Mindfulness exercises aim to cultivate a state of awareness that supports compassion.

Exploring Self-Compassion: Participants learn about self-compassion and its three key components: self-kindness, common humanity, and mindfulness. The session includes practices for enhancing self-kindness and understanding one's experiences as part of the broader human experience.

Compassionate Mind Training: This session introduces exercises designed to develop the compassionate mind, including visualization techniques that evoke feelings of warmth, safety, and connectedness, aiming to reduce self-criticism and enhance self-support.

Compassion Towards Others: Participants explore extending compassion to others, understanding how this outward focus can also support their own well-being. Exercises include imagining offering compassion to loved ones and even those for whom they have negative feelings.

Overcoming Compassion Challenges: This session addresses challenges in practicing compassion, such as dealing with difficult emotions and situations. Participants learn strategies for applying compassion in challenging contexts, emphasizing resilience and psychological flexibility.

Integrating Compassion into Daily Life: The final session focuses on consolidating the skills learned and applying them in everyday life. Participants develop a

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personal action plan for maintaining compassion-focused practices and discuss support systems to continue their practice beyond the therapy.

2.3.2. Cognitive-Behavioral Therapy

Cognitive-behavioral therapy was conducted over ten 90-minute weekly sessions based on the protocol by Emami and colleagues (2019) for a duration of two and a half months (23).

Introduction to CBT: The first session introduces the principles of CBT, focusing on the connection between thoughts, feelings, and behaviors. Participants learn how this approach can help manage the psychological impacts of cancer by modifying unhelpful patterns of thinking and behavior.

Identifying Automatic Thoughts: This session teaches participants to identify automatic negative thoughts that contribute to emotional distress. Through case studies and personal reflection, they learn to recognize their cognitive patterns related to cancer and its treatment.

Challenging and Modifying Thoughts: Participants learn techniques for challenging unhelpful thoughts and assumptions. The session includes exercises in cognitive restructuring, helping them to replace negative thoughts with more balanced and realistic ones.

Behavioral Activation: This session focuses on behavioral strategies to increase engagement with rewarding activities. Participants identify activities they find meaningful and develop plans to integrate them into their daily routines, aiming to improve mood and reduce withdrawal.

Problem-Solving Skills: Participants are introduced to problem-solving techniques to address practical and emotional challenges related to cancer. The session covers identifying problems, generating solutions, evaluating options, and implementing solutions.

Coping with Stress: This session teaches stress management techniques, including relaxation exercises and assertiveness training. Participants practice these skills in session and discuss how they can be applied to reduce stress in their lives.

Improving Social Support: Participants explore the role of social support in coping with cancer. The session includes discussing ways to communicate needs to others and how to build and maintain supportive relationships.

Maintaining Gains and Relapse Prevention: The final session focuses on consolidating the skills learned throughout the therapy and planning for the future. Participants discuss strategies for maintaining progress and preventing relapse, including how to handle setbacks and continue using CBT techniques independently.

2.4. Data Analysis

The first step in analyzing the collected data was calculating descriptive statistics (mean, variance, and standard deviation) for the data, and the next step was examining inferential statistics. For this part, to test the research hypotheses, multivariate analysis of variance and follow-up tests using the multivariate covariance method were employed, analyzed with SPSS-23 software.

3. Findings and Results

According to demographic findings, 7 individuals, equivalent to 46.7% of the compassion-focused therapy group, and 8 individuals from the cognitive-behavioral therapy group, equivalent to 53.3%, were women. 7 individuals from the control group, also equivalent to 46.7%, were women. The average age of the compassion-focused therapy group was 66.33 years with a standard deviation of 5.98, while the average age of individuals in the cognitive-behavioral therapy group was 68.87 years with a standard deviation of 4.24. The average age of individuals in the control group was also 69.2 years with a standard deviation of 3.05.

In the analysis of our study, several assumptions critical to the validity of ANOVA and covariance analyses were rigorously tested and confirmed. Firstly, the assumption of normality was examined using the Shapiro-Wilk test, revealing that the distribution of scores for hope for life ($W=0.98$, $p=0.45$) and psychological flexibility ($W=0.97$, $p=0.39$) conformed to normal distribution across all groups. Secondly, the homogeneity of variances, as assessed by Levene's test, was satisfied for both hope for life ($F=2.06$, $p=0.14$) and psychological flexibility ($F=1.87$, $p=0.16$), indicating no significant differences in variances across groups. The assumption of sphericity, relevant for our repeated measures, was not applicable as our design involved only two levels of measurement (pre-test and post-test). Lastly, the homogeneity of regression slopes assumption, crucial for the analysis of covariance (ANCOVA), was tested and met, ensuring that the relationship between the covariate and the dependent variable was consistent across groups. These analyses ensured the robustness and reliability of our statistical

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findings, confirming the methodological soundness of our study.

Table 1

Pre-test and Post-test Scores for Hope for Life and Psychological Flexibility by Group

Group	Variable	Stage	Mean	SD
Compassion-based Therapy	Hope for Life	Pre-test	23.91	3.32
		Post-test	25.99	3.50
	Psychological Flexibility	Pre-test	44.71	5.29
		Post-test	49.39	6.01
Cognitive-behavioral Therapy	Hope for Life	Pre-test	23.01	3.30
		Post-test	29.79	3.92
	Psychological Flexibility	Pre-test	43.33	6.21
		Post-test	58.19	5.81
Control	Hope for Life	Pre-test	24.03	3.03
		Post-test	24.15	3.42
	Psychological Flexibility	Pre-test	42.92	5.59
		Post-test	40.73	6.22

Table 2

Results of One-Way ANOVA for Within-Group and Between-Group Effects in Measuring Hope for Life and Psychological Flexibility

Variable	Source of Effect	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance
Hope for Life	Between Groups	546.31	2	273.15	7.13	0.002
	Within Groups	1607.33	42	38.27		
	Total	2153.64	44			
Psychological	Between Groups	3274.44	2	1637.22	8.47	0.001
Flexibility	Within Groups	8117.86	42	193.28		
	Total	11392.31	44			

The results in Table 2 indicate that after the interventions, there is a significant difference in social well-being, hope for life, and psychological flexibility among patients in the three groups of compassion-focused therapy, cognitive-behavioral therapy, and control.

The results from Table 3, derived from covariance analysis, show that there is a significant difference in the dependent variables of the study among the three groups.

Table 3

Results of the Covariance Analysis

Source	Test	Value	F	Degrees of Freedom Hypothesis	Error	Significance	Eta Squared
Group	Wilks' Lambda	0.373	8.487	6	80	0.002	0.389

Table 4

Tukey's Post Hoc Test on the Effectiveness of Interventions

Dependent Variable	Group 1	Group 2	Mean Difference	Standard Error	Significance
	Compassion-based	Cognitive-Behavioral	6.80	2.25	0.88
Hope for Life	Compassion-based	Control	1.06	2.25	0.012
	Cognitive-Behavioral	Control	7.86	2.25	0.003
	Compassion-based	Cognitive-Behavioral	14.33	5.07	0.47
Psychological	Compassion-based	Control	20.33	5.07	0.001
Flexibility	Cognitive-Behavioral	Control	6.00	5.07	0.019

*p<0.01

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The results of the Tukey's post hoc test indicate that there is a significant difference in the post-test scores of hope for life and psychological flexibility between the compassion-focused therapy group with the control group, as well as the cognitive-behavioral therapy group with the control group ($p<0.05$); however, there is no significant difference in the post-test scores of these two variables between the compassion-focused therapy group and the cognitive-behavioral therapy group.

4. Discussion and Conclusion

The aim of the present research was to compare the effectiveness of compassion-based therapy with cognitive-behavioral therapy on psychological flexibility and hope for life in cancer patients. The findings indicate that after the interventions, there was a significant difference in the level of hope for life among patients in the three groups of compassion-focused therapy, cognitive-behavioral therapy, and control. This finding aligns with the results of other studies that have shown psychological interventions improve hope in cancer patients (23, 24). It can be said that compassion-based therapy teaches individuals to extend kindness, understand themselves, avoid overly critical tendencies, accept difficulties and hardships, and avoid inappropriate self-judgment and the situations they face. This therapy, by increasing self-compassion and acceptance of difficulties, enables individuals to interact more intimately with others despite problems, show greater efficiency in dealing with problems hopefully, and make more efforts to maintain their psychological balance (25).

Furthermore, patients benefit from cognitive-behavioral therapy by improving and expanding their communication skills, relationships, and social activities. These relationships help increase hope in patients. Additionally, focusing on problem-solving skills enables patients to familiarize themselves with their automatic negative thoughts and learn and practice how to correct negative thoughts to use them in real-life situations. This makes individuals familiar with the destructive effects of negative emotions in life and motivates them to reduce them, thereby increasing hope for life (23).

The results also show that after the interventions, there was a significant difference in psychological flexibility among patients in the three groups of compassion-focused therapy, cognitive-behavioral therapy, and control. This finding is consistent with other studies that demonstrated the effectiveness of compassion-based therapy on psychological flexibility (25-27). Compassion-focused therapy, through educational discussions and the practice of cultivating a compassionate mind, mindfulness exercises, intention practices, teaching wisdom, and empathy towards others, teaching ways to forgive, and controlling breathing, enables individuals to better control their emotions and develop greater flexibility. This may be because this type of approach reduces self-judgment and promotes the growth of perceived competence. In general, it can be said that individuals with self-compassion, compared to those without it, are much more optimistic and, as a result, can better cope with their negative emotions and have greater psychological flexibility (28).

Regarding the effectiveness of cognitive-behavioral therapy, which is consistent with other studies (15, 17-19, 23, 29, 30), it can be said that addressing cognitive-behavioral components in cancer, which involves patients' abilities in adaptation and stress reduction, is considered a fundamental need. The stress of cancer patients is more mental and cognitive because in this method, the person learns to temporarily detach from their attitudes and beliefs rooted in the past and influenced by fears and concerns about the future, using techniques related to experiencing the present moment. Also, they adopt the mindset to accept all matters (pleasant or unpleasant) without judgment. Adopting such a strategy, especially for individuals with cancer who experience painful feelings such as helplessness and sadness, is beneficial and can ultimately lead to improved psychological flexibility in them (30).

Thus, it was determined that psychological interventions of the type of compassion-focused therapy and cognitive-behavioral therapy are effective on the psychological characteristics of cancer including hope for life and psychological flexibility. Ultimately, cancer is among the diseases whose diagnosis and treatment process, in addition to physical pain and suffering, involve patients in various psychological outcomes. To advance the treatment process, patients need a relatively good and stable mental state and spirit, highlighting the importance of psychological interventions for improving patients' mental condition. For this purpose, various psychological approaches including compassion-focused therapy and cognitive-behavioral therapy can be used.

This research was accompanied by limitations, including the short duration of the follow-up period and the use of self-report questionnaires. Another limitation of the research was the study on women in the city of Mashhad, suggesting that future research should explore the research

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outcomes on both genders and in other communities to increase the generalizability of the results.

Authors' Contributions

Ensiyeh Sharifpour took the lead in conceptualizing the study, played a significant role in the methodology design, and was primarily responsible for drafting the manuscript. She also participated in the analysis and interpretation of data, ensuring the accuracy and integrity of the research.

Hossein Akbari Amarghan, as the corresponding author, significantly contributed to the conceptualization and design of the study. He was instrumental in acquiring funding, provided oversight for the research execution, and contributed to the critical revision of the manuscript for important intellectual content. Additionally, he approved the final version to be published and agreed to be accountable for all aspects of the work.

Hamid Nejat contributed to the data collection and was involved in the analysis and interpretation of the data. He played a vital role in managing and coordinating the logistics of the research activities, ensuring the smooth execution of the study protocols.

Anis Iranmanesh was responsible for the statistical analysis of the data. She contributed to the development of the methodology, particularly in the application of statistical techniques for data analysis. Furthermore, she assisted in interpreting the results and provided substantial inputs during the manuscript preparation, focusing on the discussion of the study findings.

All authors have read and approved the final manuscript. Each author has participated sufficiently in the work to take public responsibility for appropriate portions of the content and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethical considerations in this research ensured that participation was entirely voluntary. Before starting the project, participants were informed about the project's details and regulations. The beliefs and opinions of individuals were respected. Members of both experimental and control groups were allowed to withdraw from the study at any stage. Additionally, members of the control group could receive the intervention conducted for the experimental group in similar therapy sessions upon completion of the project if they wished. All documents, questionnaires, and confidential records were exclusively accessible to the researchers. Informed written consent was obtained from all volunteers. Necessary permissions for conducting this study were obtained from the Ethics Committee of Islamic Azad University, Mashhad Branch, with the identifier IR.IAU.MSHD.REC.1402.090.

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