Title: Investigating the Effectiveness of Paradox Therapy on Death Anxiety in Female Patients with Cancer

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Abstract

Background: After cancer diagnosis, death anxiety continuously challenges the patient's life. Individuals diagnosed with cancer are forced to think of and confront the end of their lives. The present research was conducted to determine the effect of paradox therapy (PTC) on death anxiety of female patients with cancer.

Methods: This research was a quasi- experimental study with a pretest- posttest control group design. The statistical population consisted of all female patients with cancer, referring to a specialized cancer treatment center in Ahvaz province, Iran, from January 21 to February 19, 2023 who were first recruited by convenience sampling based on inclusion criteria and then were randomly assigned into experimental (n=26) and control (n=26) groups. The data were collected using Death Anxiety Scale (DAS). The experimental group received 6 sessions of individual, face-to- face paradox therapy (PTC). The duration of each session was 45 minutes. The dependent variable was assessed at three distinct time points: initially at the pre-test phase, subsequently upon the conclusion of the psychotherapy intervention, and finally, one month following the termination of psychotherapy. Data analysis was done using descriptive statistics and to test the research hypothesis, mixed analysis of variance was used in SPSS-25 software. The significance level was set at $P < 0.05$.

Results: A significant effect of time on death anxiety scores was observed ($F=169.77$, $P<0.0001$). Post hoc analysis revealed significant differences in the mean death anxiety scores across the pretest, posttest, and follow-up assessments. Additionally, a significant interaction between time and treatment group was noted ($F=153.58$, $P<0.0001$). According to the Bonferroni test, the experimental group exhibited a significant reduction in death anxiety at posttest compared to pretest ($P<0.0001$), and this reduction persisted at follow-up stage ($P<0.0001$). Moreover, death anxiety continued to decrease from posttest to follow-up. These results supported the study hypothesis.

Conclusion: By elevating our understanding of the effect of PTC on death anxiety in cancer patients, the current research has tried to fill a major gap in psychosocial oncology. Perceiving the long-term effect of PTC can lay the groundwork for following care plans and long-term support for cancer patients.

Keywords: Cancer, Death anxiety, Paradox Therapy (PTC), Females

Highlights

- Health care systems should always consider the quality of life of cancer patients.
- Cancer diagnosis brings many challenges for cancer patients, including facing the pain of death, especially for women who have a special position in the family.
- Considering the positive effect of paradox therapy in reducing the death anxiety of female cancer patients, the use of this treatment is recommended to reduce the death anxiety and thus improve the quality of life of these patients.

Plain Language Summary

Cancer, as a chronic disease, frightens the affected person at the time of diagnosis and gradually causes the person to suffer psychological damage. One of the prevalent psychological responses following a cancer diagnosis is the perception of proximity to death, with death anxiety now recognized as a significant psychological concern in cancer patients. People experience death anxiety when confronted with the contemplation of their own mortality, which can be both intense and debilitating. Various psychotherapeutic interventions have been developed to address death anxiety, with paradox therapy standing out as an approach that leverages patients' anxiety and fear as catalysts for positive psychological transformation. Paradox therapy consists of techniques that eliminate undesirable behavior by encouraging undesirable behavior. This study showed that Paradox therapy reduces the death anxiety of female cancer patients.

Introduction

As a prevalent chronic disease, cancer is one of the major health issues in the world which ranks as the second leading cause of mortality after heart disease (Götze et al., 2020), predicted to become the leading cause of mortality by 2060 (Mattiuzzi & Lippi, 2019; Ren et al., 2024). Technological advances have extended the life expectancy of cancer patients (Lu et al., 2023; Hampton et al., 2024). However, the challenges associated with this disease have not been fully resolved (Cho et al., 2020) and patients often struggle with feelings such as anxiety, fear, and chronic pain (Li et al., 2024; Besharat et al., 2020; Götze et al., 2020; Vehling et al., 2017).

In 2019, 1.8 million people were diagnosed with cancer in the United States. Cancer is expected to be the main cause of 70% of deaths by 2030 (Siegel et al., 2019; Mardani, 2023). In 2020, cancer affected 131,191 people in Iran and led to the death of 79,136 patients (The Global Cancer Observatory, 2021). Cancer is recognized as a significant health problem of the century (Stagl et al., 2015) which its development have resulted in negative complications (El-Sayed et al., 2023; Firouzi, 2022).

Individuals diagnosed with cancer are forced to think of and confront the end of their lives. These patients are struggling with death anxiety, characterized by an unusual fear of dying, as well as feelings of panic and presentiment (Lu et al., 2024). Death anxiety has been reported to affect 91% of cancer patients, making it one of the most prevalent types of anxiety in this population. This type of anxiety is persistent and abnormal, defined as an intense fear of death, accompanied by panic and worry about the death process and events thereafter (Shakeri et al., 2022). Death anxiety culminates in helplessness, physical changes, loss of control, and loss of people around (Coutts-Bain et al., 2023; Bastani et al., 2016). The fear and anxiety of death are among the most significant concerns in cancer treatment, leading to profound distress in the patient (Togluk & Budak, 2024). This anxiety accompanies long-term dysfunctions (Gulbahar Eren et al., 2023). Attention to psychotherapy in cancer patients in general and intervention on death anxiety in particular has been suggested in numerous studies (Blunt & Trigg, 2024; Spitz et al., 2023; Togluk & Budak, 2024; Lu et al., 2024; Gulbahar Eren et al., 2023; Babanejad Derikande et al., 2023; Mina et al., 2023; Bajelan et al., 2022).

Women suffer from mental illness almost twice as often as men (Yu, 2018). They are more vulnerable to stress and fear-related disorders (Maeng et al.,2015). Past research has strongly supported differences in the prevalence and severity of mental disorders between men and women (van de Venne et al, 2019). Women experience markedly greater levels of anxiety disorders than men. In a study of more than 20,000 individuals, the Collaborative Psychiatric

Epidemiology Surveys (CPES) found higher rates of lifetime diagnosis for nearly all anxiety disorders among women in the United States (Alegria et al., 2001-2003). Core features of the anxiety disorders include subjective anxiety or fear experience, physiologic reactivity, and often, avoidance behaviors. Anxiety disorders are characterized by anxious apprehension or fear in response to a perceived threat. Anxiety or anxious apprehension is a future-oriented state in which one is concerned about potential threats, whereas fear occurs in response to an immediate threat. Finally, women may be more physiologically responsive to stressors, leading to an increased risk of anxiety or other neuropsychiatric disorders (Hantsoo et al, 2017). Considering the importance of women's role as one of the main pillars in the family (T beck,1988) and that women are more vulnerable than men to anxiety and fear-related disorders (Maeng et al., 2015), this research focused on women's society.

Conventional psychological interventions have provided varying degrees of improvement but have often neglected to deal with the intricate perspective resulting from cancer.

A therapeutic intervention that is considered very effective among psychotherapy methods is paradoxical psychotherapy that views anxiety and pain as catalysts for psychological improvements (Browning & Hull, 2021). Besharat (2019) has developed a paradox therapy model (paradox + timetable = cure [PTC]) that makes this therapy more effective. The PTC is a new and comprehensive approach in the treatment of a broad spectrum of psychological disorders, such as obsessive-compulsive disorder (OCD) (Besharat, 2020). This method has been effective on couple issues (Besharat, 2020), illness anxiety (Peiman Pak et al., 2023), social anxiety (Besharat, 2019; Maba, 2017; Babaie et al., 2023), body dysmorphic disorder (BDD) (Ataoglu et al., 2003; Besharat, 2020), binge eating disorder (BED) (Ghadimi Nouran et al., 2020), insomnia (Zhang et al., 2016), rumination (Mohammadi et al., 2020), anger rumination in people suffering from anxiety caused by the 2019 Corona virus (COVID-19) (Eatesamipour et al., 2023), ego-strength and self-knowledge (Tahernejad et al., 2022), emotion regulation in couples (Chitgarzadeh et al., 2023), grief (Jahanpanah et al., 2023), relationship obsession (Dehaqin et al., 2023), and self-esteem (Hashemizadeh et al., 2023). There are two substantial items in PTC that accelerate healing. The first item is "paradox", meaning the prescription of a disease symptom. The patients reconstruct the same symptoms and behaviors they have experienced based on the prescribed order. The second item is "timetable", which dictates when and for how long the patient reconstructs the symptoms. There are four effective mechanisms in PTC, including formalization/artificialization, disconnection of the symptom and anxiety, changing the meaning of the symptom, and finally ego-strength. The primary and ultimate goal of treating psychological disorders in this approach is to enhance the consistency and power of ego-

strength. Simultaneously with removing anxiety related to the disease symptoms, the ego-strength process commences and evolves in parallel with performing tasks in the form of artificial mechanisms, disconnection of the symptom and anxiety, and changing the meaning of the symptom (Besharat, 2023).

Numerous interventions have been introduced to manage and control psychological and behavioral complications stemming from death anxiety, such as cognitive behavioral therapy (CBT) (Togluk & Budak, 2024), semantic therapy (Babanejad Derikande et al., 2023), unity-oriented therapy (Bajelan et al., 2022), and acceptance and commitment therapy (ACT) (Mina et al., 2023). While these interventions have achieved favorable results as expected, there is still a significant need for experimental studies to assess the effectiveness of psychological interventions on individuals with cancer.

Considering the significance of the mentioned features of PTC and the lack of a study to assess the effectiveness of PTC on death anxiety in cancer patients, the current study investigated the effectiveness of PTC on death anxiety of women with cancer. Based on this, we hypothesized that PTC is effective on death anxiety in women with cancer and that its effectiveness is sustained over time.

Materials and Methods

It was a quasi- experimental study with a pretest- posttest control group design. The statistical population consisted of all female cancer patients referring to Dr. Vosoughi Cancer Treatment Center in Ahvaz province, Iran, from January 21 to February 19, 2023. The sample size was estimated using the statistical method outlined by G*Power software (Farahani and Roshan Chesli, 2022-23). The effect size was set at 0.35, with a statistical power of 0.08 and a significance level of 0.05. Considering potential attrition, four additional subjects were included, resulting in a final sample size of 52. The subjects were first recruited based on inclusion criteria and then were assigned into intervention (n=26) and control (n=26) groups by simple randomization. The inclusion criteria were consent to participate in the study, women with various types of cancer, aged 18 years and above, being in all stages of treatment except the final stage, being in either active treatment or follow-up stages, no history of psychiatric illness, no comorbid physical illness, no drug abuse, being literate in reading and writing, being fluent in Persian language, and having full consciousness. Exclusion criteria included missing more than two treatment sessions, and using complementary and alternative medicine. Psychotherapy sessions were held on even days. Each patient had a session once a week. The

time of each session was 45 minutes. The sessions were conducted face-to-face and individually at the cancer treatment center in Ahvaz province. The first author of the article was responsible for conducting these sessions. She has attended up courses of CBT, acceptance and commitment therapy (ACT), Mindfulness, and Schema Therapy. Also as a PhD student in Tehran university, she has taken up the course of paradox therapy under the supervision of Dr. Besharat (the developer of paradox therapy model). The treatment consisted of 6 sessions, which were implemented individually. However, the number of sessions could vary from 4 to 6 based on the patient's characteristics (every patient has a different Ego and the goal of paradox therapy is to strengthen the Ego. Once the Ego strength is achieved, both the patient and the therapist will know that the sessions are terminated). After the end of the study, each member of the control group received an in-person meditation session.

The Paradox Therapy: Besharat (2019) developed a new model of paradox therapy for the treatment of psychological disorders, called PTC (paradox + timetable = cure). In this research, this model was used to treat the selected samples. The PTC sessions implemented in the present research are summarized in table 1.

Table 1. Summary of paradox therapy sessions (Adapted from Besharat, 2019)

Session	Summary of Treatment Guidelines
Session 1	The social phase of the interview: Greetings, talking about the disorder duration, marital status, number of children, and special family and social issues. The problem stage: Getting a detailed description of the problems or disorders focusing on the nature of problems, behaviors, interactions, and consequences of the problems, describing the treatment plan, determining the treatment goals, and assigning assignments according to the symptoms and problems. Paradox therapy was defined as techniques designed to eliminate undesirable behavior by encouraging the undesirable behavior (e.g. A patient reports severe death anxiety with nightmares, heart palpitations, suffocation, and sleep disturbances. The undesirable behaviors in this case include the nightmares, palpitations, sensations of suffocation, and sleep problems. The patient is instructed to perform specific exercises several times a day, as prescribed by the therapist. The exercises involve sitting in a quiet, undisturbed environment and deliberately recreating the distressing symptoms, as if she is about to die. While this practice may be unpleasant, it mirrors the symptoms the patient is already experiencing, but with the key difference that she is now consciously and voluntarily recreating the experience. Outside of these sessions, the patient is advised not to make any attempts to eliminate or suppress their symptoms. If, during the exercises, the distress does not feel as intense as at other times, the patient is encouraged not to worry about these differences, but to continue the instructions faithfully).
Session 2	Behavioral analysis: Assessing how to do the assignments of the previous session, probable issues and limitations doing the assignments, the consequences of doing the assignments, estimating the percentage of possible therapeutic changes by the client, and the possible necessity of continuing the previous assignments (e.g., re-explaining the assignment of the first session, correcting functional mistakes of the client in doing the assignments, and the order to continue the assignments of the previous session)
Session 3	Behavioral analysis: It involves evaluating the consequences of task completion and asking the patient about the undesirable symptoms. A patient who correctly followed the instructions reported: "The symptoms are still present, but they no longer have any meaning for me. I feel like I have them under control." Given the progress observed, the frequency of the exercises was reduced to twice daily.
Session 4	Behavioral analysis (continued): Further behavioral analysis, using reflective techniques to gather accurate information from the patient. In the over mentioned patient it was revealed that: "I no longer feel anxiety or panic. I haven't used any relaxation aids for sleep. Previously, I believed I wouldn't survive until tomorrow, but now I think I will live, even if I'm not able to plan for it." Consequently, the exercises were reduced to once daily.
Session 5	Behavioral analysis (continued): Assessing how to do the assignments of the previous session, probable issues and limitations doing the assignments, the consequences of doing the assignments, estimating the percentage of possible therapeutic changes by the client, the possible necessity of continuing the previous assignments (e.g., prescribing the continuation of the assignments of the previous session by the client), determining and prescribing new assignments, using paradoxical complementary techniques, if needed. The patient later reported: " I still think about death, but now it feels normal and I don't fear it anymore. I'm starting to plan for tomorrow."
Session 6	Describing the client's self-treatment plan in the future in the final session if needed, completing the questionnaire and research scales. The DAS was completed by the patient after the final session, in which she reported significant improvement. This questionnaire serves as the post-treatment assessment in the study.

Tools

The demographic information questionnaire: The demographic information included the level of education, marital status, age, job status, type of cancer, duration of illness, and ethnicity.

The Death Anxiety Scale (DAS): The DAS, compiled by Templer (1970), consists of 15 questions used to assess the subjects' attitudes toward death. Each question requires a Yes-No answer. A score of 1 is assigned to the "Yes" answer, and a score of zero is assigned to the "No" answer. As a result, scores on this scale can range from0 (no death anxiety) to 15 (very high death anxiety) (0 to 6 = low death anxiety and 7 to 15 = high death anxiety). A score falling between 6 and 7 was considered as the cut-off point. Saggino and Kline (1996) reported the Cronbach's alpha coefficients for the three factors obtained through the factor analysis method and revision of the Italian version of this scale as 0.68, 0.49, and 0.60, respectively. Templer (1970) obtained the scale's test-retest coefficient to be 0.83. Rajabi and Bahrani (2002) assessed the reliability and validity of the Persian version of this questionnaire. They reported a split-half reliability coefficient of 0.60 and an internal consistency coefficient of 0.73. In addition, in Ghasempour et al.'s study (2012) in Iran, the scale's reliability was reported as 0.65 using Cronbach's alpha. In the present research, the reliability coefficient of the DAS was calculated using Cronbach's alpha, which was 0.76, indicating the desirable reliability coefficient for the scale.

Data analysis

The mean, standard deviation, and demographic characteristics for the experimental and control groups were first reported separately. Comparison of sociodemographic characteristics between the experimental and control groups was conducted by Chi-square test and independent t-test. The results pertaining to the research hypothesis were presented using the mixed analysis of variance (ANOVA) method in SPSS-25 software. Additionally, the Shapiro-Wilk test and Mauchly's test of sphericity were employed to verify the assumptions of repeated measures ANOVA. Bonferroni test was used for within-group pairwise comparisons of death anxiety. The significance level was set at 0.05.

Results

Descriptive Findings of the Research Variable

Description and comparison of demographic variables are shown in Table No. 2.

Table 2. Comparing the baseline characteristics of the two groups

Variables		Experimental (N=26)	Control (N=26)	P
Marital status	Married	23(88/5)	24(92/3)	1.00*
	Single	3(11/5)	2(7/7)	
Level of education	Under diploma	10(38/5)	7(26/9)	0.547*
	Diploma	11(42/3)	16(61/5)	
	Bachelor's degree	4(15/4)	2(7/7)	
	Master's degree	1(3/8)	1(3/8)	
Ethnicity	Fars	13(50)	14(53/7)	0.677*
	Bakhtiyari	4(15/4)	4(15/4)	
	Lor	2(7/7)	4(15/4)	
	Arab	7(26/9)	4(15/4)	
Job	Employed	3(11/5)	3(11/5)	1.00*
	Unemployed	23(88/5)	23(88/5)	
Type of Cancer	Blood	2(7/7)	1(3/8)	0.805*
	Liver	2(7/7)	2(7/7)	
	Breast	16(61/5)	20(76/9)	
	Intestine	2(7/7)	2(7/7)	
	Lymph nodes	1(3/8)	1(3/8)	
	Bone	1(3/8)	0	
	Stomach	1(3/8)	0	
Duration of illness (year)	Under 1 year	8(30/8)	6(23/1)	0.117**
	1-2 years	10(38/5)	16(61/5)	
	2-3 years	3(11/5)	4(15/4)	
	More than 3 years	5(19/2)	0	
	M±SD	2.34±0.234	1.92±0.123	
Age	M±SD	42/61±12.12	40/11±11.32	0.446**

*The chi-squared test; **The independent t-test.

Table 2 demonstrates that the groups are homogeneous with respect to all demographic variables.

The descriptive findings related to the research variable in both groups are presented separately for the pretest, posttest, and follow-up phases (table 3). The mean scores of death anxiety in both groups, across the pretest, posttest, and follow-up stages, are visually represented in Diagram 1.

Table 3. Descriptive findings of death anxiety in the pretest, posttest, and follow-up stages

Variable	Stages	Paradox Therapy		Control Group	
		Mean	SD	Mean	SD
Death anxiety	Pretest	10.26	1.63	11.57	1.70
	Posttest	2.23	1.39	10.50	1.55
	Follow-up	1.84	1.28	12.11	1.42

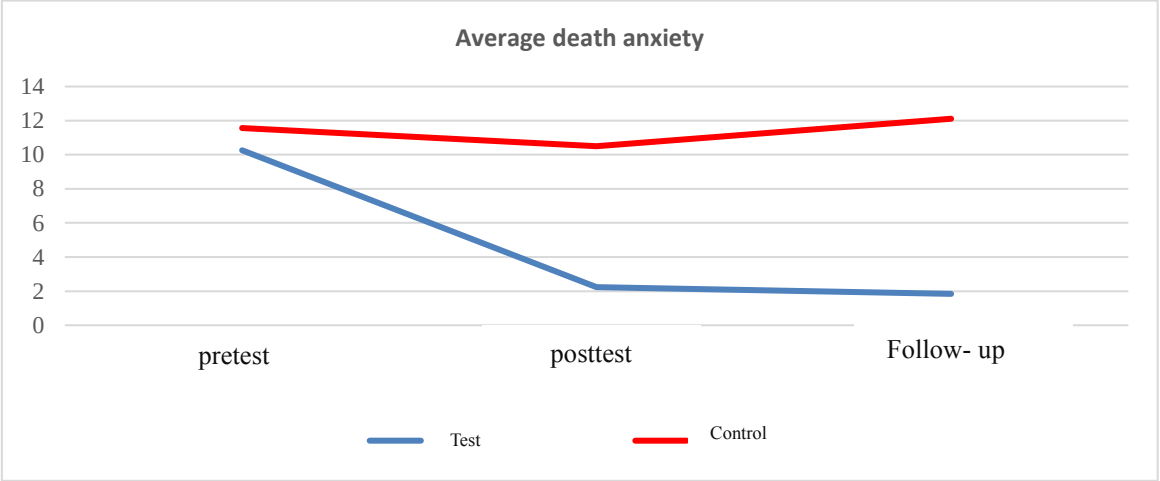

Diagram 1. The mean scores of death anxiety in the two experimental and control groups in the pretest, posttest, and follow-up stages

In the present study, mixed variance analysis was used to test the research hypothesis. Before analyzing the data related to the hypothesis, they were examined to ensure that the data meet the underlying assumptions of the statistical analysis. For this purpose, the assumptions of normality, Mauchly's sphericity and homogeneity of variances were investigated.

In order to check the normality of the distribution of the variable in the pretest, posttest and follow-up stages, the Shapiro-Wilk test was used and the results showed that the significance level of the statistical values obtained for the distribution of the variable scores in the three time points is higher than 0.05, which shows that the variable scores of the current research, have a

normal distribution. Therefore, the assumption of normality for the dependent variable is maintained in both experimental and control groups.

In order to check the assumptions of using mixed analysis of variance, Levin's test was used to check the homogeneity of variances in the two groups and Mauchly's sphericity test was conducted to check the variance of the difference between all the combinations of the variance-covariance matrix in the groups. The results of Levin's test for death anxiety variable showed that the F value obtained regarding the difference in the variances of the two groups in pretest (p=0.96), posttest (p=0.42), and follow-up (p=0.82) stages are not statistically significant. Therefore, the assumption of homogeneity of variances is confirmed. Mauchly's test was used to check the assumption of sphericity (table 4).

Table 4. The results of Mauchly's test to check the assumption of sphericity of death anxiety

dependent variable	Mauchly's	chi-squared approximation	p-value	Greenhouse-Geisser Epsilon	Huynh–Feldt Epsilon
Death anxiety	0.96	1.77	0.41	-	-

According to table 4, the obtained chi-square value is not significant at the level of (P<0.05) and due to the homogeneity of the matrix, the sphericity coefficient should be used.

The results of the analysis of intragroup and intergroup effects are reported in Table 5 using analysis of variance with repeated measures.

Table 5. Effects of time and type of treatment (PTC and control) on death anxiety

Source of statistical changes	characteristic	Sum of Squares	df	Mean Squares	F	p-value	Effect Size	Power
Death anxiety	Time	636.01	2	318.006	169.77	0.0001	0.77	1
	Group	1706.76	1	1706.76	556.64	0.0001	0.91	1
	Time × Group	575.34	2	287.67	153.58	0.0001	0.75	1

As the results of Table 5 show, the effect of time on death anxiety scores is significant (F=169.77, P=0.0001). As a result, it can be said that there is a significant difference between the average scores of death anxiety in pretest, posttest and follow-up stages. Also, the interaction effect of time and treatment group is also significant (F=153.58, P=0.0001). In other words, the difference in the mean death anxiety score at different times according to the paradox

therapy group and the control is significant and indicates the effect of the treatment on the dependent variable. According to the above results, the hypothesis is confirmed.

Pairwise comparisons regarding within group and between group differences were performed using the Bonferroni test. This test shows the change process from pretest to posttest and from pretest to follow-up and from posttest to follow-up. The results are reported in Table 6.

Table 6. Bonferroni test results (within-group pairwise comparisons of death anxiety)

Comparisons	Paradox Therapy		Control	
	Mean Difference	Sig	Mean Difference	Sig
Pretest & Posttest	8.03	0.0001	1.07	0.02
Pretest & Follow-up	8.42	0.0001	-0.53	0.53
Posttest & Follow-up	0.38	0.8	-1.61	0.0001

According to table 6, death anxiety in the experimental group decreased significantly (P<0.0001) in the posttest compared to the pretest; In addition, death anxiety had a significant decrease in the follow-up phase compared to the pretest (P<0.0001); Also, death anxiety decreased in the follow-up phase compared to the posttest, but this amount was not significant (P=0.8).

Discussion

Cancer diagnosis can be very stressful for the patient physically and mentally. After exposure to a cancer diagnosis, patients experience severe psychological reactions. Among the feelings that appear after a cancer diagnosis is a sense of closeness to death to the extent that nowadays death anxiety is expressed as one of the crucial psychological components in cancer patients (Moraes et al., 2021; Kiyak & Türkben, 2022). Due to its ambiguous nature, death manifests for many individuals as a threat. Death is a reality that has always existed, and each individual may have a unique reaction and perception towards it. There are high levels of death anxiety in many people with cancer, which can be caused by insufficient education of these patients and their ignorance of how to deal with it (Curran et al., 2020).

The present research aimed to determine the effectiveness of PTC on death anxiety of women with cancer. Based on the research results, the strong effect size, and the improved death anxiety

symptoms, PTC can be considered a very effective intervention that maintains its reducing effect on death anxiety over time. In paradox therapy, the individual is required to think about their intrusive automatic thoughts and feelings at a specified and predetermined time and in essence, they reconstruct and re-experience the symptoms of their disorder. In exposure to these symptoms, and during the ego-strengthening processes, the conflicts between the patient's id and superego that lead to morbid symptoms gradually end without tension (Besharat, 2019). Different psychotherapeutic approaches have investigated this variable in various studies and suggested that the life of a patient with this anxiety is unbearable and destructive (Blunt & Trigg, 2024; Togluk & Budak, 2024; Gulbahar Eren et al., 2023; Babanejad Derikande et al., 2023). According to the results of this research, PTC is very effective in the reduction of death anxiety in female cancer patients. The results of the current study are consistent with other studies regarding the effectiveness of PTC on different diseases, including a broad spectrum of neuropsychiatric disorders, such as various types of anxiety disorders (Maba, 2017; Peimanpak et al., 2023), self-esteem (Hashemizadeh et al., 2023), body dysmorphic disorder (BDD) (Ataoglu et al., 2003), insomnia (Zhang et al., 2016), and relationship obsession (Dehaqin et al., 2023).

In fact, it can be stated that the specific advantages of the paradoxical therapy model are its simplicity and efficiency (short duration to achieve therapeutic goals). These factors lead to a reduced likelihood of treatment dropout, lower treatment costs for patients, a high certainty of achieving therapeutic goals, and a significant reduction in the likelihood of relapse. (Besharat, 2020). Based on the effectiveness mechanisms of paradox therapy, the patient reconstructs and re-experiences disease symptoms according to the pattern taught by the therapist in the first session. Unlike the compulsory and involuntary nature of morbid symptoms, these are voluntary with two characteristics, including formalization (according to the therapist's instructions) and artificialization (self-produced by the patient and not spontaneous). Due to their imposed, compulsory, annoying, and undesirable nature, the morbid symptoms disappear. By decreasing anxiety, it results in mitigating or eliminating the connection between the patient's intra-psychic stress, consequently reducing involuntary thoughts in the patient (Besharat, 2023). Parallel to the formalization and artificialization of morbid symptoms and the constant repetition of timetable exercises, the patient's thoughts and actions are gradually and quickly separated from anxiety and a state of symptoms free from anxiety and negative emotions is created. Consequently, when an anxiety-free symptom appears, it is no longer considered a psychological disorder and a morbid symptom of a neuropsychiatric disease, but a source of tension and distress for the patient. Alongside the optionality and artificialization of morbid symptoms and also the removal of the connection between anxiety and these morbid

symptoms, the meaning of these symptoms and psychological disorders will quickly change for the patient with death anxiety (Besharat, 2023).

The research population in this study was Iranian women with cancer over 18 years of age. Therefore, it is necessary to consider this issue in generalizing the results. In addition, the results cannot be generalized to men with cancer. Carrying out this intervention in samples with different ethnicities and cultures can help to further confirm its effect. Since this research was conducted in a cancer treatment center where patients had frequent interactions with treatment team for their visits and treatments, they felt more comfortable to participate in psychotherapy sessions, and the recommendations of their specialist doctor to participate in this psychotherapy led them to better trust and adherence. Furthermore, addressing the mental well-being of these patients and providing them with an opportunity to express themselves, viewed by some as a last resort, brought them a sense of satisfaction. Thus, it is recommended that officials from the Ministry of Health consider incorporating PTC by psychologists and psychiatric nurses as part of the treatment process for cancer patients in similar cancer treatment centers.

Conclusion

In short, cancer patients often find themselves in a cycle of anxieties. The more they try to resist or cope with these anxieties and pains, the more obvious they become. PTC that often comprises asking patients to accept or even exaggerate their anxieties and fears, can break this cycle and make them more controllable by disclosing the contradictory nature of these anxieties and fears. Considering the physical and mental challenges faced by cancer patients at present due to the disease diagnosis and treatment, long-term psychotherapy may be challenging. Although PTC is a short-term psychotherapy, its impact can be long-lasting. By training patients to cope with their anxiety using this new approach, this method provides tools that can be used beyond therapy sessions and ensures the long-term sustainability of its effects. PTC, while structured, offers flexibility and can be adjusted according to the patient's needs, making it a versatile tool in the hands of psychotherapists. Moreover, PTC can help uncover and address deeper and often unexpressed beliefs that patients may have about their illness, prognosis, or treatment, making the therapeutic intervention deeper and more comprehensive. Therefore, the importance and necessity of PTC in cancer care cannot be ignored. Since cancer patients are struggling with numerous challenges, offering a beneficial and short-term psychotherapeutic tool to manage their anxiety can be extremely helpful in their life process. Despite the availability of various psychological interventions to support cancer patients, there was a gap in understanding how paradox therapy could specifically impact death anxiety. This research provided perspectives

denoting that patients benefited from PTC and this method allowed for more personalized and influential psychological care. PTC has not been assessed in psycho-oncology as much as other psychotheraputic approaches. This research provided an experimental assessment of its effectiveness, which was necessary for its validation and potential acceptance. By evaluating the effectiveness of PTC, this study could indicate a cost-effective approach to improve mental health in cancer patients, which is particularly valuable in healthcare systems with limited resources. Reducing the psychological burden of cancer can remarkably improve patients' lives, resulting in better overall health outcomes and potentially affecting the survival rate. Perceiving the long-term effects of this treatment can help develop future care plans and provide long-term support for cancer survivors. This research can offer valuable insights into psychosocial oncology and steer future studies and clinical practices to better support cancer patients.

Ethical Considerations

Complying with ethical guidelines

The present research has been extracted from the first author's doctoral dissertation in health psychology and approved by the Iranian National Ethics System in Biomedical Research, University of Tehran (code of ethics: IR.UT.PSYEDU.REC.1403.001). Also, all ethical considerations including providing explanations about the research objectives, ensuring confidentiality of information, respecting voluntary participation in the research, and obtaining informed consent from the participants, were adhered in this research.

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