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The Effectiveness of Dialectical Behavior Therapy on Religious Beliefs, Self‑Harm Thoughts, and Cognitive Fusion in Patients with Cancer

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Abstract

Introduction: The present study aimed to investigate the effectiveness of Dialectical Behavior Therapy (DBT) on religious beliefs, self-harm thoughts, and cognitive fusion in patients with cancer.
Method: This study employed a quasi-experimental pre-test–post-test design with a control group. The study population consisted of cancer patients referred to oncology clinics and medical centers in Ardabil City in 2025. After screening 100 patients, 38 eligible participants were selected and randomly assigned to an experimental group (n = 19) and a control group (n = 19). The experimental group received DBT in eight sessions of 90 minutes, while the control group received no intervention. Data were analyzed using multivariate analysis of covariance.
Results: The findings showed that DBT significantly increased ideological (F = 35.42), ritualistic (F = 40.76), experiential (F = 75.92), consequential (F = 36.15), and reduced self-harm thoughts (F = 48.37), and cognitive fusion (F = 38.19) in patients with cancer.
Conclusion: DBT may be a promising intervention for improving religious beliefs and reducing self-harm thoughts and cognitive fusion in patients with cancer. However, the quasi-experimental design, small sample size, and lack of follow-up limit causal inference and generalizability. Further randomized controlled and longitudinal studies are needed to confirm these findings.

Keywords: Dialectical Behavior Therapy, Religious Beliefs, Self‑Harm, Cognitive Fusion, Cancer

Introduction

Cancer patients face complex physical and psychological challenges that require comprehensive and compassionate care [1]. The disease itself, along with treatments such as chemotherapy, radiation therapy, and surgery, can significantly affect patients' quality of life, causing symptoms like fatigue, pain, and emotional distress [2]. Beyond the medical aspects, many patients also experience anxiety, depression, and uncertainty about the future [3]. Therefore, effective cancer care involves not only advanced medical treatment but also strong psychological support, clear communication, and holistic management that addresses the patient's physical, emotional, and social needs [4].

For many individuals diagnosed with cancer, religious beliefs become an important psychological and emotional resource that helps them interpret and cope with the illness experience [5]. Cancer often confronts patients with uncertainty, fear of mortality, and profound changes in daily life, prompting many to turn toward spiritual or religious frameworks to find meaning, hope, and comfort [6]. Religious beliefs may provide patients with a sense of purpose, acceptance of suffering, and trust in a higher power, which can reduce psychological distress and strengthen resilience during demanding treatments such as chemotherapy or surgery [7]. Participation in prayer, religious rituals, and faith

communities can also create a supportive social network that buffers feelings of isolation [8]. However, the role of religion is complex; while positive religious coping can enhance emotional well‑being and adjustment to illness, negative interpretations may increase distress and hopelessness [9].

A diagnosis of cancer can significantly influence a patient's mental health, and in some cases may lead to the emergence or intensification of self‑harm thoughts [10]. The psychological burden associated with cancer can create feelings of helplessness, hopelessness, and emotional exhaustion [11]. For some patients, these overwhelming experiences may contribute to thoughts of self‑harm or suicidal ideation, particularly when depression, anxiety, or perceived loss of control becomes severe [12]. Research has shown that the risk of such thoughts may be higher during critical periods, such as shortly after diagnosis or during aggressive treatment phases. At the same time, protective factors can significantly reduce these risks [13]. Recognizing and addressing self‑harm thoughts among cancer patients is therefore a crucial component of comprehensive cancer care, emphasizing the need for routine psychological screening and timely mental health support [14].

Cognitive fusion refers to a psychological process in which individuals become overly entangled with their thoughts, treating them as absolute truths rather than transient mental events [15]. In the context of cancer, patients often experience intrusive thoughts related to fear of death, disease progression, loss of independence, or uncertainty about the future [16]. When cognitive fusion is high, these thoughts can dominate a patient's perception and emotional state, making it difficult for them to distance themselves from negative interpretations [17]. This fusion with distressing thoughts can intensify anxiety, depression, and emotional suffering, and may reduce patients' ability to engage in adaptive coping strategies or maintain meaningful activities during treatment [18].

Dialectical Behavior Therapy (DBT) can play an important role in addressing the psychological challenges experienced by patients with cancer [19]. A cancer diagnosis often brings profound emotional distress, uncertainty about the future, and persistent worries related to illness, treatment, and survival [20]. These experiences may lead to intense emotional reactions, difficulty managing distress, and negative thought patterns that affect patients' psychological well‑being [21]. DBT focuses on helping individuals develop practical psychological skills that enable them to cope more effectively with overwhelming emotions and stressful life circumstances [22]. Through its core components—mindfulness, emotion regulation, distress tolerance, and interpersonal effectiveness—DBT supports patients in becoming more aware of their internal experiences and responding to them in healthier and more adaptive ways [23]. In the context of cancer, DBT can help patients strengthen their emotional resilience and improve their ability to cope with the ongoing psychological demands of the disease [24]. Mindfulness practices encourage patients to remain present and observe their thoughts and feelings without becoming overwhelmed by them, while distress tolerance skills help them endure difficult moments associated with treatment and uncertainty [25]. Emotion regulation strategies assist patients in understanding and managing intense emotional responses, and interpersonal effectiveness skills support clearer communication with family members, caregivers, and healthcare professionals [26]. By fostering psychological flexibility and adaptive coping, DBT can contribute to improved emotional adjustment and enhance the overall quality of life for individuals living with cancer [27].

The experience of cancer is often accompanied by profound psychological challenges that affect patients' thoughts, emotions, and coping processes. Many individuals diagnosed with cancer struggle with existential concerns, distressing thoughts, and difficulties in regulating intense emotions, which can influence important psychological factors such as religious beliefs, self‑harm thoughts, and cognitive fusion [28]. These variables play a significant role in how patients interpret their illness, cope with suffering, and maintain psychological stability during the course of treatment. Therefore, identifying effective psychological interventions that can positively influence these dimensions is an important priority in psychosocial oncology. Accordingly, the present study aims to examine the effectiveness of DBT on religious beliefs, self‑harm thoughts, and cognitive fusion in patients with cancer, with the ultimate goal of improving their psychological adjustment.

Method

The present study employed a quasi-experimental design with a pre-test–post-test structure and a control group to examine the effectiveness of DBT on religious beliefs, self-harm thoughts, and cognitive fusion in patients with cancer. The study population consisted of cancer patients referred to oncology clinics and medical centers in Ardabil City in 2025. Initially, 100 patients with different types of cancer, including breast cancer, gastrointestinal cancer, lung cancer, and blood cancer, were assessed through convenience sampling. After screening based on the inclusion and exclusion criteria, 38 eligible participants were selected as the final sample. The sample size was determined using G*Power analysis [29], assuming an effect size of 1.53, a statistical power of 0.97, and an alpha level of 0.05, resulting in 19 participants per group. Participants were then randomly assigned to the experimental group (n = 19) or the control group (n = 19). The inclusion criteria were: (a) having a confirmed diagnosis of one of the specified cancer types by a specialist physician, (b) being between 18 and 60 years of age, (c) providing written informed consent to participate in the study, and (d) demonstrating elevated levels of self-harm and cognitive fusion based on the predefined cutoff criteria of the respective measures. Specifically, participants with a score above 10 on the Self-Harm Inventory (SHI) and a score above 30 on the Cognitive Fusion Questionnaire (CFQ) were considered eligible for

inclusion. These cutoff criteria were applied consistently during the initial screening process to ensure that participants met the predefined psychological eligibility criteria.

The exclusion criteria included: (a) absence from more than two therapy sessions, (b) incomplete questionnaire responses, (c) receiving concurrent psychological treatment during the intervention period, and (d) experiencing severe physical deterioration or hospitalization during the study period. All ethical principles were strictly observed in accordance with the World Medical Association Declaration of Helsinki. Written informed consent was obtained from all participants, and the confidentiality of participants' personal information was maintained throughout the study.

The tools used in this study were as follows:

The Religious Beliefs Questionnaire (RBQ): This tool was developed based on the four-dimensional religiosity model proposed by Glock and Stark [30]. This instrument has been widely applied and standardized across different countries among followers of Christianity, Judaism, and Islam, and has also been adapted to Islamic contexts. In Iran, it has frequently been used in similar studies for assessing religiosity. The questionnaire consists of 26 items across four dimensions of religiosity: ideological (belief), experiential (emotional), consequential, and ritualistic (practice). The ideological dimension includes seven items (questions 1–7), the experiential dimension includes six items (questions 8–13), the consequential dimension includes six items (questions 14–19), and the ritualistic dimension includes seven items (questions 20–26). Items are rated on a 5-point Likert scale ranging from strongly disagree (0) to strongly agree (4). The total score is obtained by summing all item scores, yielding a possible range from 0 to 104, with higher scores indicating higher levels of religiosity [30]. The validity and reliability of this questionnaire have been confirmed in previous studies, with Cronbach's alpha coefficients ranging from 0.82 to 0.91.

The Self-Harm Inventory (SHI): was developed by Sansone et al. [31] to assess a broad spectrum of self-destructive and self-injurious behaviors. The inventory consists of 22 items with dichotomous response options ("Yes" and "No"). Each item measures the lifetime presence or absence of a specific self-harming behavior. A "Yes" response is scored as 1, indicating the occurrence of the behavior, while a "No" response is scored as 0, indicating its absence. Therefore, the total score ranges from 0 to 22, with higher scores reflecting greater severity and frequency of self-harm behaviors. The SHI has been widely used in both clinical and non-clinical populations and has demonstrated satisfactory psychometric properties, including acceptable convergent validity and reliability [31]. In the present study, the Cronbach's alpha coefficient for the inventory was 0.87, indicating good internal consistency.

The Cognitive Fusion Questionnaire (CFQ): developed by Gillanders et al [32], is a 12-item self-report measure designed to assess the extent to which individuals are entangled with their thoughts and internal experiences. Items are rated on a 6-point Likert scale ranging from 1 (never) to 6 (always), yielding total scores between 12 and 72, with higher scores reflecting greater cognitive fusion and increased engagement with intrusive or dysfunctional thoughts. In the original validation study [32] conducted on a sample of 1,040 students, the instrument demonstrated excellent internal consistency (Cronbach's alpha = 0.93) and satisfactory four-week test–retest reliability (r = 0.80). In the present study, content validity was established by calculating the CVI and CVR, yielding values of 0.92 and 0.88, respectively. These results collectively indicate satisfactory content validity. The Cronbach's alpha coefficient was found to be 0.84.

Dialectical Behavior Therapy (DBT): After obtaining the necessary permissions and coordinating with the authorities of oncology clinics and medical centers in Ardabil, the researchers visited the selected centers to recruit participants. A total of 38 eligible patients with cancer were selected through convenience sampling and randomly assigned to two equal groups of 19, including an experimental group and a control group, using a lottery system. At the beginning of the study, general information regarding the objectives and procedures of the research was provided to the participants, and after obtaining written informed consent, they entered the study. To assess and reduce self-harm thoughts and cognitive fusion, as well as to strengthen religious beliefs among patients with cancer, DBT [33] was implemented. The intervention was conducted by the researcher under the supervision of a clinical psychology specialist in 8 sessions, delivered as two 90-minute group sessions per week at the psychological services clinic. A summary of the DBT session contents is presented in Table 1. It should be noted that, for ethical considerations, after the completion of the study and post-test assessments, the control group received another therapeutic intervention.

After collecting the research data, all responses were entered into IBM SPSS Statistics version 30 for analysis. Descriptive statistics, including means and standard deviations, were first calculated for the study variables. Subsequently, Multivariate Analysis of Covariance (MANCOVA) was conducted to examine the effectiveness of DBT on religious beliefs, self-harm thoughts, and cognitive fusion by controlling for pre-test scores. The assumptions of normality, homogeneity of variances, and homogeneity of regression slopes were assessed before the main analysis. The significance level for all statistical tests was set at 0.05.

Table 1. Content of Dialectical Behavior Therapy Sessions [33]

Session	Skill	Session Content
1	Introduction	In the first session, after introducing the goals and rules, group members are introduced to the three mental states: logical, emotional, and wise mind, in the mindfulness module. The group is informed that these mental states refer to logical, emotional, and wise minds.
2	Mindfulness Training	In addition to practicing the mental states from the previous session, this session focuses on teaching the "what" and "how" of mindfulness skills, including observing, describing, and participating. The "how" skills, such as adopting a non-judgmental stance, self-awareness, and acting effectively, are also introduced.
3	Mindfulness Training	The "what" and "how" skills are practiced in the group. These exercises are the core of DBT, so they are taught early on.
4	Emotional Regulation	This session reviews previous exercises and introduces some emotional regulation skills, including defining emotions and their components.
5	Emotional Regulation	In this session, another part of the emotional regulation skills is taught, including identifying and labeling emotions, which increases the ability to manage emotions.
6	Emotional Regulation	This session continues the review of previous skills and teaches acceptance of emotions, even negative ones, and strategies to reduce vulnerability to negative emotions.
7	Distress Tolerance	This session introduces part of the distress tolerance components, focusing on crisis survival strategies, including 1) distraction skills and 2) self-soothing through the five senses.
8	Distress Tolerance	In the final session, previous teachings are reviewed, and crisis survival strategies, such as improving moments and the cost-benefit technique in the face of failure or distress, are practiced in the group. Additionally, training on how to generalize skills outside of therapy sessions is emphasized.

Results

The mean age of participants in the experimental group was 39.62 ± 6.14 years, while the control group had a mean age of 40.18 ± 5.87 years. The results of the chi-square test showed no significant differences between the experimental and control groups in terms of gender, type of cancer, duration of illness, marital status, or age category ($p > 0.05$), indicating baseline equivalence between the groups. The means and standard deviations of pre-test and post-test scores for religious beliefs, self-harm thoughts, and cognitive fusion among patients with cancer in both groups have been presented in Table 2. In addition, the Shapiro–Wilk test was conducted to assess the normality of data distribution for each variable. As presented in Table 2, the Shapiro–Wilk statistics were non-significant across all variables, indicating that the data met the assumption of normality and were appropriate for further parametric analyses.

Table 2. Descriptive Indices of Study's Variables in Control and Experimental Groups

Variables		Groups	Mean	SD	S-W	P
Ideological (Belief)	Pre-test	Experimental	14.47	1.28	0.15	0.068
		Control	13.94	2.30	0.11	0.070
	Post-test	Experimental	18.63	2.36	0.10	0.063
		Control	14.94	2.01	0.09	0.051
Ritualistic (Practice)	Pre-test	Experimental	11.47	1.46	0.11	0.072
		Control	11.05	1.31	0.12	0.069
	Post-test	Experimental	15.68	2.02	0.09	0.055
		Control	12.05	1.35	0.13	0.072
Experiential (Emotional)	Pre-test	Experimental	10.57	2.03	0.10	0.058
		Control	11.21	1.15	0.09	0.061
	Post-test	Experimental	14.94	1.72	0.09	0.069
		Control	9.89	1.39	0.11	0.057
Consequential	Pre-test	Experimental	13.52	1.47	0.11	0.060
		Control	12.94	1.32	0.10	0.072
	Post-test	Experimental	17.63	1.28	0.08	0.059
		Control	14.05	1.33	0.09	0.055
Self-Harm Thoughts	Pre-test	Experimental	15.47	1.29	0.10	0.072
		Control	16.01	1.41	0.11	0.059
	Post-test	Experimental	10.36	1.28	0.09	0.060
		Control	14.63	1.12	0.10	0.072
Cognitive Fusion	Pre-test	Experimental	34.73	2.30	0.11	0.065
		Control	35.36	2.03	0.11	0.062
	Post-test	Experimental	29.37	2.45	0.09	0.054
		Control	33.73	2.90	0.11	0.067

*Shapiro-Wilk test

MANCOVA was used to evaluate the effectiveness of DBT on religious beliefs, self-harm thoughts, and cognitive fusion in patients with cancer. Before conducting the main analysis, the assumptions of MANCOVA were examined. The results of Levene's test indicated that the assumption of homogeneity of variances for the dependent variables was met (P > 0.05). In addition, the results of Box's M test showed that the covariance matrices of the dependent variables were equal across the experimental and control groups (Box's M = 35.48, F = 1.38, P = 0.113), confirming the assumption of equality of covariance matrices. Furthermore, the results of the Bartlett's test of sphericity demonstrated a significant relationship among the dependent variables, including religious beliefs, self-harm thoughts, and cognitive fusion (P<0.01). Another important assumption of MANCOVA, the homogeneity of regression slopes, was also examined through the interaction between the pre-test scores and the independent variable (intervention method). The non-significant interaction effect indicated that this assumption was satisfied. Given that all assumptions were established, MANCOVA was performed to examine the differences between the experimental and control groups (Table 3).

According to Table 3, the results showed a significant multivariate effect of the intervention on the dependent variables. This indicates that the experimental and control groups differed significantly in at least one of the variables, including religious beliefs, self-harm thoughts, and cognitive fusion. The effect size showed that 76% of the total variance was explained by the intervention, and the statistical power of the test was 1.00, indicating sufficient sample size. To determine the specific variables with significant differences, follow-up ANCOVA analyses were performed, as presented in Table 4.

According to the contents of Table 4, the F-statistic was significant for ideological (F = 35.42), ritualistic (F = 40.76), experiential (F = 75.92), consequential (F = 36.15), self-harm thoughts (F = 48.37), and cognitive fusion (F = 38.19) at the 0.001 significance level. These findings indicate that there was a significant difference between the groups in these variables. Also, according to the calculated effect size, 54% of ideological, 57% of ritualistic, 72% of experiential, 55% of consequential, 62% of self-harm thoughts, and 56% of cognitive fusion were explained by the effect of the independent variable. As a result, it can be stated that DBT significantly increased religious beliefs and reduced self-harm thoughts and cognitive fusion in patients with cancer.

Table 3. The Results of Multivariate Analysis of Covariance on Mean Post-Test Scores

Test	Value	F	df	Error df	P	Effect Value
Pillai's Trace	0.765	13.596	6	25	<0.001	0.76
Wilks Lambda	0.235	13.596	6	25	<0.001	0.76
Hoteling Trace	3.263	13.596	6	25	<0.001	0.76
Roy's Largest Root	3.263	13.596	6	25	<0.001	0.76

Table 4. Univariate ANCOVA Results for Post-Test Scores of Dependent Variables in the Experimental and Control Groups

Variables	SS	DF	MS	F	P	Effect Value
Ideological (Belief)	99.51	1	99.51	35.42	<0.001	0.54
Ritualistic (Practice)	100.14	1	100.14	40.76	<0.001	0.57
Experiential (Emotional)	225.32	1	225.32	75.92	<0.001	0.72
Consequential	97.88	1	97.88	36.15	<0.001	0.55
Self-Harm Thoughts	133.02	1	133.02	48.37	<0.001	0.62
Cognitive Fusion	115.08	1	115.08	38.19	<0.001	0.56

Discussion

The present study aimed to examine the effectiveness of DBT on religious beliefs, self‑harm thoughts, and cognitive fusion among patients with cancer. Living with cancer often exposes individuals to profound psychological pressures, including uncertainty about the future, fear of disease progression, and significant emotional strain associated with treatment and physical suffering. These challenges can influence how patients interpret their experiences, regulate their emotions, and maintain psychological balance. Consequently, identifying effective therapeutic approaches that address these complex psychological dimensions is essential. The findings of this study suggest that DBT can serve as a valuable intervention in improving several key psychological outcomes among cancer patients.

First, the findings indicated that DBT contributed to the strengthening and improvement of religious beliefs in patients with cancer. For many individuals confronting a serious illness, religion and spirituality become important frameworks for understanding suffering, maintaining hope, and preserving a sense of meaning in life [22]. Psychological interventions that promote mindfulness, acceptance, and self‑reflection may help patients reconnect with personal values and spiritual perspectives constructively [20]. Within DBT, mindfulness practices encourage individuals to become more aware of their internal experiences without judgment, which can create a reflective space in which religious or spiritual beliefs are experienced with greater depth and authenticity [19]. Moreover, DBT emphasizes acceptance of difficult realities while simultaneously encouraging commitment to meaningful life values. This balance may allow cancer patients to interpret their illness experience in a way that aligns with their spiritual worldview, fostering patience, hope, and emotional stability [26]. By helping individuals tolerate uncertainty and remain present in the moment, DBT may support a more adaptive engagement with religious beliefs, transforming them into a psychological resource that promotes resilience and inner strength

during the challenging course of cancer [33].

The results of the study demonstrated that DBT was effective in reducing self‐harm thoughts among patients with cancer. The psychological impact of cancer can be overwhelming, particularly when patients face prolonged treatment, physical pain, and fears related to mortality. Under such circumstances, some individuals may experience feelings of despair, loss of control, or emotional exhaustion that contribute to thoughts of self‐harm [22]. Addressing these thoughts is critically important, as they reflect significant psychological distress and may negatively affect patients' adjustment to illness and treatment [21]. DBT is specifically designed to target maladaptive emotional responses and harmful coping patterns [28]. Through skills such as distress tolerance and emotion regulation, patients learn how to navigate intense emotional states without resorting to destructive thoughts or behaviors [33]. These skills help individuals identify emotional triggers, manage psychological pain, and develop healthier ways of coping with difficult experiences [20]. As patients strengthen their ability to regulate emotions and tolerate distress, they may experience a reduction in feelings of hopelessness and vulnerability that often underlie self‐harm thoughts, ultimately promoting greater psychological safety and stability [25].

The findings revealed that DBT significantly reduced cognitive fusion in patients with cancer. Cognitive fusion occurs when individuals become overly entangled with their thoughts, perceiving them as literal truths rather than temporary mental events. In the context of cancer, patients may experience persistent thoughts related to fear, helplessness, or catastrophic interpretations about their illness and future [33]. When individuals become fused with these thoughts, they may feel overwhelmed and unable to respond flexibly to their circumstances, which can intensify emotional suffering and limit adaptive coping [19]. DBT addresses this process by cultivating mindfulness and psychological awareness, enabling patients to observe their thoughts with greater distance and perspective [27]. Rather than becoming dominated by distressing cognitions, individuals learn to recognize thoughts as passing mental experiences that do not necessarily define reality [21]. This shift in perspective promotes psychological flexibility, allowing patients to respond more calmly and effectively to challenging situations. As cognitive fusion decreases, patients may develop a more balanced and adaptive relationship with their thoughts, which can improve emotional regulation and enhance their overall psychological adjustment to living with cancer [26].

The present study has several limitations that should be considered when interpreting the findings. First, although participants were randomly allocated to the experimental and control groups, the initial recruitment was based on convenience sampling within selected oncology settings. Therefore, the sample may not adequately represent the broader population of patients with cancer, and the generalizability of the findings to patients with different demographic, clinical, cultural, or treatment characteristics should be approached with caution. Second, the quasi-experimental design and relatively small sample size limit the strength of causal inferences. Although random allocation was used after participant recruitment, the absence of a fully randomized controlled trial with a larger and independently recruited sample means that the observed changes cannot be attributed to DBT with the same level of certainty as in a rigorously controlled RCT. Third, the participants differed in cancer type, illness duration, and potentially disease severity and treatment experiences. Such clinical heterogeneity may have influenced psychological responses to the intervention and may have contributed to variability in treatment effects. Fourth, the study did not include a follow-up assessment; therefore, it remains unclear whether the observed improvements in religious beliefs and reductions in self-harm and cognitive fusion were maintained after the intervention ended. Finally, reliance on self-report measures may have introduced response and social-desirability biases, particularly when assessing sensitive psychological experiences such as self-harm. Accordingly, future studies should recruit larger and more heterogeneous samples using probability-based or multicenter sampling strategies, employ fully randomized controlled designs with appropriate active comparison conditions, account for relevant clinical characteristics, and incorporate longitudinal follow-up assessments to determine the durability and clinical relevance of DBT effects.

Despite these limitations, the findings have potentially relevant clinical implications. The observed effects suggest that DBT may be considered as a complementary psychological intervention within comprehensive oncology care, particularly for patients presenting with difficulties related to self-harm and maladaptive cognitive processes. In oncology settings, appropriately trained clinical psychologists, counselors, and other mental health professionals could incorporate selected DBT components, including mindfulness, emotion regulation, distress tolerance, and acceptance-based skills, into psychological and supportive care programs. Such integration should be implemented as an adjunct to, rather than a replacement for, standard medical and psychiatric care, with appropriate clinical screening and referral procedures for patients requiring specialized mental health or psychiatric intervention. However, these implications should be interpreted cautiously given the study design and sample characteristics. Future RCTs with larger samples, active control conditions, standardized treatment protocols, and longitudinal follow-up are warranted to establish the efficacy, durability, and clinical applicability of DBT for psychological difficulties among patients with cancer.

Conclusion

Overall, the findings indicate that DBT produced significant improvements in the assessed dimensions of religious beliefs and significant reductions in self-harm and cognitive fusion among patients with cancer. These findings suggest that DBT may have value as a

complementary psychological intervention for addressing maladaptive cognitive and emotional processes in this population. Nevertheless, the findings should be interpreted in light of several methodological limitations, including the quasi-experimental design, convenience sampling, relatively small and clinically heterogeneous sample, and the absence of a follow-up assessment. These limitations restrict the strength of causal conclusions and the generalizability and long-term interpretation of the findings. Therefore, future research should employ larger, fully randomized controlled trials and longitudinal designs with follow-up assessments to confirm the observed effects, examine their durability, and further establish the clinical applicability of DBT in oncology care.

Conflict of Interest

The authors report no conflicts of interest concerning the research, authorship, or publication of this study.

Ethical Approval

Ethical approval for this study was obtained from the Ethics Committee under code IR.BMSU.BAQ.REC.1403.092. All procedures were conducted in accordance with the ethical principles of the World Medical Association Declaration of Helsinki. Before participation, all subjects provided written informed consent after receiving a complete explanation of the study objectives and procedures.

Declaration of Generative AI and AI-Assisted Technologies

No generative AI or AI-assisted technologies were used in the design, data collection, analysis, or writing of this manuscript.

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References

1. Lawson McLean A, Kahr J, Régis J, Kamp MA, Senft C. Epidemiology of resistant cancer pain: prevalence, clinical burden, and treatment gaps. Stereotactic and Functional Neurosurgery. 2026;103(6):489-501.
2. Falanga A, Ay C, Di Nisio M, Gerotziafas G, Jara-Palomares L, Langer F, Lecumberri R, Mandala M, Maraveyas A, Pabinger I, Sinn M. Venous thromboembolism in cancer patients: ESMO Clinical Practice Guideline. Annals of Oncology. 2023;34(5):452-67.
3. Rowe DG, O'Callaghan E, Yoo S, Dalton JC, Woo J, Owolo E, Dalton T, Johnson MO, Goodwin AN, Crowell KA, Kaplan S. Perioperative Trends in Distress Among Cancer Patients: A Systematic Review and Meta- Analysis. Cancer medicine. 2025;14(6):e70456.
4. Zhang C, Liu M. Integrating Ovarian Reserve Biomarkers with Machine Learning for Gonadotoxicity Risk Prediction in Young Female Cancer Patients: A Scoping Review. Journal of Computing Innovations and Applications. 2026;4(1):127-36.
5. Kelly EP, Myers B, Henderson B, Sprik P, White KB, Pawlik TM. The influence of patient and provider religious and spiritual beliefs on treatment decision making in the cancer care context. Medical Decision Making. 2022;42(1):125-34.
6. Anshasi HA, Fawaz M, Aljawarneh YM, Alkhawaldeh JF. Exploring nurses' experiences of providing spiritual care to cancer patients: a qualitative study. BMC nursing. 2024;23(1):207.
7. Rybarski R, Bartczuk RP, Śliwak J, Zarzycka B. Religiosity and death anxiety among cancer patients: the mediating role of religious comfort and struggle. International journal of occupational medicine and environmental health. 2023;36(4):450.
8. Chen X, Yan Q, Tang Y, Zhu J, Zhang W, Zhang J. Financial toxicity, family resilience and negative emotions among young and middle-aged breast cancer patients: a multicentre cross-sectional study. The Breast. 2024;75:103735.
9. Rha SY, Song SK, Lee J. Self-efficacy for coping with cancer and quality of life in advanced gastric cancer patients. European Journal of Oncology Nursing. 2022;58:102120.
10. Men VY, Emery CR, Lam TC, Yip PS. Suicidal/self-harm behaviors among cancer patients: a population-based competing risk analysis. Psychological medicine. 2022;52(12):2342-51.
11. Low CE, Loke S, Rana S, Sim B, Ho CS. Prevalence and incidence of suicide, suicidal ideation and self-harm in caregivers of cancer patients: a systematic review and meta-analysis. General hospital psychiatry. 2024;90:35-43.
12. Bagheri-Sheykhangafshe F, Fathi-Ashtiani A, Savabi-Niri V, Mikelani N, Eghbali F. Prevalence of Suicide and Self-harm During the Coronavirus 2019 Pandemic: A Systematic Review Study. IJBS. 2022;16(3):183-190.
13. Mudiyanselage SP, Tsai YT, Liu WC, Tsai YJ, Ko NY. Breast cancer and suicide: A comprehensive systematic review and meta-analysis of suicidal behaviours mortality and risk factors among women with breast cancer. Journal of affective disorders. 2025;376:422-34.
14. Simonetti A, Tripaldella D, Bardi F, Pinto M, Caso R, Stella G, Monacelli L, Camardese G, D'Onofrio AM, Montanari S, Janiri D. Pain and Suicide Behavior in Cancer Patients: Implications for Personalized Treatment—A Systematic Review. Journal of Personalized Medicine. 2026;16(1):42.
15. Llewellyn A, Phung TH, Soares MO, Shepherd L, Glynn D, Harden M, Walker R, Duarte A, Dias S. MRI software and cognitive fusion biopsies in people with suspected prostate cancer: a systematic review, network meta-analysis and cost-effectiveness analysis. Health Technology Assessment (Winchester, England). 2024;28(61):1.
16. Deng R, Liu Y, Wang K, Ruan M, Li D, Wu J, Qiu J, Wu P, Tian P, Yu C, Shang J. Comparison of MRI artificial intelligence-guided cognitive fusion-targeted biopsy versus routine cognitive fusion-targeted prostate biopsy in prostate cancer diagnosis: a randomized controlled trial. BMC medicine. 2024;22(1):530.
17. Aguirre-Camacho A, Rash JA, Hidalgo B, Wurz A, Garland SN. An experimental study revisiting the link between media attention and breast cancer concern: exploring the role of cognitive fusion. Women & Health. 2021;61(10):976-85.
18. Guzmán A, Gillanders D, Stevenson A, Ross K. Psychosocial adjustment to mild cognitive impairment: the role of illness perceptions, cognitive fusion and cognitive impairment. Dementia. 2021;20(2):464-84.
19. Hyland KA, Neacsiu AD, Fisher HM, Cowperthwait CM, Chou N, Stinchcombe TE, Oeffinger KC, Porter LS, Dorfman CS, Keefe FJ, Somers TJ. LiveWell: Pilot Feasibility Trial of an Adapted Dialectical Behavioral Therapy Skills Training Protocol in Patients With Metastatic Non- Small Cell Lung Cancer. Psycho- Oncology. 2025 Dec;34(12):e70357.
20. Jin Y, Hu X, Tang C, Li X, Geng Q, Wang H. Effect of a DBT-Informed Dyadic Intervention (Better Together) on Psychosocial Outcomes in Colorectal Cancer Patient–Spouse Dyads: A Randomized Controlled Trial. Psycho- Oncology. 2026;35(4):e70467.
21. McCall MH, Boyd CT, Kerr ND, Daniel SS, Sutfin EL. Dialectical Behavior Therapy Skills Training as a brief intervention for cigarette smoking by patients With cancer: A scoping review and narrative synthesis of related literature. Psycho- Oncology. 2025;34(1):e70074.
22. Wu SI, Liu SI, Wu YJ, Huang LL, Liu TJ, Kao KL, Lee YH. The efficacy of applying the Interpersonal Effectiveness skills of dialectical behavior therapy into communication skills workshop for clinical nurses. Heliyon. 2023;9(3).
23. Vijayapriya CV, Tamarana R. Effectiveness of dialectical behavior therapy as a transdiagnostic treatment for improving cognitive functions: a systematic review. Research in Psychotherapy: Psychopathology, Process, and Outcome. 2023;26(2):662.

24. Dils AT, O'Keefe K, Dakka N, Azar M, Chen M, Zhang A. The efficacy of cognitive behavioral therapy for mental health and quality of life among individuals diagnosed with cancer: A systematic review and meta- analysis. Cancer medicine. 2024;13(16):e70063.
25. Shi K, Zhang LY, Gao BL, Qian Y, Huang XB, Yue JL. Bibliometric analysis of global research on dialectical behavior therapy from 1987 to 2024. Frontiers in Psychology. 2025;16:1450497.
26. Hall A, Gregg L, O'Ceallaigh B, Wittkowski A. Transdiagnostic patient experiences of dialectical behavioural therapy: a systematic review and metasynthesis. Frontiers in Psychiatry. 2025;16:1640341.
27. Schmitz SE, Ebner-Priemer UW, Kleindienst N, Friedmann F, Bohus M, Steil R, Müller-Engelmann M, Limberger MF, Hartnagel LM, Santangelo P, Priebe K. Intrusive Memory Frequency and Related Inner Tension Following Dialectical Behavior Therapy or Cognitive Processing Therapy for Posttraumatic Stress Disorder: An e-Diary Study. JMIR Mental Health. 2025;12:e81081.
28. Ruork AK, Finkelstein J, McLean CL, Rizvi SL. Dialectical behavior therapy and acceptance and commitment therapy: areas of overlap and distinction. Journal of Contemporary Psychotherapy. 2022;52(4):281-92.
29. Bagheri-Sheykhangafshe F, Tajbakhsh K, Savabi Niri V, Bourbour Z, Otadi S. The Effectiveness of Compassion-Focused Therapy on Pain Catastrophizing, Sexual Function, and Resilience in Women with Multiple Sclerosis (MS). IJBS. 2023;17(3):133-140.
30. Glock CY, Stark R. Religion and society in tension: a publication. from the research program in the Sociology of Religion Survey Research Center, Univ. of Calif., Berkeley, 1965.
31. Sansone RA, Wiederman MW, Sansone LA. The self- harm inventory (1): Development of a scale for identifying self-destructive behaviors and borderline personality disorder. Journal of Clinical Psychology. 1998;54(7):973-83.
32. Gillanders DT, Bolderston H, Bond FW, Dempster M, Flaxman PE, Campbell L, Kerr S, Tansey L, Noel P, Ferenbach C, Masley S. The development and initial validation of the cognitive fusion questionnaire. Behavior therapy. 2014;45(1):83-101.
33. Linehan MM. Skills training manual for treating borderline personality disorder. New York: Guilford Press; 1993.