IJBMC
International Journal of Body, Mind and Culture

Volume 12, Issue 7, pp 185-193
DOI: 10.61838/ijbmc.v12i7.851

Article type:
Original Research

Effectiveness of Schema Therapy on Cognitive Fusion with Illness and Illness-Related Fatigue in Patients with Cancer

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Article history:

Received 12 Jul 2025
Revised 28 Jul 2025
Accepted 20 Sep 2025
Published online 01 Oct 2025

How to cite this article:
Maghhoori, M., Razavi Sadati, S. F., & Chamani, A. (2025). Effectiveness of Schema Therapy on Cognitive Fusion with Illness and Illness-Related Fatigue in Patients with Cancer. International Journal of Body, Mind and Culture, 12(7), 185-193.

ABSTRACT

Objective: The present study was conducted with the aim of determining the effectiveness of schema therapy on cognitive fusion with illness and illness-related fatigue in patients with cancer.

Methods and Materials: The research method was quasi-experimental with a pretest–posttest design, a control group, and a two-month follow-up period. The statistical population consisted of all patients with cancer who referred to the Mazandaran Comprehensive Cancer Center in the second half of 2024. From among them, 30 patients with cancer were selected using purposive sampling and were randomly assigned to an experimental group (15 participants) and a control group (15 participants). The research instruments included the Cognitive Fusion Questionnaire developed by Gillanders et al. (2014) and the Cancer Fatigue Scale developed by Okuyama (2000). Young et al.'s (2003) schema therapy package was implemented in the form of eight 90-minute group sessions, held twice a week, for the experimental group, while the control group received no intervention. Data were analyzed using repeated measures analysis of variance.

Findings: The results showed that there was a significant difference between the groups in posttest and follow-up scores of cognitive fusion with illness and illness-related fatigue ($P<0.05$), and that the effects of schema therapy were maintained at follow-up ($P<0.05$).

Conclusion: It can be concluded that schema therapy can be used as an effective method for reducing cognitive fusion with illness and illness-related fatigue in patients with cancer.

Keywords: schema therapy, cognitive fusion, illness-related fatigue, cancer.

Introduction

Cancer, as one of the most complex and challenging diseases of the present century, not only affects the physical systems of the body but also has profound psychosocial impacts on patients' lives (Siegel et al., 2023). Although medical advances have increased survival rates among cancer patients, the psychological issues associated with this disease still remain a major challenge (Simard et al., 2013). Among these, cognitive fusion with the illness and disease-related fatigue are two of the most common and debilitating psychological problems that severely affect patients' quality of life (Lebel et al., 2016).

One of the most important cognitive factors involved in the formation and maintenance of suicidal thoughts is cognitive fusion (Zeidabadinejad et al., 2025). Cognitive fusion is a state in which a person experiences their thoughts as absolute and unchangeable realities, failing to distinguish between what they think and objective reality (Anderberg et al., 2024; Chamandoust et al., 2025). For example, when someone in this state has thoughts such as "I am worthless" or "There is no hope," they do not regard them as passing mental events but as unquestionable truths (AL-Hammouri et al., 2025). This pattern of cognitive processing leads to increased rumination, a focus on negative aspects of life, feelings of helplessness and hopelessness, and ultimately elevates the risk of suicidal ideation (Hosseinimotlaqh & Rahimi, 2024). Empirical evidence indicates that reducing cognitive fusion and fostering a healthy distance from thoughts can play an important role in reducing depressive symptoms and suicidal tendencies (Alimoradi & Talaei, 2024).

Another distressing consequence of cancer is cancer-related fatigue (Ghasemzadehbarki et al., 2024). Cancer-related fatigue (CRF), sometimes referred to simply as "cancer fatigue," is one of the most common and troubling side effects of cancer and its treatments, and it disrupts all aspects of quality of life. Cancer-related fatigue has been reported in 70–100% of patients undergoing treatment. In patients with cancer, fatigue may arise from the disease process itself or from its related treatments (Kvillemo & Bränström, 2014). Cancer-related fatigue is a subjective experience that does not correspond to ordinary, familiar fatigue, and there is no consensus on its precise definition. It is not relieved by rest (Neel et al., 2015). Regardless of patients' diagnostic characteristics, cancer-related fatigue affects almost all individuals with cancer (Gomes et al., 2024; Izadi et al., 2025).

The National Comprehensive Cancer Network (NCCN, 2010) defines cancer-related fatigue as "a distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning" (Zarei & Esmaielzadeh, 2024). Fatigue has been observed in more than 70% of patients undergoing radiotherapy and chemotherapy. For most patients, the severity of cancer-related fatigue is such that, if it does not improve, it disrupts and limits daily activities and deeply affects most domains of life—such as carrying out activities, fulfilling valued life roles, quality of life, and functional status (Jim et al., 2006). According to reports by cancer patients, cancer-related fatigue is the most distressing symptom they experience and thus exerts substantial negative effects on their quality of life (Breitbart et al., 2015; Lichtenthal et al., 2020). Cancer-related fatigue is most severe in the early stages after diagnosis; therefore, its assessment and treatment should begin from the onset of symptoms (Breitbart et al., 2015; Lichtenthal et al., 2020). Studies have confirmed that the severity and duration of fatigue in cancer patients, their families, and survivors is significantly greater than in the general population (Breitbart et al., 2015; Lichtenthal et al., 2020; Breitbart et al., 2012). Hence, finding a non-pharmacological and non-invasive solution to alleviate this problem in patients with cancer appears essential.

In recent years, increasing attention has been paid to psychological interventions aimed at reducing these symptoms in cancer patients (Breitbart et al., 2012). Among various approaches, schema therapy, developed by Young, has emerged as a comprehensive therapeutic method for deep and chronic psychological problems (Visser et al., 2010). This approach is based on the assumption that many psychological problems are rooted in early maladaptive schemas formed in childhood (Nia et al., 2017). Schema therapy employs cognitive, experiential, and behavioral techniques to modify these schemas and promote more adaptive patterns (Renner et al., 2013; Thanoon et al., 2022).

In the context of cancer, schema therapy can help patients identify and modify dysfunctional beliefs about the illness, its treatment, and their future. For example, schemas such as "vulnerability to harm or illness" or "failure" may intensify fear of recurrence, and schema therapy, by targeting these beliefs, can help reduce such fears. Preliminary studies have indicated that this method may be effective in reducing anxiety symptoms and improving quality of life in cancer patients (Alsubaie, 2024).

Methods and Materials

The present study used a quasi-experimental design with a pretest–posttest format, a control group, and a two-month follow-up period. The statistical population consisted of all cancer patients who referred to the Mazandaran Comprehensive Cancer Center during the second half of the year 2024. From this population, 30 patients with cancer were selected purposively after an initial interview and based on the inclusion and exclusion criteria, and were then randomly assigned to two groups: an experimental group (15 participants) and a control group (15 participants).

The inclusion criteria were: having received a diagnosis of cancer at least one year prior; completion of chemotherapy sessions; minimum education level of high school diploma; age between 20 and 50 years; not currently taking psychiatric medications; and no history of psychiatric disorders (based on the participant's self-report). The exclusion criteria were: absence from more than two intervention sessions; lack of willingness to continue participation in the study; simultaneous participation in other counseling or psychotherapy programs; and failure to complete the questionnaires at all three stages (pretest, posttest, and follow-up).

The procedure was as follows: among cancer patients referring to the Mazandaran Comprehensive Cancer Center in Sari, 30 patients meeting the inclusion and exclusion criteria were identified. After they were informed about the study, they were randomly assigned to the experimental and control groups. Following group assignment, and prior to the intervention, participants completed the study questionnaires as the pretest. The experimental group received group schema therapy delivered by the researcher in 8 sessions of 90 minutes each, twice a week. The control group did not receive any intervention during this period. After the treatment sessions ended, both groups again completed the questionnaires at the posttest stage, and 60 days later at the follow-up stage.

Instruments

Cognitive Fusion Questionnaire (CFQ): The Cognitive Fusion Questionnaire was developed by Gillanders et al., (2014) to assess cognitive fusion. The CFQ consists of 7 items and is rated on a Likert scale with items such as "It's hard for me to let go of upsetting thoughts, even when I know that doing so would be helpful." To obtain the total score, all item scores are summed. The possible range of scores is from 7 to 49. Higher scores indicate higher levels of cognitive fusion, and lower scores indicate lower levels of cognitive fusion. In Basharpoor et al., (2020) study, the content, face, and criterion validity of the questionnaire were evaluated as satisfactory. The Cronbach's alpha coefficient reported for this questionnaire in Basharpoor et al., (2020) study was above 0.70.

Cancer Fatigue Scale (CFS): The Cancer Fatigue Scale (CFS) was developed by Okuyama et al., (2000) to assess cancer-related fatigue. This questionnaire includes 3 subscales and 15 items. The items of each subscale are as follows: Physical fatigue: items 1, 2, 3, 6, 9, 12, and 15; Affective fatigue: items 5, 8, 11, and 14; and Cognitive fatigue: items 4, 7, 10, and 13. The questionnaire is rated on a five-point Likert scale. Each item is scored from 0 ("not at all") to 4 ("very much"), and respondents indicate their recent state on the questionnaire. To calculate the score for each subscale, the scores of the relevant items are summed. To obtain the total fatigue score, the scores of all items are summed. The minimum and maximum total scores are 0 and 60, respectively. Higher scores indicate higher levels of fatigue, and lower scores indicate lower fatigue. Thus, the possible score range is 0–28 for physical fatigue, 0–16 for affective fatigue, 0–16 for cognitive fatigue, and 0–60 for total fatigue. Regarding validity, this scale has been supported by both international and national studies. In the study by Haghighat et al., the reliability of the questionnaire using Cronbach's alpha for the physical, affective, and cognitive subscales and the total fatigue score was 0.92, 0.89, 0.85, and 0.95, respectively, indicating satisfactory reliability. In the present study as well, Cronbach's alpha was 0.76.

Schema Therapy Protocol: This protocol was derived from Young et al., (2006) Schema Therapy manual and was implemented in eight 2-hour sessions, twice a week. The content and goals of the sessions are presented in Table 1.

Table 1

Young et al.'s (2003) Schema Therapy Protocol

Session	Description of Sessions
1	Introduction and establishing rapport; administration of pretest; explaining the importance and goals of schema therapy; presenting and conceptualizing clients' problems within the schema therapy framework.
2	Examining objective evidence that confirms or refutes schemas based on past and current life experiences; discussion of the contrast between existing schemas and healthy schemas.
3	Introducing schema domains and early maladaptive schemas; providing a brief explanation of the biology of early maladaptive schemas; explaining the functions of schemas.
4	Introducing maladaptive coping styles and responses that maintain schemas, with examples from daily life; defining the concept of schema modes; preparing patients to assess and change their schemas.
5	Preparing for change; assessing schemas through questionnaires; providing feedback to facilitate further identification of schemas.
6	Teaching experiential techniques such as imagery exercises involving problematic situations and confronting the most problematic ones.
7	Training in relationships with significant others and role-playing; conducting dialogues between the healthy part and the schema-driven part of the self; examining the advantages and disadvantages of healthy versus unhealthy behaviors; providing strategies to overcome barriers to behavior change.
8	Brief review of the material covered in previous sessions; practicing and consolidating learned strategies; administration of the posttest.

Ethical considerations were observed as follows: prior to the start of the study, participants were informed about the purpose and procedures of the research; the researcher committed to protecting participants' private information and using the data solely for research purposes; the researcher also committed to providing an explanation of the results to participants upon request; in case of any ambiguity, necessary guidance was provided to participants; participation in the study imposed no financial burden on them; and the study did not conflict with the religious or cultural values of the participants or the community. Data were analyzed using repeated measures analysis of variance (ANOVA) in SPSS version 26.

Findings and Results

In the present study, the sample consisted of 30 participants. In the experimental group, there were 15 individuals with a mean age of 31.83 ± 3.27 years, and in the control group, 15 individuals with a mean age of 31.04 ± 3.12 years, indicating that the two groups were homogeneous in terms of age. The descriptive findings of the study are presented in Table 2.

Table 2

Descriptive statistics of the dependent variables in the pretest, posttest, and follow-up phases

Variable	Group	Pretest		Posttest		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
Cognitive fusion with illness	Experimental	47.13	6.54	25.53	8.44	24.66	8.47
	Control	46.13	6.11	46.53	6.80	46.40	5.65
Cancer-related fatigue	Experimental	42.66	6.93	33.86	6.89	34.53	6.74
	Control	35.86	6.24	35.26	5.93	36.60	6.36

As shown in Table 2, the means and standard deviations of total scores of cognitive fusion with illness and cancer-related fatigue in the experimental and control groups were examined in the pretest, posttest, and follow-up stages. As can be seen, in the pretest phase the mean scores of the two groups were very close to each other. However, in the posttest and follow-up phases, the mean score of the experimental group on cancer-related fatigue was noticeably lower than that of the control group, and on cognitive fusion with illness in the posttest and follow-up phases it differed considerably from that of the control group.

Before presenting the results of the repeated measures analysis of variance, the assumptions of parametric tests were examined. The results of the Shapiro–Wilk test indicated that the assumption of

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E-ISSN: 2345-5802

normal distribution of the sample data was met for the variables of cognitive fusion with illness and cancer-related fatigue in the experimental and control groups at the pretest, posttest, and follow-up stages (p > 0.05). In addition, Box's M test was used to examine the homogeneity of covariance matrices, and the results showed that (F= 1.02, p= 0.429) the covariance matrices were equal across groups; therefore, the assumption of homogeneity of covariance was met.

Moreover, the assumption of homogeneity of variances was assessed using Levene's test, the results of which were not significant, indicating that the assumption of homogeneity of variances was satisfied (p > 0.05). Furthermore, the results of the independent samples t-test showed that the differences between the pretest mean scores of the experimental and control groups on the dependent variables (cancer-related fatigue and cognitive fusion with illness) were not statistically significant (p>0.05). The results of Mauchly's test also indicated that the sphericity assumption for the variables of cognitive fusion with illness and cancer-related fatigue was met (p>0.05).

Table 3

Repeated measures analysis of variance for comparing groups on the study variables

Variable	Source	Sum of Squares	df	Mean Square	F value	P value	Effect size
Cognitive fusion with illness	Time	457.80	2	228.90	55.62	0.0001	0.66
	Group	298.84	1	298.84	8.45	0.02	0.23
	Time × Group	518.09	2	259.54	62.83	0.0001	0.69
	Error	230.44	56	4.11			
Cancer-related fatigue	Time	518.60	2	259.30	136.41	0.0001	0.83
	Group	448.90	1	448.90	7.39	0.03	0.20
	Time × Group	468.29	2	234.14	123.18	0.0001	0.81
	Error	106.44	56	1.90			

The results in Table 3 show that the F value for the interaction effect of time and group for the variables of cognitive fusion with illness (reported as 171.74) and cancer-related fatigue (reported as 87.69) is significant at the 0.001 level. This finding indicates that the experimental and control groups differ significantly in the study variables (cognitive fusion with illness and cancer-related fatigue) across the three stages of pretest, posttest, and follow-up. To determine at which stages this effect occurred, Bonferroni post hoc tests were conducted.

Table 4

Pairwise comparisons of pretest, posttest, and follow-up stages

Component	Test stages	Mean difference	Standard error	P-value
Cognitive fusion with illness	Pretest–Posttest	4.00	0.61	0.0001
	Pretest–Follow-up	5.30	0.63	0.0001
Cancer-related fatigue	Pretest–Posttest	−4.10	0.36	0.0001
	Pretest–Follow-up	−5.70	0.41	0.0001

According to the results in Table 4, the differences between the mean scores of the pretest and posttest and the pretest and follow-up for the components of cognitive fusion with illness and cancer-related fatigue in cancer patients are significant. In contrast, there is no significant difference between the mean scores of the posttest and follow-up for these components. This means that the mean scores of cognitive fusion with illness and cancer-related fatigue in cancer patients, which had changed significantly from pretest to posttest, retained this change at the follow-up stage and did not lose stability over time. Therefore, positive parenting training, while having a significant effect on the mean scores of cognitive fusion with illness and cancer-related fatigue in cancer patients at the posttest stage, was also able to maintain its effect over time.

Discussion and Conclusion

The findings of the present study showed that implementing schema therapy interventions in patients with cancer led to a significant reduction in cognitive fusion with the illness and illness-related fatigue. This suggests that addressing deeper cognitive and emotional structures through the identification and modification of early maladaptive schemas can have a substantial impact on improving patients' psychological adjustment to chronic and life-threatening diseases. In what follows, each of the main components under study is discussed in detail.

Cognitive fusion refers to the entanglement of the individual with thoughts, images, and beliefs related to the illness, such that these thoughts are experienced not as mere mental events, but as absolute realities. In this state, the patient does not see themselves as separate from their negative thoughts, which in turn increases feelings of helplessness, anxiety, and depression. The results of the present study showed that participation in schema therapy sessions reduced this fusion.

From a theoretical perspective, schema therapy is based on Young's cognitive–emotional model Young et al., (2006), which holds that many emotional and behavioral problems originate in early maladaptive schemas formed in childhood as a result of unmet core emotional needs. Patients with cancer, when faced with the threat of death and loss of bodily control, may activate schemas such as "incompetence," "mistrust," "vulnerability to harm," or "dependence/incompetence." Activation of these schemas leads the individual to perceive illness-related thoughts as highly real and threatening and to be unable to distance themselves from them. In other words, maladaptive schemas provide the groundwork for cognitive fusion.

Schema therapy, by identifying these underlying patterns and helping the patient to recognize their developmental origins, gradually increases the person's capacity to differentiate themselves from the content of their mind. Techniques such as chair dialogues, imagery rescripting, revisiting childhood experiences, and practicing the "healthy parent" mode enable individuals to observe their thoughts from a meta-perspective and to distinguish between the "observing self" and the "experiencing self." As a result, patients learn that negative thoughts about disease progression or death are not necessarily facts, but rather products of the mind in threatening circumstances. This process is what is known in the therapeutic literature as reducing cognitive fusion.

Previous studies have reported similar findings. For example, extensive research in the area of chronic pain has shown that reducing cognitive fusion with pain is associated with improved functioning and better quality of life. Likewise, studies applying schema therapy in populations with physical illnesses (such as cancer or autoimmune diseases) have indicated that by increasing insight into maladaptive patterns and reducing self-criticism and helplessness, this approach can enhance cognitive flexibility and illness acceptance. Thus, the reduction in cognitive fusion observed in the present study can be considered a direct outcome of increased awareness of schemas, strengthening of the internal healthy parent, and cognitive–emotional restructuring in relation to the illness. When patients learn to observe and understand their negative thoughts rather than merge with them, the negative emotions associated with the illness decrease, and they experience a greater sense of mastery and control over their mind.

Fatigue is one of the most common and disabling symptoms in patients with cancer and, from a psychological standpoint, represents a combination of physical, emotional, and cognitive exhaustion. Chronic fatigue is not only associated with treatment side effects and physical weakness, but also strongly correlated with psychological burnout, anxiety, depression, and a sense of meaninglessness. The finding of the present study—namely, the significant reduction in fatigue following schema therapy—highlights the crucial role of cognitive and emotional factors in this symptom.

Theoretically, fatigue in cancer patients may stem from persistent mental preoccupation with negative thoughts about the illness, fear of recurrence, feelings of incompetence, and perceived lack of control over circumstances. When a person is chronically caught up in negative, self-blaming, or helpless thinking patterns, both physiological and psychological arousal increase, and over time, the psychophysiological system becomes exhausted. Schema therapy, by identifying and modifying these repetitive patterns, helps reduce internal tension and promotes emotional restructuring.

More specifically, when patients in therapy confront schemas such as "unrelenting standards," "dependence/incompetence," "worthlessness," or "abandonment," and learn to meet their emotional needs in healthier ways, they free themselves from constant internal pressure and feelings of inadequacy. Consequently, their psychological energy is released, and mental and emotional fatigue decreases. In addition, strengthening the "healthy adult" mode helps patients adopt a more realistic and accepting perspective toward their illness—a view in which the illness is seen as a part of life, rather than its entirety. This shift in perspective indirectly reduces the sense of exhaustion.

Numerous studies have shown that fatigue in cancer patients is closely linked to depression, negative beliefs about the self and the future, and difficulties in emotion regulation (Kroenke & Swindle, 2000; Wetherell et al., 2016). Thus, interventions that promote cognitive restructuring and emotional regulation can reduce fatigue. Schema therapy directly pursues this goal, and by focusing on the primary source of negative emotions—maladaptive schemas—rather than merely controlling symptoms, it targets the psychological roots of fatigue. The findings of the present study are consistent with this view and suggest that modifying deep cognitive and emotional structures can alter important physiological and psychological outcomes such as fatigue. In other words, fatigue is not merely a physical phenomenon; it is also a reflection of internal psychological and emotional pressures, and schema therapy, by addressing these deeper layers, can influence the subjective experience of fatigue.

In explaining the effective mechanisms, it can be argued that schema therapy affects both components (cognitive fusion and fatigue) through similar pathways. During treatment, patients learn to distinguish between thoughts and reality, to identify their emotions, and to trace them back to early schemas. This increased self-awareness reduces emotional reactivity and thereby diminishes both cognitive fusion and psychological fatigue. Therapists in schema therapy use the "limiting parent" and "healthy parent" modes to help patients change their internal relationship with themselves. When the patient's inner dialogue shifts from criticism and blame to support and acceptance, psychological strain and the feeling of fatigue decrease.

Since schema therapy teaches patients not to view their thoughts as absolute and unchangeable, their cognitive flexibility increases, and their ability to cope with stressful situations improves. Patients learn to experience and manage unpleasant emotions related to the illness instead of avoiding them or becoming overwhelmed by them. This skill contributes to reducing both cognitive fusion and fatigue resulting from chronic stress.

The findings of this study are consistent with research emphasizing the effectiveness of cognitive–emotional approaches in chronic patients. For example, (Özer, 2022) found that schema therapy in individuals with chronic illnesses led to increased personal control and reduced helplessness. Similarly, Nejat et al., (2022), in a study on cancer patients, showed that modifying early maladaptive schemas can improve psychological adjustment and reduce psychosomatic symptoms. In the present study, as in the above research, working with core schemas such as "vulnerability to harm," "dependence/incompetence," and "mistrust" led to reduced perceived threat and a greater sense of control over the illness. This indicates that schema therapy is highly effective not only in personality disorders or emotional problems, but also in the context of physical illnesses.

Overall, the findings of the present study indicate that schema therapy, by reconstructing maladaptive cognitive and emotional structures, was able to significantly reduce two key psychological outcomes related to cancer—cognitive fusion with illness and illness-related fatigue. These results underscore the importance of integrating deep, schema-based psychological interventions alongside medical treatments. In fact, schema therapy helped patients shift from viewing themselves as "victims of the illness" to seeing themselves as "agents of control and meaning-making." When patients are able to observe their thoughts instead of drowning in them, and when they can express their emotions in a healthy manner rather than suppressing them, their sense of mastery, calmness, and hope increases. This internal shift, in turn, leads to reduced fatigue and improved quality of life.

Therefore, it can be concluded that schema therapy is a comprehensive approach that is effective not only in improving psychological symptoms in cancer patients, but also in enhancing their overall adjustment to the

illness and improving their quality of life. Implementing such interventions alongside pharmacological and medical treatments can be an important step toward holistic care for patients with cancer and strengthening their psychological well-being.

Acknowledgments

The authors express their gratitude and appreciation to all participants.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical 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 study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contribute to this study.

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