

The Effectiveness of Mindfulness-Based Group Cognitive Therapy on Improving the Quality of Life in Patients with Cancer

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Abstract

Objective: The majority of cancer patients have a poor quality of life. It seems that mindfulness-based group cognitive therapy can improve quality of life in these patients. Therefore, this study was conducted with the aim of evaluating the effectiveness of mindfulness-based group cognitive therapy in improving quality of life among patients with cancer.

Methods: The present study is a quasi-experimental research with pre-test and post-test with control group. The sample population consisted of 30 cancer patients selected through purposive sampling method who were randomly placed in two experimental and control groups (15 subjects per group). All subjects completed the quality of life questionnaire in pre-test and post-test stages. The findings were analyzed by the SPSS software and multivariate analysis of covariance tests.

Results: The results showed that there is a significant difference between the control and experimental groups. It was shown that mindfulness-based group cognitive therapy had a significant effect on improving quality of life in experimental group ($p < 0.01$).

Conclusion: According to the results, it can be proposed that it is necessary for health centers and support associations to use mindfulness-based group cognitive therapy to improve their patients' quality of life.

Keywords: cognitive therapy, mindfulness, quality of life, cancer, health.

Introduction

Cancer is a disorder characterized by abnormal cell growth and loss of cell differentiation. Cancer patients become afflicted with many physical, mental and social problems which may undermine the quality of their lives. Many research findings are indicative of the relationship between mental health and quality of life in cancer patients (Faller et al., 2013).

The hurdles of cancer are the negative effects resulting from living with such disorder. Cancer patients often suffer from multiple mental and psychological problems in addition to physical ones which lead to denial, neglect of treatment

and physical problems (Zainal, Booth & Huppert, 2013). One of the aspects which undergo drastic change in cancer patients is quality of life. Quality of life refers to a person's awareness of life experiences and his/her role in those experiences (Faller et al., 2013; Ryan & Deci, 2001). The World Health Organization (WHO) defines the concept of quality of life as "individuals' perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns". This definition encompasses all physical and psychological aspects, independence level, social and environmental relations and spiritual aspects (Nosikov & Gudex, 2003). The results of many studies point to the reduction of cancer patients' quality of life (McCarroll, 2014). Severe illnesses and physical complications worsen the quality of

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life. Refractory diseases do more so because of the concurrence of physical problems, psychological consequences and even economic problems which follow.

Kaplan and Sadock (1988) believe that when a patient is in need of help to overcome the problems and stresses resulting from non-adjustment, the environment, the family and the society, psychological intervention becomes imperative. According to above mentioned, it can be concluded that cancer patients with all their problems are in dire need of therapies and trainings to improve their quality of life.

The mindfulness-based cognitive therapy (MBCT) is among the therapeutic and educational programs which can be helpful in this regard. During MBCT course, depressed patients learn how to deal with their negative thoughts and feelings and how to focus on changing their beliefs and attitudes. They also learn how to reorient their automatic thoughts, ruminations, and negative thoughts and feelings, how to become aware of them and how to look at their thoughts and feelings from a broader perspective (Wood, Gonzalez & Barden, 2015). Mindfulness is a type of awareness which happens when we bring our attention to our experiences about a specific subject; this attention is on purpose (it is brought to specific aspects of experience), and occurs in the present moment (when the mind orients toward the future or the past, it gets reoriented toward the present), and is non-judgmental (it is accompanied by acceptance of what has happened) (Crane, 2017). A MBCT program includes: (1) training awareness through mindfulness exercises, (2) an attitudinal framework developed by means of little effort, acceptance and inherent interest to experiences, and (3) a process which establishes connection between the understanding of the work procedure and vulnerable factors and training them (Foley, Baillie, Huxter, Price & Sinclair, 2010). Personal

experiences become integrated and understandable in this framework. The framework also helps with understanding the general vulnerabilities of human and his sufferings as well as understanding specific vulnerabilities such as depression relapse. This perception relates to the two intrinsic traits of mankind (vulnerability and susceptibility) to the features of depression relapse. This is facilitated during MBCT sessions through conversation, feedback, group exercises and training (Crane, 2017).

The positive effects of MBCT on psychological and mental problems of cancer patients have been demonstrated in various studies (Foley & et al, 2010; Teimouri, Ramazani & Mahjoob, 2015; Safa, Ghassem Boroujerdi, Karamlou & Masjedi, 2014; Yang, Liu, Zhang & Liu, 2015; Abbott and et al, 2014; Hofmann, Sawyer, Witt & Oh, 2010). Wood et al. (2015) propose that MBCT is effective in restructuring dysfunctional thinking and negative cognitions in cancer patients. The present study attempts to answer this question: Is MBCT effective in improving quality of life in cancer patients?

Materials and Methods

Participants and Procedure

This study is quasi-experimental conducted by pre-test and post-test with control and experimental groups. The study population consisted of all cancer patients who visited Shahid Mohammadi Hospital in Bandar Abbas Province in Iran for treatment. The sample population consisted of 30 patients, selected by purposive sampling, who were then randomly and equally divided into the control and experimental groups (15 individuals per group). The purposive sampling enabled the authors to select the patients who had the required characteristics; otherwise, conducting such studies in the humanities and psychology becomes difficult if not impossible (Gall, Borg & Gall, 1996). Considering that the recommended size for

the sample population in experimental and quasi-experimental group studies is better to be at least 15 individuals per group (Yalom, 1995), the same number of subjects were chosen from the study population according to the inclusion criteria. The selected subjects were then randomly placed in two 15-member groups. The data collected from the study questionnaires in the pre-test and post-test were described by descriptive statistics and then the multivariate analysis of covariance test (MANCOVA) was used in the inferential data analysis stage to test the study hypotheses and to control the pre-test effect using the SPSS software. The inclusion criteria for the present study was being over 18 years old and having at least high school diploma and full consent of patients; and exclusion criteria for this study was inappropriate physical condition. There were no drop outs in this study.

In order to comply with the ethical aspects, the necessary permissions were first obtained, then, in selecting the samples, with a full explanation of the purposes and aspects of privacy and confidentiality, it was stated that any person who wishes to participate in the present study should express their consent to participate in the study. In this research,

all participants verbally expressed their consent to attend in the study.

Measures

Quality of Life Questionnaire (QOL): This questionnaire is used to assess a person's quality of life during the past two weeks. The questionnaire was designed by the WHO in cooperation with 15 international centers in 1989. It contains 24 questions in 4 areas. There are also two more questions at the beginning which belong to none of the areas; rather, they assess the subject's overall health condition and quality of life. Therefore, the measure has an overall number of 26 questions, four subscales and a total score. The subscales are physical health, mental health, social relations, and environmental health.

In all of the reports by the QOL designers in the 15 international centers, the Cronbach's alpha ranged between 0.73 and 0.89 for the four subscales and the total score. The reliability of the scale in Iran was tested through the test-retest with a three-week interval, the bisection method and the Cronbach's alpha method, which resulted in 0.67, 0.87 and 0.84, respectively. Also, the result of measuring the reliability of the quality of life scale

Table 1. Mindfulness-based cognitive group therapy

No.	Session No.	Session Content
1	First	Overviewing chapters, introducing MBCT, reviewing quality of life, decreasing automatic negative thoughts and dysfunctional attitude,
2	Second	Awareness attention training with focus on full awareness of feelings and thoughts via metacognition therapy, understanding the relationship between thoughts and feelings,
3	Third	Understanding and controlling the wandering mind, reviewing quality of life, decreasing automatic negative thoughts and dysfunctional attitude,
4	Fourth	Mindful breathing, mindfulness meditation,
5	Fifth	Continuing previous exercises, achieving full awareness of feelings and thoughts and accepting them,
6	Sixth	Creating a different relationship with experiences, understating how to create and use acceptance, changing attitude and thoughts,
7	Seventh	Reviewing the "thoughts are not facts" topic using methods which involve viewing thoughts differently, self-caring and identifying relapse symptoms,
8	Eighth	Reviewing previous sessions, summarizing with the help of participants to finish the course

Participants received a home practice handout at the end of each session.

using the Cronbach's alpha was reported 0.88 for the whole scale, 0.70 for physical health, 0.77 for mental health, 0.65 for social relations, and 0.77 for environmental health (Zemestani, Hasannejad & Nejadian, 2013). In their research, Yousefi and Safari used the correlation between the total score of each dimension and every constituting question of that dimension to determine the reliability of the scale. The correlation coefficients ranged between 0.45 and 0.83 and all coefficients were significant at the 0.01 level. Each item had the highest correlation with its related dimension (Yousefi & Safari, 2010). The reliability of the present study's instruments was reported 0.88 using the Cronbach's alpha.

Findings

In this section, the demographic data and the research variables are described. A total number of 30 subjects constituted the sample population, who were all cancer patients in Bandar Abbas Province. Table 2 indicates the distribution of the means of quality of life in the two groups at the pre- and post-test stages.

As it can be seen in Table 2, the quality of life mean for the experimental group is 101.4 in the pre-test and 113.46 in the post-test. But, the mean for the experimental group is 91.4 in the pre-test and 92.8 in the post-test.

Prior to testing the research hypotheses and analysis of covariance, Levene's test was used to assess the assumption of equality of variances and the Kolmogorov-Smirnov test was used to assess the normal distribution of the research variables.

The probability value of the Kolmogorov-Smirnov test for the quality of life variable is 0.716, which indicates a normal distribution of the variable and its dimensions in the sample population. Therefore, parametric tests were used to analyze the study results. The results of Levene's test are presented in Table 3.

As it can be seen in Table 3, the null hypothesis for the equality of variances of the two groups in the research variables is confirmed. This means that the assumption of equal variances in the two groups is true. Regarding this, the analysis of covariance test can be safely used. Then, the research hypothesis was tested.

Prior to testing the research hypotheses and analysis of covariance, Levene's test was used to assess the assumption of equality of variances and the Kolmogorov-Smirnov test was used to assess the normal distribution of the research variables. The results proved the normal distribution of the variable and its dimensions in the sample population. Also, the results of Levene's test confirm the null hypothesis for the equality of variances of the two groups in the research variables. This means that the assumption of equal variances in the two groups proves true.

The multivariate analysis of covariance test (MANCOVA) was used to compare the post-test mean scores on the quality of life dimensions (physical health, mental health, social relations and environmental health) in the control group and the experimental group after eliminating the pre-test effect. The results are shown in Tables 4 and 5.

Table 2. Distribution of quality of life mean in the control and experimental groups in the pre- and post-tests

Variable	Index	Experimental Group		Control Group	
		Mean	Standard Deviation	Mean	Standard Deviation
Quality of Life	Pre-test	101.4	14.82	91.4	16.71
	Post-test	113.46	7.57	92.8	15.96

Table 3. Results of Levene's test of the equality of variances in the control and experimental groups

Variable	F	First Degrees of Freedom	Second Degrees of Freedom	Significance Level
Quality of Life	0.628	1	28	0.435

Table 4. Results of multivariate analysis of covariance for comparing the means of the quality of life dimensions (physical health, mental health, social relations and environmental health) in the control and experimental groups

Test	Value	F	df hypothesis	df error	Significance level	Eta-squared
Pillai's Trace	0.402	3.536	4	21	*0.023	0.402
Wilks's lambda	0.588	3.536	4	21	*0.023	0.402
Hotelling's Trace	0.674	3.536	4	21	*0.023	0.402
Roy's Largest Root	0.674	3.536	4	21	*0.023	0.402

**Sig. p<01.0 , *p<05.0

As it can be seen in Table 4, the significance level of all tests indicates that there is a significant difference between the two groups in at least one of the dependent variables of the quality of life dimensions (physical health, mental health, social relations and environmental health). In order to better understand the difference, the results of the test of between-subjects effects are presented in Table 5.

As it can be seen in Table 5, there is a significant difference between the post-test mean scores of physical health ($\eta^2=0.204$, $P<0.05$, $F=6.14$), mental health ($\eta^2=0.178$, $P<0.05$, $F=5.21$), social relations ($\eta^2=0.349$, $P<0.01$, $F=12.84$) and

environmental health ($\eta^2=0.156$, $P<0.05$, $F=4.43$) in the experimental group after eliminating the pre-test effect in the sense that the post-test mean scores in the experimental group are significantly higher than the control group in the quality of life dimensions (physical health, mental health, social relations and environmental health). It can be concluded that MBCT has significantly improved the quality of life dimensions in the experimental group at the post-test stage in comparison with the control group. Therefore, the hypothesis that "MBCT is effective in improving the quality of life (physical health, mental health, social relations and environmental health) in cancer patients" is

Table 5. Results of analysis of covariance for comparing the means of the post-test scores of the quality of life dimensions (physical health, mental health, social relations and environmental health) in the control and experimental groups

Variable	Sources of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level	Eta-squared
Physical Health	Pre-test	3.73	1	3.73	0.233	0.633	0.01
	Group	98.46	1	98.46	6.14	*0.021	0.204
	Error	384.65	24	16.02			
Mental Health	Pre-test	0.595	1	0.595	0.051	0.823	0.002
	Group	59.93	1	59.93	5.21	*0.032	0.178
	Error	276.11	24	11.5			
Social Relations	Pre-test	0.015	1	0.015	0.001	0.972	0.0001
	Group	150.52	1	150.52	12.84	**0.001	0.349
	Error	281.17	24	11.71			
Environmental Health	Pre-test	17.24	1	17.24	1.73	0.2	0.068
	Group	44.008	1	44.008	4.43	*0.046	0.156
	Error	238.17	24	9.92			
Total	Physical Health	20653	30				
	Mental Health	16463	30				
	Social Relations	14295	30				
	Environmental Health	18296	30				

**Sig. p<0.01, *p<0.05

confirmed.

Discussion and conclusion

The results of the study indicate that there is a significant difference in the post-test mean scores of quality of life in the experimental group after elimination of the pre-test effect, i.e. the experimental group means are significantly higher than the control group. It can be concluded that MBCT has improved the quality of life in the members of the experimental group at the post-test stage.

Furthermore, as the results indicate, there is a significant difference in the post-test mean scores of physical health, mental health, social relations and environmental health after elimination of the pre-test effect in the sense that the post-test mean scores of the quality of life dimensions (physical health, mental health, social relations, and environmental health) in the experimental group are higher than the control group. It can be proposed that MBCT has significantly improved the quality of life dimensions in the experimental group in comparison with the control group at the post-test stage. These findings are consistent with the findings of the studies conducted by Gonzalez-Garcia et al. (2014), Taimory et al. (2015), Safa et al. (2014), Yang et al. (2015), Abbott et al. (2014), Foley et al. (2010) and Hofmann et al. (2010).

The findings of recent studies in this area support the idea that MBCT improves self-assertiveness, self-esteem, quality of life and positive feelings (Coelho, Canter & Ernst, 2013). Self-assertiveness and self-esteem are effective in improving one's quality of life and cause satisfaction with one's performance. Self-assertiveness is also one of the most important abilities in interpersonal communication, which can be strengthened and improved via MBCT (Golpour Chamarkohi & Mohammadamini, 2012).

Mindfulness training also helps with relieving

stress. Through this kind of training, the mental representation of objects outside the boundaries of one's direct control is adjusted through mindful breathing and meditation (Kabat-Zinn, 2003). Mindfulness training also ameliorates psychological distress (Ostafin and et al, 2006; Javanmard and Goli, 2018) as well as depression and stress symptoms (Evans and et al, 2008), improves mental, physical, emotional and spiritual well-being (Colle and et al, 2010), and consequently improves quality of life. The results of various studies conducted with the purpose of analyzing the effect of mindfulness on the quality of life indicate that mindfulness predicts self-regulated behavior and positive emotional states and can induce positive changes in happiness, self-regulated behavior and quality of life through combining liveliness and transparent vision of experiences (Brown & Ryan, 2003). Mindfulness results in improving the quality of life, more joy in life and reducing depression and anger (Kieviet-Stijnen, Visser, Garssen & Hudig, 2008), and has a significant role in decreasing the short-term and long-term symptoms of depressed mood (Godfrin & Van Heeringen, 2010).

This finding is consistent with the results of a research done by Rajabi and Sotodeh Navrodi (2012), who indicated that MBCT is effective in reducing depression. Bayrami et al. (2013) also indicated in their research that MBCT is effective in relieving stress and depression as well as improving adaptability. A study by Yousefian and Asgharipour (2013) indicated that MBCT and cognitive behavioral group therapy are effective in improving self-esteem, social adjustment and quality of life. A case study by Horton-Deutsch et al. (2007) indicated that increased mindfulness entails significant changes in one's compatibility with others and improvement of the quality of life indices in different aspects of intrapersonal conflicts. The study also indicated that mindfulness improves self-awareness, self-regulation and

balancing.

It has been stated that a significant part of the poor quality of the cancer patients' lives is the dysfunctional thoughts about the future of the illness and the worst imagination that makes their future and life more destructive (McCarroll & et al, 2014). Mindfulness informs them this kind of inefficient thinking and unpredictable future and reminds them how such thoughts can affect their life and even their illness. By learning the concepts and principles of mind-consciousness, they learn to focus on life prospects instead of living and immersing themselves in the future and the thoughts that have a negative impact on them. Such a situation leads to better mental and physical conditions in the way that once these dimensions are improved, they will regain a more positive mood; consequently, it is feasible to be asserted that the quality of their life is improving (Wood & et al, 2015).

Cancer patients seem to have a great deal of difficulty in accepting their disease and conditions. Part of the mindfulness training focuses on this issue. Cancer patients, based on the skills they have learned, can accept the conditions associated with the disease, and it seems that admission can improve their life (Crane, 2017). So if cancer patients are equipped with mindfulness techniques - such as body scanning techniques, mindfulness of breathing and mindfulness of thought - they can accept the thoughts, feelings, and events in their life without judgment and create positive changes in their life style that creates positive attitudes towards themselves and their life (Yaghobi, Sohrabi & Mohamadzade, 2013).

Regarding this finding, it can be said that this method is a good way to retain new learning and is suitable for people with different problems, especially physical complications simply, because it helps preserve the readiness for something which is to happen in a few months or years later. Since

patients may face problems, daily exercises help them retain and use the skills they have picked (Gonzalez-Garcia, et al., 2014). Increased attention and awareness of thoughts, emotions and desires are among the positive aspects of mindfulness (Minton, Ogden & Pain, 2006), which lead to coordination of adaptive behaviors and positive psychological states, improvement of one's abilities to perform individual and social activities and increased tendency to such activities, so the result improve the quality of life (Chambers, Gullone & Allen, 2009). Therefore, mindfulness training to cancer patients, who have to deal with multiple problems, improves their abilities and increases their tendency toward individual and social activities and as a result is effective in improving the quality of their lives. This conclusion is in line with previous findings (Gratz & Gunderson, 2006) on the effectiveness of mindfulness-based group intervention in improving mental health and reducing depression, anxiety and stress symptoms. Awareness of emotions and thoughts has an important role in life and this approach, as a therapeutic method which deals with self-esteem and social relations for adjusting thoughts and emotions (Gross, 2002), provides effective protection against stressful situations and entails increased activity in social situations (Tugade & Frederickson, 2002). All of these together lead to improved quality of life.

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