The effect of mindfulness on quality of life and psychological well-being in women with cervical cancer

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ABSTRACT

Cervical cancer is the second most common cancer of the reproductive system after breast cancer in women; due to the decrease in quality of life and psychological well-being in patients with cervical cancer, this study to determine the effect of mindfulness on quality of life and psychological well-being in women with cervical cancer was performed in Ahvaz. This was a randomized controlled clinical trial study on 64 patients. The intervention group received 8 sessions of 2-hour mindfulness training. The questionnaire on quality of life and psychological well-being was completed by the sample before the intervention, immediately after the intervention and 1 month after. The collected data were analyzed by SPSS software version 22. Findings showed a significant difference (P <0/0001) between the quality-of-life dimensions and the overall health status of the samples (P <0/0001). And dyspnea also showed a significant difference in the control and intervention groups (P <0/0001). A comparison of the dimensions of psychological well-being in the domains of domination and acceptance in the control and intervention groups showed a significant difference (P <0/0001). Psychotherapeutic interventions such as mindfulness-based counseling make the patient aware of the worries of illness distress and enable the patient to cope with their illness through recognition of cognitive-behavioral techniques.

Keywords: Cervical cancer, Mindfulness, Quality of life, Psychological well-being

Introduction

Cervical cancer, following breast cancer, is considered the second most common cancer in the female reproductive system. It is caused by abnormal and uncontrolled growth of cervical cells and accounts for about 6% of all cancers in women [1]. Based on the National Cancer for Cancer Registry of Iran's Ministry of Health, its prevalence was 2.17 cases per 100000 people in 2013, and some reports have announced its prevalence of 2.5 cases per 100000 people. These reports suggest that it is ranked 11 among all cancers, showing a slight increase compared to the 2011 report, in which it was ranked 13. Moreover, 286 women died in Iran due to advanced cervical cancer in 2013 [2].

A review of several studies suggests that the quality of life of patients with cervical cancer is at a low level [1, 3]. The issues related to the quality of life in women with reproductive system cancers are often rooted in their perceptions of their body image, gender, femininity, and their view of reproduction, disability, and mortality. In addition, treatment options such as surgery, radiotherapy, and chemotherapy can negatively affect the quality of life in women with cervical cancer [4].

Psychological well-being is one of the variables affected in cancer patients. Well-being is one of the major concerns of people in human societies, and many costs are spent annually by governments and the people in this regard. Reef (1989) views psychological well-being as an attempt for perfection in order to

realize one's true potential. In this view, well-being means an attempt at promotion [5].

Psychological well-being, as one of the main concepts of the health model, refers to individuals' evaluation of their lives. With enhancing psychological well-being, anxiety, depression, negative affectivity, and psychological symptoms are reduced, and self-esteem, optimism, and positive affectivity are enhanced. Nowadays, researchers argue that the development of psychological well-being and life satisfaction will bring greater success, better health, supportive social communication, and finally, higher mental and physical health for people [6].

Given these individuals' reduced quality of life and psychological well-being, different methods have been recommended to increase these variables and reduce the psychological problems caused by this disease. The mindfulness technique is one of these methods. Mindfulness is a state of targeted attention along with acceptance without judgment on experiences taking place in the present moment and awareness of what is happening at the moment [7]. This technique enables people to focus on their thoughts and senses and to be realistic about what is happening around them. The mindfulness technique also helps one respond to events appropriately and rationally. It also helps people manage and solve daily problems [7].

Various studies have been carried out on the usefulness of mindfulness-based interventions in various diseases. In this regard, the results of the study conducted by Berwan and Rayan show that mindfulness training is associated with an increase in psychological well-being [7]. Eslami *et al*. also concluded that mindfulness training effectively enhances these patients' psychological well-being [8]. The results of the study conducted by Hons *et al*. showed that mindfulness training is effective in promoting the quality of life and spiritual health of cancer patients [9].

Due to the increasing prevalence of cancer and the importance of the effect of this disease on all aspects of aging, especially mental health, and as drug therapies in cancer patients are associated with many complications, specialists recommend non-drug methods to reduce the stress. The present study was conducted with the aim of evaluating the effect of mindfulness on the quality of life and psychological well-being of women with cervical cancer in Ahvaz.

Materials and Methods

This study was carried out as a randomized controlled clinical trial. The study environment was an oncology clinic and female surgical ward of Imam Khomeini hospital and Ahvaz Golestan hospital. These centers were selected since they are oncology referral centers, and access to the samples was easy in these centers. In this study, 64 patients with cervical cancer were selected by convenience sampling method, and they were selected based on inclusion criteria. Inclusion criteria included cervical cancer, quality of life less than 50%, psychological well-being less than 50, and being married. The exclusion criteria also included drug addiction, history of mindfulness technique, other

acute physical disorders, and other mental disorders. Then, the samples were randomly assigned into control (n = 32) and intervention (n = 32) groups. The sampling procedure was continued until an adequate number of samples was selected from the research population. A random number table was used to allocate the samples.

The data were collected through collecting several questionnaires. First, the demographic questionnaire consisted of two sections was completed. The first section included demographic information on age, gender, height, weight, marital status, job status, and level of education.

In the second section, a standard questionnaire developed by the European Cancer Research and Treatment Organization in 1993 was used to assess the quality of life of cancer patients. The validity and reliability of this questionnaire were confirmed Aaronson and *et al*. in 1993 with a Cronbach's alpha coefficient >.70. [10]. A reef questionnaire was also used to assess psychological well-being. This questionnaire was designed by Reef in 1989 with the aim of assessing psychological well-being from different dimensions (independence, environmental mastery, personal growth, positive relation with others, purpose in life, self-acceptance). In the study conducted by Bayani (2008), the validity and reliability of the Reef Psychological Well-being Questionnaire were confirmed with a Cronbach's alpha 0.82 [11].

Then, the intervention group received eight 2-hour mindfulness training sessions held in the research environment, and the control group received routine care. The content of sessions was as follows: Session 1: introducing, implementing pre-test, and explaining the effect of mindfulness training on the quality of life, health, and well-being, Session 2: Training of relaxation techniques for 14 body muscles, Session 3: a review of previous session and training of relaxation for 6 body muscles, Session 4: training of respiratory techniques, Session 5: training of body scan technique, Session 6: training of concentrating on positive and negative thoughts, Session 7: Review of Sessions 5, 4 and 6, Session 8: Implementation of post-test. The quality of life questionnaire and psychological well-being questionnaire was completed by the samples before the intervention, immediately after the intervention, and one month after the intervention after explaining how to complete the questionnaires. Finally, the collected data were analyzed by using SPSS22 software.

Results and Discussion

In this study, a total of 64 patients were evaluated in two groups of control and intervention. The mean age of the samples was 55.28 ± 2.23 in the control group and 49.50 ± 1.94 in the intervention group. Most of the samples in the control group had an elementary level of education (50%), and most of the samples in the intervention group had an elementary level of education (25%). Higher education had the lowest frequency in both control (1%) and intervention (2%) groups. Regarding job status, all samples were unemployed (100%) in the control group and 96% were unemployed in the intervention group.

Additionally, the comparison of the age range of the two groups of control and intervention by the Chi-square test revealed no significant difference between the two groups (P <0.05) **(Table 1).**

There was a significant difference between the control and intervention groups in the level of education variable (P> 0.05), and there was no significant difference between the control and intervention groups in the job status variable (P> 0.05).

Table 1. Comparison of demographic characteristics of the samples in the intervention and control groups

Variable	Control group	Intervention group	p-value
Job-status			
employed	0(0%)	1(3.2%)	>.99
unemployed	32(100%)	31(96.8%)	
Level of education			0.729
Illiterate	3	5	
Literate			
age	29	27	0.055
mean (SD)	55.28(12.62)	49.50(10.99)	
Number of children	4(2-6)	3.5(3-6)	0.632
Median (min-max)			
Duration of disease	1.97(0.474)	1.66(0.483)	0.014
Frequency of hospitalization during one year	12.72(2.69) 8-18	12.50(3.03) 8-18	0.666
Other diseases			
Hypertension	51.5%	54.8%	
diabetes	27.3%	25.8%	0.635
Hypertension and diabetes	21.2%	19.4%	

The data of **Table 2** obtained using descriptive statistics and an independent t-test showed a statistically significant difference between the two groups in the performance domain in items of physical performance, role-playing, emotional performance, cognitive performance, and social performance in the intervention and follow-up stages.

Table 2. Comparison of the performance domain scores of quality of life in the intervention and control groups

variable	Control group	Intervention group	p-value
	Mean (SD)	Mean (SD)	
Physical performance			
Before intervention	52.92(3.26)	65(2.39)	0.184
After intervention	48.54(2.39)	76.04(1.58)	<0.0001
Follow-up	21.45(1.46)	61.87(2.10)	<0.0001
p-value*	0.071	<0.0001	
p-value**			<0.0001
Role-playing			
Before intervention	46.35(3.01)	55.72(3.09)	0.0001
After intervention	30.72(3.30)	75.52(2.54)	<0.0001
Follow-up	21.87(2.49)	63.35(2.88)	<0.0001
p-value*	<0.0001	0.001	
p-value**			<0.0001
Emotional performance			
Before intervention	51.04(2.96)	53.90(3.57)	0.046
After intervention	38.28(2.52)	78.38(2.04)	<0.0001
Follow-up	35.67(2.42)	59.37(3.39)	<0.0001
p-value*	<0.0001	0.001	
p-value**			<0.0001
Cognitive performance			
Before intervention	47.91(2.41)	59.89(3.44)	0.258
After intervention	44.27(3.87)	79.68(2.17)	<0.0001
Follow-up	34.89(2.58)	54.68(3.14)	<0.0001
p-value*	0.004	<0.0001	
p-value**			0.002
Social performance			
Before intervention	54.16(2.32)	56.17(3.95)	0.007
After intervention	38.02(4.72)	81.77(1.70)	<0.0001
Follow-up	32.81(2.70)	60.93(4.51)	<0.0001

p-value*	0.011	<0.0001
p-value**		0.164

P-value was reported based on comparing the mean quality of life dimensions in two groups at different times using the Mann-Whitney test

*P-value has been reported for each group based on repeated measures ANOVA (Friedman test) to assess the time trend of mean quality of life dimensions.

**P-value has been reported based on the analysis of repeated measures ANOVA (interaction of time and group in GEE model).

The data of **Table 3** obtained using descriptive statistics and an independent t-test showed that the symptoms of fatigue, nausea, vomiting, pain, shortness of breath, insomnia, loss of appetite, constipation, and diarrhea were significantly different in the intervention and control groups at the post-intervention and follow-up stages.

Table 3. Comparison of symptom domain scores in the quality of life in the intervention and control groups

variable	Control group Mean (SD)	Intervention group Mean (SD)	p-value
fatigue			
Before intervention	51.04 (2.43)	39.27 (3.50)	0.977
After intervention	57.29(2.36)	24.30(2.10)	<0.0001
Follow-up	73.95(2.33)	34.07 (3.36)	<0.0001
p-value*	<0.0001	<0.0001	
p-value**			0.001
nausea and vomiting			
Before intervention	51.04(3.03)	44.97 (4.32)	0.006
After intervention	58.33(3.60)	22.91 (2.52)	<0.0001
Follow-up	76.04(2.84)	42.18 (4.35)	<0.0001
p-value*	<0.0001	0.006	
p-value**			<0.0001
pain			
Before intervention	47.39(3.83)	38.02(3.31)	0.480
After intervention	56.20(3.01)	20.31(2.92)	<0.0001
Follow-up	72.39(2.61)	39.58(4.01)	<0.0001
p-value*	<0.0001	<0.0001	
p-value**			0.001
Shortness of breath			
Before intervention	55.52(4.79)	51.11(4.64)	0.058
After intervention	58.06(4.55)	26.04(3.82)	<0.0001
Follow-up	72.91(4.27)	45.57(4.57)	<0.0001
p-value*	<0.0001	0.002	
p-value**			0.001
insomnia			
Before intervention	52.08(4.64)	40.12(5.75)	0.563
After intervention	62.37(4.23)	27.08(4.52)	<0.0001
Follow-up	70.83(3.53)	74.7(3.72)	<0.0001
p-value*	0.033	0.007	
p-value**			0.009
Loss of appetite			
Before intervention	48.95(4.16)	46.24(6.57)	0.079
After intervention	54.16(4.10)	19.79(3.85)	<0.0001
Follow-up	72.91(4.27)	44.79(5.23)	<0.0001
p-value*	0.012	0.580	
p-value**			0.688
Constipation			
Before intervention	45.83(4.10)	40.88(4.62)	0.431
After intervention	65.62(4.99)	22.91(4.57)	<0.0001
Follow-up	64.58(3.88)	42.51(5.67)	<0.0001
p-value*	0.008	0.001	
p-value**			0.019
Diarrhea			
Before intervention	47.91(4.64)	39.09(3.65)	0.345
After intervention	65.62(5.20)	29.16(4.35)	<0.0001
Follow-up	67.70(2.74)	43.75(4.75)	0.004
p-value*	0.039	0.062	
p-value**			0.108

P-value was reported based on comparing the mean quality of life dimensions in two groups at different times by means of the Mann-Whitney test

*P-value has been reported for each group based on the repeated measures ANOVA (Friedman test) to assess the time trend of mean quality of life dimensions.

**P-value has been reported based on the analysis of repeated measures ANOVA (interaction of time and group in GEE model).

The data of **Table 4** obtained using descriptive statistics and t-test showed that there was a significant difference between the intervention and control groups in the financial problems and the overall health status at the post-intervention and follow-up stages.

Table 4. Comparison of financial dimensions and overall health status in two intervention and control groups

variable	Control group	Intervention group	p-value
	Mean (SD)	Mean (SD)	
Financial status			
Before intervention	45.95(3.29)	57.29(4.93)	0.137
After intervention	85.41(4.64)	24.75(3.38)	<0.0001
Follow-up	61.45(4.19)	67.70(4.29)	<0.0001
p-value*	0.015	0.068	
p-value**			0.078
overall health status			
Before intervention	22.91(7.19)	20.05(10.33)	0.054
After intervention	22.39(6.83)	85.15(7.84)	<0.0001
Follow-up	26.04(5.49)	74.47(12.33)	0.237
p-value*	<0.0001	<0.0001	
p-value**			0.632

P-value was reported based on comparing the mean quality of life dimensions in two groups at different times by means of the Mann-Whitney test

*P-value has been reported for each group based on repeated measures ANOVA (Friedman test) to assess the time trend of the mean quality of life dimensions.

**P-value has been reported based on the analysis of repeated measures ANOVA (interaction of time and group in GEE model).

The data of **Table 5** obtained using descriptive statistics and an independent t-test showed that there was no significant difference between the two groups in independence, personal growth, and positive relation with others, but a significant difference was seen between the two groups in the domain of environmental mastery at both post-intervention and follow-up stages. There was a statistically significant difference between the two groups in the positive relation with each other people, purpose in life, and self-acceptance only at follow-up stages.

Table 5. Comparison of the psychological well-being score in intervention and control groups

variable	Control group	Intervention group	p-value
	Mean (SD)	Mean (SD)	
Independence			
Before intervention	10.81±1.86	10.12±2.66	0.22
After intervention	11.65±1.99	11.53±3.44	0.001
Follow-up	9.84±1.74	8.78±2.67	0.000
Environmental mastery			
Before intervention	8.68±3.2	10.09±2.38	0.31
After intervention	8.5±1.79	11.37±3.83	0.000
Follow-up	9.12±1.84	11.43±2.53	0.000
Personal growth			
Before intervention	9.8±2.78	11.56±3.01	0.57
After intervention	11.06±2.28	9.87±3.28	0.000
Follow-up	9.87±1.66	9.81±2.66	0.000
Positive relationships with others			
Before intervention	9.43±3.27	9.78±2.37	0.09
After intervention	9.68±1.71	10±2.74	0.000
Follow-up	9.78±1.58	11.34±3.37	0.000
Purpose in life			
Before intervention	10.34±2.68	10.21±2.28	0.76
After intervention	9.62±2.91	9.59±3.32	0.000
Follow-up	9.84±10.87	8.46±2.29	0.000
Self-acceptance			
Before intervention	10.87±3.11	12.06±1.99	0.54
After intervention	10.53±1.98	9±2.91	0.000

The results of the present study suggest that mindfulness-based counseling can improve the quality of life and psychological well-being of women with cervical cancer. In fact, psychotherapy interventions, especially mindfulness-based counseling, can be helpful in the management of pain, modifying the physical and emotional symptoms by enhancing the patients' knowledge of emotional, physical, and functional issues and increasing confidence in women with cancer. Moreover, it helps the patient to be independent, establish a positive relationship with others, and master the environment through improving self-acceptance developed in disease conditions [12]. In this study, a comparison of physical variables, including fatigue, nausea, vomiting, pain, shortness of breath, constipation, insomnia, loss of appetite, and diarrhea showed significant differences between the control and

intervention groups during the intervention and follow-up stages (p=0.000). In the study conducted by Rahman Fard *et al.*, mindfulness-based psychotherapy intervention could improve physical problems in the intervention group compared to the control group (P <0.001). Their results are in line with the results of the present study. In fact, the researchers found that mindfulness-based psychotherapy affects people's cognitive systems and information processing by enhancing the awareness of people of the present moment, leading to improved quality of life [13]. Madani and Hojjati also stated that mindfulness-based treatment enhances people's knowledge and quality of life [14]. The results of a study carried out by Roth and Robbins with the aim of evaluating mindfulness-based therapy on public health and quality of life-related to health in cancer patients showed that mindfulness-based therapy could enhance the public health and quality of life-related health of samples [15]. Their results are in line with those of our study. In a study conducted in 2013 to evaluate psychological interventions in women with breast cancer, Jones *et al.* also concluded that interventions could improve the quality of life of breast cancer patients by decreasing physical problems [16]. The results of the studies suggest that mindfulness-based psychological interventions can reduce symptoms of physical diseases, improve patients' attitudes toward these problems, and help the patient control their thoughts, beliefs, and attitudes to enhance their coping skills during the cancer treatment stage [13, 17].

The results of the present study revealed a significant difference between control and intervention groups in dimensions of psychological well-being, including independence, environmental mastery, personality development, positive relationship with others, purpose in life, and self-acceptance in the intervention and follow-up stages (p=0.000). In this regard, the results of the studies conducted by Chambers *et al.* (2001), Cohen *et al.* (2011), and Maher *et al.* (2014) suggest that mindfulness psychotherapy can improve the psychological well-being of cancer patients [18-20]. These results are consistent with the results of the present study. In fact, the results of studies suggest that psychotherapeutic interventions such as mindfulness-based counseling make the patient pay attention to concerns caused by disease distress [21] and enable the patient to cope with their disease through identifying cognitive-behavioral techniques [22]. It helps enhance the patient's cognitive and functional performance. It also decreases the sense of uncertainty and helplessness, fear of the unknowns, and psychological distress in the patient [16].

Moreover, mindfulness counseling can relieve physical and emotional symptoms in people with cancer [12, 23], which can improve the patient's emotional performance. The adaptation developed by recognizing the disease coping behaviors in cancer patients inhibits the stressful factors induced by diagnosis and treatment. It can also improve health-providing behaviors such as exercise, diet, sleep, and adherence to taking the drug [12, 24], leading to improved social performance and independence of the people. In addition, coping strategies developed by mindfulness-based counseling can be helpful in the management of pain and other physical symptoms in the patient [25]. The results of the

study conducted by Heydari and Mozaffari in 2012 to evaluate the effect of mindfulness on the psychological well-being of children with cancer showed that training in social problem-solving through mindfulness-based methods significantly impacts the psychological well-being of children with cancer. The level of psychological well-being significantly increased in the case group compared to the control group [26]. One of the limitations of this study is that this study was conducted in a cross-sectional and short-term about a group of women with cervical cancer, and further studies can investigate the long-term effects of mindfulness-based consultation interventions.

Conclusion

As a whole, the results are relatively encouraging. The results show that mindfulness counseling has a positive effect on mental health and well-being. In terms of mental health, the findings included positive results for dimensions of psychological well-being, including independence, environmental mastery, personality development, positive relationship with others, purpose in life, and self-acceptance in the intervention and follow-up stages

Psychotherapy interventions such as mindfulness-based counseling make the patient aware of the concerns caused by the distress of cervical cancer and empower patients to cope with their disease through cognitive-behavioral techniques.

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