

Research Paper:

Comparing the Effectiveness of Acceptance and Commitment Therapy and Solution-focused Brief Therapy on Pain Catastrophizing and Psychological Well-Being of Patients With Breast Cancer



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Citation Baghernezhad O, Hasanzadeh R, Abbasi Gh. Comparing the Effectiveness of Acceptance and Commitment Therapy and Solution-focused Brief Therapy on Pain Catastrophizing and Psychological Well-Being of Patients With Breast Cancer. Avicenna J of Neuropsychophysiology. 2019; 6(1):27-36. <http://dx.doi.org/10.32598/ajnpp.4.3.320>

<http://dx.doi.org/10.32598/ajnpp.4.3.320>



Article info:

Received: 02 Jul 2018

Accepted: 12 Dec 2018

Available Online: 01 Feb 2019

Keywords:

Acceptance and commitment therapy, Catastrophization, Chronic pain, Psychotherapy

ABSTRACT

Introduction: Breast cancer affects the various aspects of mental health, aggravates mental stress, and challenges the person's mental health because of the disturbance in the mental image of the subjects. It can also affect the mental status of these individuals.

Objectives: The aim of the present study was to compare the efficacy of Acceptance and Commitment Therapy (ACT) and Solution-Focused Brief Therapy (SFBT) on pain catastrophizing and the psychological well-being of patients with breast cancer.

Materials and Methods: The present quasi-experimental study used a pretest-Post-test design with the control group. The statistical population of the present study included all patients with breast cancer referring to health centers and hospitals of Babol and Babolsar in 2018. A sample of 45 people was selected by a random sampling method, and 3 groups of 15 women with breast cancer were randomly divided into ACT, SFBT, and control groups. ACT and SFBT were performed for the experimental groups and no intervention was performed in the control group. To obtain the data, the pain catastrophizing scale and psychological well-being questionnaire were used. The data were analyzed by SPSS V. 23, using the multivariate analysis of covariance test.

Results: ACT and SFBT affected the pain catastrophizing ($F=47.01$, $P<0.001$) and psychological well-being ($F=79.34$, $P<0.001$) of patients with breast cancer. The ACT was more effective than the SFBT ($P<0.01$).

Conclusion: Both the ACT and SFBT had a desirable effect on reducing pain catastrophizing and increasing psychological well-being in patients with breast cancer, but the ACT was more effective than the SFBT.

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1. Introduction

Cancer is one of the most common diseases in human societies [1]. It causes cells to grow and divide uncontrollably [2]. It is regarded as the third cause of death in Iran after cardiovascular diseases and accidents. Over 30,000 Iranian individuals die from cancer annually. According to some estimates, more than 70,000 new cancer cases are developed in Iran annually. As the second fatal disease among women after lung complaints, breast cancer is a multilateral source of tension, that is, surgery interferences often cause body dysmorphic. Cancer could put the whole mental health in danger; it intensifies one's stress and threatens mental health mainly because of body dysmorphic [3].

Moreover, the disease causes to create a wide range of psychological problems, such as self-concept and self-esteem threat, losing a feeling of freedom, physical comfort, denial, anger, depression, unreliability, loneliness, and deprivation, as well as family problems. However, studies have consistently shown that those with high psychological well-being offer strong resistance to long-term painful therapies, as well as the effects of chemotherapy and radiation [4]. Generally, the disease, as a strongly stressful event accompanied by difficult and complicated medical processes, causes many psychological problems for the patient and his/her family [5].

On the other hand, catastrophizing is a negative cognitive-emotional process containing exaggeration, distress, and rumination. Catastrophizing level is the main predictor of therapeutic consequences; likewise, it is regarded as a primary variable for cognitive-behavioral approaches and the fear-avoidance model [6]. There is a relationship between catastrophizing and increased sensitivity to pain and emotional disorders; nevertheless, catastrophizing works as an index of disability and harm, when variants such as pain, depression, anxiety, and fear are controlled [7].

Recent evidence suggested that there is a direct link between pain catastrophizing and depression. Unlike men, women show a high-level of pain catastrophizing. Acceptance and Commitment Therapy (ACT) is among non-medicinal psychological therapeutic methods used to harmonize patients with chronic diseases [8]. The approach seeks to help people, but not to pass judgment on what has happened and accept it; it aims at directing them to identify their life values and draw up a good plan [9]. Accepting the fact that a valuable life is always

accompanied by distress, commitment is the main ingredient of moving along values, and words could not be displaced by experience will establish fundamental strategies and methods for an acceptance and commitment model [10].

Likewise, Solution-Focused Brief Therapy (SFBT) is one of the most well-known approaches to assist people, who suffer from stress. SFBT has a non-cognitive view of the patient to assist him/her in finding a solution for their current problems [11]. Unlike the problem-oriented approach, it emphasizes finding a solution to the concerned problem. Therefore, the mentioned therapy is based upon solution-making, not problem-solving; it is directed by discovering the current powers of the patient and having hope for the future not discussing current problems and causes thereof [12]. The lack of psychological well-being increases the possibility of patients' vulnerability to the next problems and happenings. Accordingly, an increase in positive symptoms, rather than negative ones, is the best form of therapy [13].

The ACT has efficient impacts on decreasing depression and pain anxiety. The present research aimed at improving patients' optimum life conditions by taking into account psychological matters and impacts in appearing or intensifying symptoms of psychosomatic diseases such as cancer [14].

In the same way, notifying the behaviors of medical staff (such as nurses) toward patients to provide them with health services is of the utmost importance. The findings of this study provided valuable information to patients and their families, authorities, specialists, and others to make an effort toward patients' well-being. The aim of the present research was to compare the effectiveness of ACT with SFBT on the pain catastrophizing and psychological well-being of women with breast cancer.

2. Materials and Methods

The present quasi-experimental study used a pretest-Post-test design with the control group. The population-based sample consisted of all patients with breast cancer, who were admitted to hospitals and medical centers of Babol and Babolsar in 2018. In order to select the sample, first, a formal announcement was made, stating that the hospital and other private centers would hold medical and training courses. Then, a simple random sample of 45 patients was selected and randomly

divided into 3 groups of 15 patients (ACT, SFBT, and control groups).

The criteria of cognition and screening, catastrophizing, and psychological well-being scores were <30 and >50 , respectively. Based on the effect size of 0.25, alpha of 0.05, and power of 0.80 in the two groups, the minimum number of samples was determined to achieve the desired power of 15 in each group and 45 in total. Finally, the two experimental groups were subjected to other types of interferences. The inclusion criteria included women with breast cancer based on their medical history, previous experiments, and approval of the disease by the physician, at least a high school degree, and consent to participate in the study. The exclusion criteria included having the history of taking psychological medicine, receiving psychological therapies within the last 6 months, being absent in healing sessions more than twice, having increasingly severe symptoms, and showing function disorder. The patients were randomly divided into the experimental and control groups.

Pain Catastrophizing Scale

Sullivan et al. [15] developed a pain catastrophizing scale in order to evaluate people's catastrophizing thoughts and behaviors. The self-made questionnaire consisted of 13 variables and needed at least 6 educational levels to reply to questions thereof. The aim of this scale is to study the different aspects of pain catastrophizing and helps patients to understand the effects of the mechanism clearly. It includes 3 sub-scales of rumination, magnificence, and distress. They all evaluate the link between negative thoughts and related pain. The participants are asked to score 13 different thoughts and feelings related to pain experience on a scale of 0 (never) to 4 (always). Questions 8, 9, 10, and 11 considered the rumination on a scale of 0 to 16, questions 6, 7, and 13 were related to magnificence on a scale of 0 to 12, and questions 1, 2, 3, 4, 5, and 12 regarded distress on a scale of 0 to 24. The total pain catastrophizing score was on a scale of 0 to 52. The more the scores, the more catastrophizing the pain. Considering the Cronbach's alpha, the validity of the other subscales was 0.88, 0.67, and 0.89 for rumination, distress, and magnificence, respectively. To attain the considered power, at least 15 in each group and 45 in total were needed in terms of the effect size (0.25), Cronbach's alpha (0.05), and power (0.80) [15]. The Iranian version of this scale is a valid and reliable instrument for measuring pain catastrophizing in Iran. Cronbach's alpha score of reliability was 0.93. Known-groups comparison showed that the pain cata-

strophizing scale could differentiate between males and females [16].

Psychological Well-being Questionnaire

Psychological well-being is a multi-variant concept containing self-acceptance, good relationships, autonomy, control over the milieu, purposeful life, and personal growth. The questionnaire was designed for adults on a 6-point Likert scale ranging from 1 (completely disagree) to 6 (completely agree), and a form consisting of 18 questions was used therein. To obtain the total score, scores of all questions were summed up. In addition, the total psychological well-being score was calculated by summing up the scores of all 18 questions. By and large, the more the scores, the more the psychological well-being. The correlation of the Ryff's short psychological well-being scale ranged from 0.7-0.89 [17]. The Iranian version of this scale is a valid and reliable instrument for measuring psychological well-being questionnaire in Iran. Cronbach's alpha score of Iranian version reliability was 0.79 [18].

The pretest was run for the two experimental groups; then, the ACT and SFBT groups received 9 sessions of 90-minute interferences for 9 weeks (Table 1 & 2). But, no interference was applied to the control group. Next, the Post-test was run for the control and experimental groups. The participants were free to cooperate in or leave the survey whenever they wish. The researcher explained scientific reasoning for the participants. They were ensured that any information given during the interview would be confidential. It was essential to establish that their intellectual property would be preserved when the results of the research would be published. The participants attended the experiment entirely for free.

The second group received SFBT. The researcher held 9 sessions of 90-minute SFBT (once a week for 6 weeks) to examine the variables of the experimental groups. The descriptive statistics (Mean \pm SD) and inferential statistics were used to analyze the data by SPSS 23.

3. Results

The Mean \pm SD age of participants in the ACT, SFBT, and control groups were 36.2 ± 7.4 , 35.7 ± 7.2 , and 38.1 ± 9.4 years, respectively, which ranged from 20 to 60 years. In terms of education, 18 (30%), 24 (40%), and 18 (30%) patients had a diploma, bachelors' degree, and master's degree, respectively (Table 3).

Table 1. Summary of the sessions of acceptance and commitment therapy

Sessions	Summary
1	Introducing patients to the therapist. Informed consent: A warning to patients that the therapy may lead to emotional distress and may make a commitment to complete healing sessions accompanied by observing moral standards. General assessment: Asking patients to describe how distress, indetermination, unwanted thoughts, and feelings disturb their lives and convene to understand why they seek to find a therapy and what their hopes and expectancies are Figure 1 .
2	Determining adverse effects, trying to control distress, anxiety, negative thoughts, and feelings, concentration on contradictory quality of making an effort to control and overcome unwanted thoughts, using a metaphor for playing a drawstring with a giant.
3	Control as a defusion problem: Assisting patients to foster defusion by somatization practice and asking the patients to draw something. The approach aimed at making a non-defensive connection with those emotions that have been already avoided. Acceptance: Introducing acceptance as an alternative to control by the use of a lie detector metaphor. The practice indicates that having control over some subject is itself a problem, not a solution.
4	Undertaking a review of acceptance as an alternative selected control. Conducting the defusion practice and training language limitations and its roles to tolerate discomfort, using a metaphor for a child and the supermarket.
5	Acceptance, defusion, and values: Determining values by the use of this metaphor: Passengers' riding on a bus, when the patient is asked to think about bus direction
6	Making a connection with the present time: Assisting the patient to live happily at present by the use of his/her experiences through a practice concerning the awareness of and release from inner experiences. Understanding the importance of living at present by mindfulness techniques; however, it is possible if the patient does not adhere to his/her inner experiences.
7	Yourself as a background: Revealing yourself as a background, where inner experiences happen therein, using a chess metaphor.
8	Identifying the concept of the value and what is essential for the patient. Clarifying values of the patient by making a list to evaluate people's values at his/her different part of life such as friendship, family relations, job, educational growth, and recreation. Acceptance: Continuing to persuade some challenging inner experiences of the patient, using the revisiting metaphor of passengers riding on a bus. Making a moral commitment to involve in value-based activities.
9	Review and completion: Making a summary of the concerned therapy through undertaking a review of exercises and metaphors. Making deduction about studied concepts during sessions, asking patients to describe their achievements and plans for the rest of life.

AJNPP**Table 2.** Schedule concerning the sessions of solution-focused brief therapy

Session	objectives	Content
1	Holding therapeutic sessions, familiarizing participants with the research subject, and running a pretest	Introducing and familiarizing, explaining research objectives and procedure, the number of sessions, provisions, the rules of the educational team, and running a pretest.
2	Transforming a problem to an accessible objective	Completing assignments set in the previous session, discussing effectual positive matters in patients' life, trying to encourage patients to talk about their desires rather than concentration on problems, identifying tangible, positive, practical, and concrete aims.
3	An investigation into solutions to deal with a complaint	Completing assignments set in the previous session, convening to discuss patients' objectives, and coming up with a solution to evaluate next changes will happen if patients' problem is solved.
4	An investigation into patients' commitment and expectation	Convening to complete the assignments set in the previous session, undertaking a review of patients' goals, using scales to evaluate patients' commitment, and expecting to solve problems.
5	Finding an effectual story accompanied by an investigation into exceptions	Convening to complete the assignments set in the previous session, trying to discuss making changes, assisting patients in discovering exceptions; that is things succeeded to overcome anxiety and awful pain or perform a better function, giving hope to patients to alter and handle problems.

Session	objectives	Content
6	Training solution-making methods on different occasions, using a miracle question	Convening to complete the assignments set in the previous session, trying to discuss exceptions, concentrating on the best solutions, asking the miracle question designed to encourage patients to utter their strengths and to build up thereof.
7	Finding different kinds of methods to utter feelings, thoughts, and behaviors	Convening to complete the assignments set in the previous session, trying to discuss patients' answer to the concerned miracle question, concentrating on the actualizing solutions, using the term "instead of" to replace problematic thoughts, behaviors, and feelings by proper ones
8	An investigation into effective changes to stabilize them	Convening to complete the assignments set in the previous session, discussing alternative thoughts, feelings, behaviors, and effects thereof with participants, evaluating desirable changes taken place during therapeutic sessions, concentrating on patients' competencies and strengthening them, and discussing how to stabilize them.
9	Closing sessions, running a Post-test	Providing participants with a summary of therapeutic sessions, convening to discuss the strengths and weaknesses of the healer and the therapeutic plan, receiving feedback from patients, running a Post-test, and closing therapeutic sessions.

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Before running the multivariate analysis covariance test, both Box and Levene's tests were administered to consider their assumptions. Based on the Box test, it was not significant for any variables. The homogeneity assumption of variance/covariance was observed, as well. Based on the Wilks' lambda criterion, which was

not significant for all variables, the evenness condition has been considered for all groups. Therefore, it was allowed to use a variance analysis test (Table 4).

The F value was significant for the experimental groups, pain catastrophizing, and psychological well-

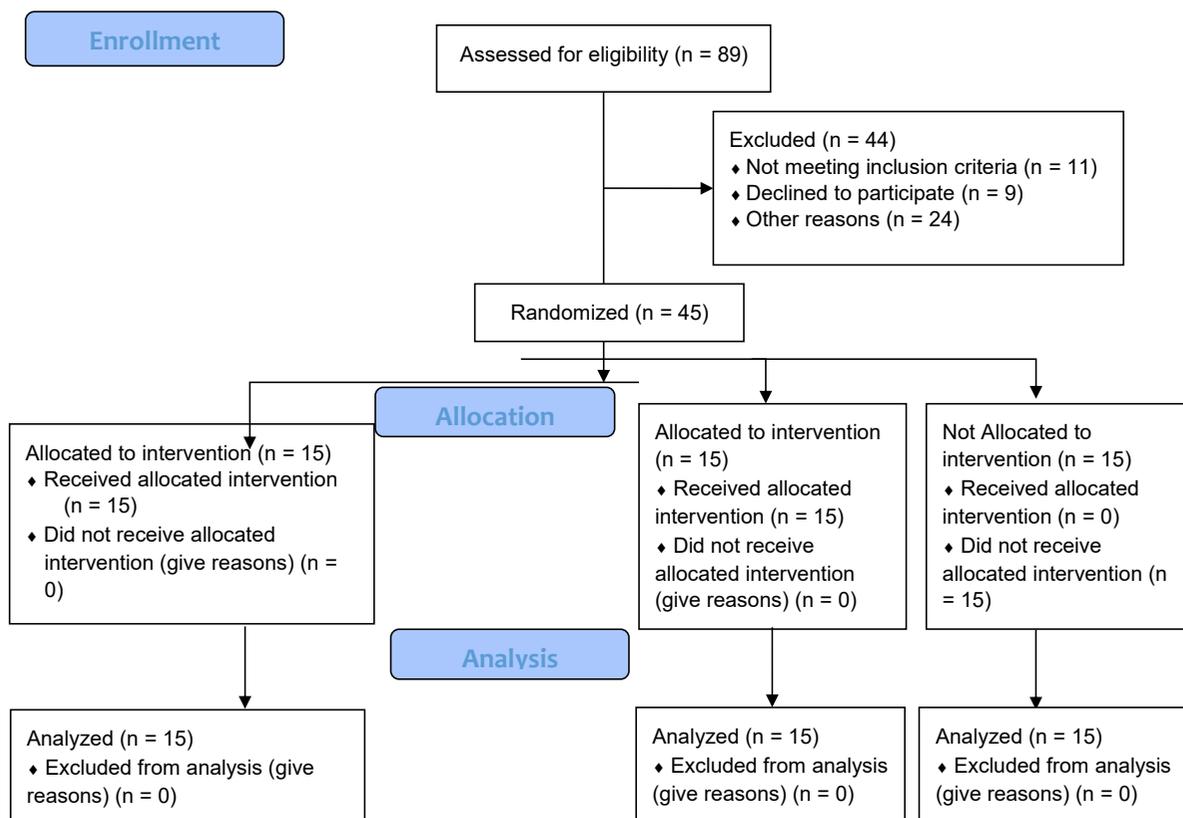


Figure 1. Consort checklist diagram

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Table 3. Frequency of research variables for the control and experimental groups

Variables	Group	Mean±SD		Sig.
		Pre-test	Post-test	
Pain catastrophizing	ACT	36.6±4.6	19.9±4.01	0.0001
	SFBT	35.06±3.1	28.4±5.3	0.0001
	Control	37.01±3.4	40.8±3.02	0.37
Psychological well-being	ACT	48.9±7.7	79.06±6.3	0.0001
	SFBT	49.01±4.8	69.9±4.01	0.0001
	Control	36.6±4.6	38.4±5.3	0.0001

AJNPP**Table 4.** A summary of multivariate analysis covariance data in comparing Post-test pain anxiety means of the experimental group with Pre-test

Source of Changes		SS	df	MS	F	Sig.	Eta Square
Pain catastrophizing	Group	6245.37	1	6104.34	47.01	0.001	0.90
	Error	185.67	1	77.42			
Psychological well-being	Group	7924.41	1	7845.51	79.34	0.001	0.87
	Error	1324.13	1	99.14			

AJNPP**Table 5.** The difference regarding the results of a post hoc test between score mean of pain anxiety and acceptance of patients with breast cancer

Variable	Group I	Group J	Difference between I and J Means	SD	Sig.
Pain catastrophizing	SFBT	ACT	4.47	1.80	0.001
		Control	-6.46	0.805	0.001
	ACT	Control	-8.34	0.956	0.001
Psychological well-being	SFBT	ACT	-4.78	0.918	0.001
		Control	-6.58	0.833	0.001
	ACT	Control	-9.39	0.987	0.001

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being ($P>0.01$). One of the mentioned therapies at least had to impact on pain catastrophizing and psychological well-being in women with breast cancer (Table 5).

According to Table 5, although both medical practices suggested a profound effect on catastrophic pain and psychological well-being on patients with breast cancer, the impact of the ACT was more significant ($P>0.01$).

4. Discussion

The present research aimed at comparing the impact of ACT with SFBT on pain catastrophizing and psychological well-being among women with breast cancer. However, both variables represented no significant difference for the pretest and Post-test in the control group.

The findings of the current study were consistent with those of Hann and McCracken [19] and Arch et al. [20], who studied the effectiveness of ACT in chronic pain and

anxiety disorders, respectively. However, to date, there was no consensus about the impact of SFBT on pain catastrophizing and psychological well-being. In conclusion, there was a close link between the acceptance of pain and more involvement in routine activities.

Likewise, these results suggested a strong relationship between acceptance and cognitive control. In the same way, researchers concluded that pain acceptance was among the most well-known practice to remove undesirable life aspects [21]. Several studies confirmed that the acceptance of pain plays a pivotal role in the daily functions of people with chronic pains. Based on the clinical studies, although there was a weak relationship between pain acceptance and pain experience of psychological and physical problems, a close link exists between pain acceptance and psychological well-being [22].

Recent studies showed a definite link among pain acceptance with high quality of life among patients with backache [23], the decrease in the impact of pain periods on the function of patients with rheumatoid arthritis [24], as well as the improvements in the function of patients with various pains [25].

The ACT is among the most effective acceptance-based inferences for those intending to experience undesirable psychological events such as pain. Acceptance-based inferences cause low sensitivity to chronic pains. The ACT is regarded as an approach subset indicating that acceptance has a leading role in decreasing the pain experience among patients with chronic pains. The acceptance seems to be an essential process involved in medicinal achievements, which increases painful functions and predicates future one's functions. Turner et al. [26] have shown that unlike other medicinal practices, the therapy has a profound impact on decreasing pain catastrophizing experience among patients. Pain catastrophizing is a warning for chronic pain and disability.

Moreover, some researchers have studied the assumption that the pain gets worse mainly because of the impact of pain catastrophizing on attention processes. In other words, high catastrophizing level leads to intense selective attention to driving-related pain [27]. Unlike non-catastrophic experience, catastrophic experience has more trouble to control or relieve pain-relevant thoughts. They usually ruminate over pain; so, their cognitive and physical functions are more unbalanced through pain expectancy [28].

The ACT causes a significant decrease in pain catastrophizing among patients. Indeed, thinking processes

thought participates in leaving supersession convection and helping to release them from disturbing thoughts [29]. The ACT has a leading impact on decreasing the pain catastrophizing among patients with breast cancer. Moreover, compared to SFBT, ACT showed a leading effect on pain catastrophizing and psychological well-being among patients with breast cancer [30]. It is worth noting that there exists a positive relationship between the mental health of chronic pain-stricken patients and doing daily activities. Also, there exists a definite link between pain acceptance and high quality of life among patients with backache, which has decreased the impact of painful periods in the function of patients with rheumatoid arthritis, as well as improvements in the function of patients with various pains [31].

Likewise, the results revealed the effectiveness of ACT in patients, who suffered from experimental inductive pain. In addition, studies conducted based on the clinical surveys emphasized the importance of ACT for decreased pain symptoms and increased psychological well-being accompanied by pain. The cognitive resilience establishes the main theoretical ingredient in acceptance based on behavioral therapies such as ACT [32]

SFBT is more effective in social emergency and matrimony conflicts. Using trained skills, the participants could be familiarized with their characteristics and sought to correct themselves implying on positive points and displacing them by rational thoughts rather than undesirable cognitive distortions and tried to improve their thoughts and feelings. The skills help the patients reveal their inherent capabilities, using positive compatible behaviors through taking control of their stress by the use of stress-fighting skills. People show incompatible behavior when the current condition threatens their health. Therefore, the improved condition will help people to reveal more cooperative behavior.

The participants were taught how to displace confidence by doubt; they recognized their cognitive distortions through reorganizing their negative thoughts and displaced thereof by proper reasonable thoughts. Regarding the limitations of the present research, imp generalizing the results should be done cautiously. The current study has only examined women with breast cancer in hospitals and health centers of Babol and Babolsar. Therefore, it is essential to be aware of generalizing the results to the patients of other cities. As another limitation of this study, the follow-up study was not conducted mainly because of time restriction and inaccessibility to the participants. There is ample room for further work to establish the function of the studied

therapy regarding Iranian culture, using comparing the effectiveness of the ACT accompanied by other medicinal approaches. It is recommended to take a follow-up test at the end of therapy to evaluate long-term effects thereof and establish closing training sessions.

Although both ACT and SFBT represented an excellent impact on decreasing the pain catastrophizing and increasing the psychological well-being, the first was more successful.

Ethical Considerations

Compliance with ethical guidelines

All ethical principles were considered in this article. The participants were informed about the purpose of the research and its implementation stages and signed the informed consent; they were also assured about the confidentiality of their information. Moreover, they were allowed to leave the study whenever they wish and, if desired, the results of the research would be available to them.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' contributions

All authors contributed equally in preparing all parts of the research.

Conflict of interest

The authors declared no conflict of interest.

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