Research Paper: Effectiveness of Acceptance and Commitment Therapy on Hope in Women With Breast Cancer Undergoing Chemotherapy

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ABSTRACT

Objective: The present research aimed to assess the effectiveness of Acceptance and Commitment Therapy (ACT) on the hope of patients with breast cancer undergoing chemotherapy.

Methods: In this quasi-experimental study, 30 patients with breast cancer were selected by convenience sampling method and randomly assigned to experimental and control groups. The experimental group attended ACT sessions for 8 weeks continuously (each session lasting 45 minutes). Customers/clients in both the experimental and control groups completed Snyder hope scale as pretest and posttest. Analysis of covariance was used as the statistical method.

Results: The findings suggest that ACT is an effective treatment for breast cancer treated patients (P<0.001, F=279.025), including those with low levels of hope.

Conclusion: The results showed that ACT is an effective method in rising hope in women with breast cancer. Thus, psychological interventions can be used to increase the hope of women with breast cancer.

1.Introduction

Breast cancer is becoming an increasingly significant global public health threat, affecting women of all socioeconomic levels in both developed and developing countries (Knaul et al., 2009). Although rates of breast cancer mortality in developed countries have historically been far greater than those in developing countries (Ferlay et al., 2008), trends suggest that breast cancer mortality rates among women in Latin America are rapidly increasing (Jemal, Center, DeSantis, & Ward, 2010). In Mexico, breast cancer has emerged as the leading cause of death in women with malignancies (Knaul et al., 2009) following the pattern of breast cancer mortality seen among U.S. Latinas (American Cancer Society, 2011).

There has been a steady improvement in patient survival in recent decades as a result of a combination of early

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detection (thanks to advances in mammographic screening) (Kopans, 2011) and adjuvant systemic chemotherapy (Peto et al., 2012). Excluding skin cancers, breast cancer is the most common cancer diagnosed among women in the United States, accounting for nearly 1 in 3 cancers (Torre et al., 2015), with an estimated rate of 232340 new cases and 39620 deaths in 2013 (Siegel, Naishadham, & Jemal, 2013). It is also the second leading cause of cancer death after lung cancer among women. Breast cancer is a very common disease that affects approximately 1 in 10 women at some point in their lives (Valent et al., 2012). In a study conducted in Iran by the prevalence of 41.4%, breast cancer was the most common type of cancer in women between the years 2000 to 2009 (Tayebi, Shabestani Monfared, Moslemi, 2012).

Breast cancer is the most prevalent cancer in Iranian women and the fifth most common cause of cancer-related death in Iran (Akbari et al., 2011). Psychological damage of the breast cancer to patient is serious. Approximately 30% of patients with the early breast cancer are diagnosed as depressed mental status before operation (Falagas et al., 2007). Patients with breast cancer have to receive hormone therapy, chemotherapy, and radiation therapy for a long term after operation (Kamio, Schmidt, Germann, Kubanek, Derby, 2013). Cancer treatment process is complex and frequently associated with severe side effects and complications that influences the physical, psychological, and social dimensions of life for cancer patients and their families (Liao et al., 2014).

Women with visceral cancer have a shorter life expectancy. Mean survival for women with skeletal cancer has increased from 24 to 36 months, and women with a more indolent disease may live for many years (10-15 years in some cases). The prognosis of breast cancer has improved largely due to advances in more effective and better-tolerated therapies, but this has also resulted in more complex survivorship problems for these patients with a high need for psychological support (Reed, Simmonds, Haviland, & Corner, 2012). The impact of living with breast cancer is considerable with many patients experiencing cancer related fatigue and psychological symptoms such as anxiety and depression (Eyles et al., 2015).

Despite the large number of psychological intervention studies for individuals diagnosed with cancer, the overall efficacy of these treatments in addressing patient symptom burden has been heavily debated (Sanford et al., 2014). A recent meta-analysis of 61 trials demonstrated that psychological distress moderated the efficacy of psychosocial treatments regarding mood management for cancer patients (Schneider et al., 2010). Furthermore, a

meta-analysis of trials targeting cancer patients indicated that psychotherapeutic and pharmacological interventions are effective in reducing depression and anxiety and increasing hope and quality of life (Mustian et al., 2013).

Hope can be defined as a subjective probability of good outcomes, (Jafari et al., 2010) representing the feeling of an optimistic future for men, which allows for the establishment of plans and long-term goals (Chang, Yu, & Hirsch, 2013). In the face of daily situations, people tend to anchor their hope in issues that are significant to them, either external, such as family, friends or something supernatural; or internal, when people deposit their hopes on themselves, thinking about their lives and possibility of personal achievements (Du & King, 2013). We explore levels of hope in individuals who experience chronic diseases, to verify the impact of this feeling at times of hardships and trials, due to its importance in the coping process of ill patients. The feeling of hope has been investigated in patients with cancer undergoing antineoplastic treatment (Ripamonti et al., 2012) and the presence of moderate levels of hope was identified in them.

Given these considerations, there is a need to verify the hope of patients who will begin chemotherapy, since the support of this feeling during therapy strengthen their experience, despite the difficulties imposed by the course of the disease and its treatment (Ahmed, Jabeen, Inayat, & Hasan,, 2013). Furthermore, being aware of their levels of hope during therapy can expand the possibilities of care to these individuals, because in such moments, hope becomes a feeling capable of making people envision a horizon of life with new perspectives, starting to believe in good times even when a chronic disease like cancer arises in their life, and brings with it the stigma of incurability and a long painful treatment (Wakiuchi, Aparecida Marchi, Sharlise Norvila, Silva Marcon, & Aparecida Sales, 2015). It is possible for people with greater sense of agency and pathways to pursue goals (i.e. high hope) more effective than those with low hopes. Accordingly, in this study we review the effect of hope on patients' adjustment to breast cancer (Stanton et al., 2000).

Researchers are increasingly investigating modern contextual forms of Cognitive Bhavior Therapy (CBT) for psychological disorders that emphasize acceptance and commitment therapy (ACT) and mindfulness strategies (Tai & Turkington, 2009). Despite research suggesting that acceptance is important for patients with cancer, majority of interventions focus on relaxation/anxiety reduction techniques, problem solving, psychoeducation, and cognitive-behavioral strategies (Osborn, Demoncada, & Feuerstein, 2006).

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ACT uses mindfulness and behavior change methods to produce greater psychological flexibility. Psychological flexibility is defined as fully facing the present moment as a conscious human being, and based on what the situation affords, changing or persisting in behavior in the service of chosen values (Hayes, Strosahl, & Wilson, 2011). ACT aims to increase psychological flexibility, and thereby improving the individual function that is done by 6 processes, including acceptance, diffusion, self as context, contact with present moment, clarifying values, and committed action (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Indeed, ACT therapists encourage clients to recognize and reduce unhelpful struggle with psychological content and develop a more accepting stance to be able to move in a valued direction (Bloy, Oliver, & Morris, 2011).

The literature review indicates that ACT has significant effects on chronic pain, anxiety disorders, obsessional compulsive disorder, and also mental health promotion. Also, studies showed that ACT may be effective for a variety of disorders, including several anxiety disorders, depression, pain, trichotillomania, psychotic disorder, drug abuse and the management of epilepsy and diabetes (Mohabbat-Bahar, Maleki-Rizi, Akbari, & Moradi-Joo, 2015). We designed a clinical trial to examine the effects of training based on ACT on hope in women with breast cancer.

This preliminary study examined the effectiveness of ACT intervention on increasing hope among patients with cancer. It was hypothesized that over the course of the intervention, patients would report increased psychological flexibility through acceptance of unpleasant thoughts and feelings, and that increased psychological flexibility would lead to improvements in their distress, mood, and hope.

2. Methods

This research design was an experimental research with pretest-posttest and a control group. ACT was done on the patients as the intervention. The intervention consisted of 4 modules comprising the essential ingredients of ACT. The modules were covered in 8 therapy sessions. Although each session focused on a specific module, the core elements of ACT were present in every session. Every session also encouraged committed action. All 8 sessions (once a week) was done individually and according to the treatment protocol of Feros et al. (2013).

Four modules were as follows: 1) Increasing effective action orientation (sessions 1–3); it aimed to develop cus-

tomers' awareness of distressing thoughts and feelings. It helped customers recognize and let go of unhelpful emotion control strategies. It utilized ACT methods (e.g. diffusion) to reduce behavioral reactivity to emotions and thoughts and increase the extent to which a person is able to choose actions based on what they care about (rather than being dominated by emotions and thoughts), 2) Mindfulness (sessions 4–6); customers were encouraged to engage in mindfulness practices to increase awareness of their distressing thoughts and feelings without having to change them. They also became aware that they could choose to act effectively even when experiencing distress. Finally, they learn to use mindfulness to better connect with what they care about, 3) Self as context (session 7); this module aimed to develop customers' sense of self as separate from their distressing thoughts and feelings. Customers apply it to develop a position from which they could observe their distressing self-concepts and let them come and go, secure in the knowledge that they were the container (context) for these concepts and were not equivalent to them, 4) Formal value clarification and commitment (sessions 8); this section involves helping customers identify what they value in a number of areas, including relationships, health, education, and spirituality. At the end of this module, customers clearly articulate their values and link these to action plans.

This study is a clinical trial with a control group that used the quasi-experimental design to examine the differences in the hope as dependent variables for patients with breast cancer before and after one course of ACT as independent variable pretreatment and posttreatment. Thirty subjects with breast cancer were selected by convenience sampling method.

Inclusion criteria for the study sample were: 1) aged between 30 and 60 years; 2) having at least a high school diploma; 3) diagnosed with breast cancer in stages II or III in patients who completed standard therapies; 4) having undergoing chemotherapy.

Exclusion criteria were as follows: 1) having history of psychotic disorders, bipolar disorder, severe personality disorders or other cancers, 2) simultaneous participation in other psychological courses, 3) lack of psychoactive substance use, addiction to drugs or alcohol.

In this study, the experimental group included 3 patients that had elementary education (20%), 5 patients (33.33%) were diploma and 7 patients (46.66%) had bachelor. Also, 11(73.33%) cases were in stage II and 4(26.66%) patients in stage III. Participants in the control group comprised 15 patients with breast cancer.

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The mean age of participants was 42 years (35–52 y). 4 patients (26.66%) had elementary education, 5 patients (33.33%) were diploma and 6 patients (40%) had bachelor Seven (46.66%) cases were in stage II and 8 (53.33%) patients were in stage III. Also, the minimum and maximum age of patients were 35 and 51 years, respectively.

The study instrument was Snyder hope questionnaire Hope was assessed with the adult trait hope scale (Snyder et al., 1991). The scale comprised 12 items, with 4 items each assessing agency (e.g., ''I energetically pursue my goals'') and pathways thinking (e.g., ''There are lots of ways around any problem''). Items are rated on a 4-point scale (from 1, definitely false to 4, definitely true). Snyder et al. (1991) reported its coefficient α ranging from 0.74 to 0.84 for the total scale. For this sample, the coefficient α reliability was 0.76. In Iran, the validity of the questionnaire was assessed on 100 students and the Cronbach α coefficients were obtained for the components of agency as 0.71 and pathway as 0.67. The internal consistency coefficient of the questionnaire was 0.89 in Persian version.

This study was conducted on 30 patients with breast cancer in different stages (II, III) who were undergoing chemotherapy; they were randomly divided into 2 experimental and control groups. The collected data were analyzed using the SPSS-20. Descriptive statistics including mean and standard deviation and analytical statistical tests, including Levene's test for homogeneity of variances and analysis of covariance (ANCOVA) were used. P values less than 0.05 were considered significant. To evaluate the effectiveness of ACT on hope of women with breast cancer, after calculating the scores of pretest and posttest in both experimental and control groups, Levene's test for homogeneity of variances and analysis of covariance (ANCOVA) were performed.

3. Results

The mean age for treatment and control groups were 43 and 42 years, respectively. In terms of Tests of Within-Subjects Effects, there were 2 time measurement of hope of pretreatment and posttreatment. The present study was performed to examine the effect of ACT on hope in women with breast cancer. Table 1 shows the descriptive statistics related to this analysis, including mean of scores of hope in experimental and control groups at pretest and posttest. Mean score of hope before the experiment was 19.13, which increased after the experiment to 32. These differences were not observed in the control group.

First, for checking the assumption of normality of subscale (pathway and agency) we used the Kolmogorov-Smirnov test. According to Table 2, significant posttest pathway and agency is higher than 0.05 indicating that the default is set to perform parametric tests. It is necessary that the assumption of homogeneity of variances variables be examined. The results are reported in Table 3.

The results also showed that Levene's test and posttest variables pathway (P=0.128, $F_{(28,1)}$=2.458) and agency (P=0.495, $F_{(28,1)}$=0.477) means were not significant, indicating that the variances are homogeneous. According to the results of Table 4, the default equality of covariance matrices of observed variables are maintained in different groups (P<0.05, F=1.459). Thus, the multivariate analysis of variance test runs. The results are presented in Table 5. The findings of present study have shown that patients with breast cancer after participating in ACT intervention had experienced higher levels of hope than patients with breast cancer in the control group.

As seen in Table 5, comparison of the results between the two groups with controlling the effect of pre and post test, showed that pathway scores of patients in the ex-

Table 1. Mean differences of hope before and after intervention

Variable		Before Intervention	After Intervention
Hope	Experimental group (n=15)	19.13	32
	Control group (n=15)	16.93	16.66
Pathway	Experimental group (n=15)	11	14.06
	Control group (n=15)	5.53	10.66
Agency	Experimental group (n=15)	8.13	14.60
	Control group (n=15)	7.40	9.33

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Table 2. Normality of variables pathway and agency posttests

		Statistics	df	Sig.
Pathway post-test	Experimental group	0.17	15	0.18
	Control group	0.16	15	0.19
Agency post-test	Experimental group	0.15	15	0.20
	Control group	0.18	15	0.17

Table 3. Levene's test for homogeneity of variances

Variable	F	df1	df2	Sig.
Pathway	2.458	1	28	0.128
Agency	0.477	1	28	0.495

perimental group had a significant increase compared to control one. Also, comparison of the results between the two groups with controlling the effect of pre and post test, showed that agency scores of patients in the experimental group had a significant increase compared to control one (P<0.001, F=279.025). Therefore, the hypothesis is confirmed.

4. Discussion

This study investigated the effectiveness of ACT on the hope of women with breast cancer. Results showed that ACT intervention has significant effectiveness on the hope of these patients. Few studies have examined effectiveness of ACT techniques in patients with cancer. Following a comprehensive literature search, only a small

Table 4. Equality of variance matrices test results

Indicators	Value
Box's M	4.744
F	1.459
df1	3
df2	141120.000
Sig.	0.224

Table 5. Analysis of covariance to compare two groups pretest and posttest

	Variables	df	MS	F	P value
Pretest	Pathway	1	11.086	7.603	0.011
	Agency	1	16.513	7.254	0.012
Posttest	Pathway	1	105.696	72.493	0.012
	Agency	1	279.025	279.025	0.001

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number of studies were found that deliberately studied the effectiveness of ACT within the cancer setting, but this nonetheless presents useful pilot data. The data demonstrate potential clinical- and cost-effectiveness for a range of patients, including those with psychological comorbidity. Within the context of wider cancer adjustment, ACT offers an intervention framework to appropriately build upon the strong empirical base already established for mindfulness within this specific patient population. The evidence available suggests that the underlying framework of ACT offers an intervention model that is potentially more suited to the individualistic nature of cancer adjustment (Hulbert-Williams, Storey, & Wilson, 2015).

In another study, ACT can be an effective intervention approach for patients with cancer that increases acceptance regarding disease and simultaneously leads to improvement in the meaning of life (Datta, Aditya, Chakraborty, Das, & Mukhopadhyay, 2015). According to Feros et al. (2013) research, ACT effect sizes were comparable to those obtained in studies examining the effectiveness of other psychological therapies, such as cognitive behavior therapy, at improving quality of life among individuals with cancer. Also according to research of Mystakidou et al. (2007), significant correlations were found between hopelessness, depression, and cognitive condition. These findings demonstrate the physical, psychological, and cognitive aspects of patients with cancer. In another research, results showed that ACT significantly decreased scores on depression and psychological flexibility in women with breast cancer (Dehghani Najvani et al., 2015).

Four processes of psychological flexibility; acceptance of illness, values-based action, psychological acceptance, and mindfulness, significantly decrease long term treatment (Hayes et al., 2006).Acceptance and commitment therapy can expand the acceptance belief of lack of control over the life in patients with cancer. The scene of lack of control over life leads to increase of mental Heath problems and is a barrier against medical procedure. Regarding take self as a context with metaphors and techniques and assignments during sessions, it could be effective in the treatment of people in individual therapy sessions (Feros et al., 2013).

In fact, the metaphors of this treatment encourage the patients to identify positive and good experiences and their role in promoting the concept of self recognition, at the same time their ability to accept the negative experiences of life and live in the present moment. In addition, patients who are diffused between thoughts, feelings and behavior, are trained to differentiate between them. Patients often believe that their thoughts are unchangeable truth.

After the treatment they would be able to contemplate and review their beliefs and determine the truth or falsity of their beliefs. These skills, prepare patients to deal with challenges. They can overcome problems rather than be despaired (Strosahl, Hayes, Bergan, & Romano, 1998).

This study has a number of limitations that must be acknowledged: First is the non-random selection of the participants; second, variables such as occupation and socioeconomic status of patients have not been controlled; third, there was a lack of follow-up periods. This study can be considered a preliminary study to evaluate the effectiveness of therapy based on commitment and acceptance of the patients with cancer. These are some suggestions for future studies. A similar study based on acceptance and commitment therapy can be conducted on men with cancer. It is recommended to do similar research in men's groups due to its similarities with other disease and some other cancer type.

This study investigates the effect of acceptance and commitment therapy on improving hope among women with breast cancer. According to the findings of this research, this treatment can be chosen as a method of psychotherapy and complementary medical treatment can be used to increase hope in patients with cancer. We hope that the results of this research encourage the related experts to focus more on the psychological aspect of this disease that its direct result can be better and faster treatment of disease and improvement of patients' quality of life. Based on this study, we suggest that in future studies both male and female patients be used to increase the generalizability of the results. We also recommend the effectiveness of this intervention be evaluated on people who have cancer in their families.

Subjects were included in study after assuring the confidentiality of their personal information and taking written consents from them. Also in this study, subjects were allowed to refrain from participating at any time they were reluctant to continue cooperation. Research methods did not violate legal, cultural, and Islamic principles.

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Conflict of Interest

The authors declared no conflicts of interest.

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