Brief Report

Acceptance and Commitment Therapy (ACT) for improving the lives of cancer patients: a preliminary study

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Abstract

Background: This preliminary study examined the effectiveness of an Acceptance and Commitment Therapy (ACT) intervention at improving the quality of life among cancer patients. It was hypothesised 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 distress, mood, and quality of life.

Method: Forty-five cancer patients participated in an ACT intervention. Outcome measures included self-reported distress, mood disturbance, psychological flexibility, and quality of life. Data were collected at pre, mid, and post-intervention and at 3-month follow-up.

Results: The data showed significant improvements on outcome measures from pre to post and from pre to follow-up. Regression analyses showed that changes in psychological flexibility predicted changes in quality of life, distress, and mood.

Conclusions: ACT effect sizes were comparable to those obtained in studies examining the effectiveness of other psychological therapies, such as cognitive behaviour therapy, at improving quality of life among individuals with cancer. This supports further research into ACT as an effective intervention for cancer patients.
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Introduction

The range and severity of distress experienced following a diagnosis of cancer varies from patient to patient. Common reactions can include shock, disbelief, sadness, fear, anxiety, guilt, shame, and anger, with significant levels of these found in more than 35% of patients [1,2]. A recent meta-analysis of studies examining the prevalence of mood disorders among cancer patients in oncological and haematological settings reported 12.9–29.8% of patients experienced depression and 5.1–17% experienced anxiety [3]. Even in the months and years following diagnosis and treatment, patients can continue to experience significant distress [4]. This distress can impact negatively on a patient's perceived quality of life including their emotional and functional well-being [5].

Meta-analytic studies on the effects of psychological treatment for adults diagnosed with cancer provide strong evidence for the beneficial effects of intervention in reducing distress and improving well-being [6,7]. For example, cognitive behaviour therapy (CBT) has been found to be effective for depression, anxiety, and quality of life in cancer patients, with large effect sizes obtained ($>.9$) [7]. However, many of the interventions studied to date have focused on reducing symptoms by disputing unhelpful thoughts. There has been little research into the effectiveness of psychological interventions that promote acceptance of the distress evident in cancer populations whilst simultaneously helping patients engage in a meaningful and valued life.

Acceptance and Commitment Therapy [8] or ACT, said as one word, is an intervention that focuses on changing a patient's relationship with their thoughts, rather than changing the content of the thoughts. Patients learn to have difficult thoughts and feelings without being dominated by them. They also learn to choose actions that are consistent with what they care about. ACT focuses on activating value-consistent behaviour rather than on reducing symptoms. It aims to develop psychological flexibility to enable a person to act effectively *with* their distressing symptoms through the use of acceptance strategies, mindfulness techniques, and a wide range of behavioural approaches. ACT is supported by a growing body of literature, indicating that attempts to suppress negative thoughts and feelings [see 9 and 10 for recent reviews], as well as avoidant coping styles [11–14], actually make psychological problems worse over time. Furthermore, it has been suggested that psychological flexibility may be a critical aspect to improving psychological health [15].

ACT has recently attracted considerable international attention as a result of positive findings in over 20 randomised and controlled psychotherapy outcome studies

for a variety of chronic health conditions including chronic pain [16,17], psychosis [18,19], polysubstance addiction [20], and nicotine addiction [21]. In addition, it has been found to be an effective treatment for depression [22,23] and anxiety [24,25], both of which are highly prevalent among cancer patients [3]. ACT has also demonstrated positive outcomes for cancer patients. In a randomised controlled trial, results showed a higher positive impact on mood and quality of life among six breast cancer patients following an ACT-based intervention compared with a cognitive-based control intervention, when long-term changes were considered at 12-month follow-up [26]. Furthermore, data from a randomised trial presented in a conference paper by Branstetter and colleagues [27], suggested that ACT is more helpful than CBT in dealing with end-stage cancer issues. These positive findings, and a dearth of further research into the effectiveness of acceptance-based interventions for cancer patients, highlights a need for examining ACT as an intervention for cancer patients experiencing distress.

The present study aimed to examine the effectiveness of an ACT intervention among cancer patients. In contrast to Páez and colleagues' research [26], this study utilised a larger sample and a diverse range of cancer patients. Follow-up data were also collected, which was not included in Branstetter and colleagues' study [27] because of the high mortality rate of their sample. It was hypothesised that over the course of the intervention, patients would report increased psychological flexibility through acceptance of unpleasant thoughts and feelings as well as improvements in distress, mood, and quality of life. It was further hypothesised that these gains would be maintained at 3-month follow-up. Finally, it was hypothesised that increased psychological flexibility would lead to improvements in distress, mood, and quality of life.

Method

Participants

Participants were 45 cancer patients from the Cancer Care Centre at the Wollongong Hospital, NSW, Australia. There were 34 women (75.6%) and 11 men (24.4%). The mean age of participants was 51.8 years (25–77 years). Almost half of the participants had breast cancer (48.9%), with other cancer sites including genitourinary, head and neck, lymphoma, lung, and stomach. Twenty three participants (51.1%) were undergoing cancer treatment at the time of the study. Five participants (11.1%) had advanced disease.

Measures

Distress

The Distress Thermometer [DT; 28] is a self-report measure, which asks patients to rate the degree of distress they have experienced in the previous week, on a scale of 0 = 'No distress' to 10 = 'Extreme distress'. It is routinely used as a screening tool for distress amongst cancer patients.

Mood disturbance

The Depression, Anxiety, and Stress Scale [DASS; 29] is a 21-item self-report measure of mood disturbance. Items are based on typical symptoms of depression, anxiety, and stress. Ratings are made on a four-point scale ranging from 0 = 'Did not apply to me at all' to 3 = 'Applied to me very much', over the previous 2 weeks, with higher scores indicating elevated mood disturbance. The DASS had satisfactory reliability in this study ($\alpha_{pre} = .89$, $\alpha_{mid} = .91$, $\alpha_{post} = .93$, $\alpha_{follow-up} = .91$).

Quality of life

The most widely accepted measure of quality of life in cancer patient populations is the Functional Assessment of Cancer Therapy [FACT; 30]. This measure is comprised of four subscales: physical well-being (7 items), social/family well-being (7 items), emotional well-being (6 items), and functional well-being (7 items). All 27 items are rated on a five-point scale from 0 = 'Not at all' to 4 = 'Very much'. The range of scores obtained is 0–108, with higher scores indicating higher perceived quality of life. The FACT had satisfactory reliability across all time points of measurement in this study ($\alpha_{pre} = .90$, $\alpha_{mid} = .90$, $\alpha_{post} = .92$, $\alpha_{follow-up} = .84$).

Psychological flexibility

The Acceptance and Action Questionnaire II is a 10-item instrument measuring psychological flexibility, obtained through ratings of acceptance or avoidance of unpleasant thoughts and feelings [AAQ-II; see 31 for preliminary psychometric properties of the AAQ-II, which was a 10-item questionnaire at the time of this study and has since been reduced to a seven-item scale]. Items are rated on a seven-point scale from 0 = 'Never true' to 7 = 'Always true'. The AAQ-II had satisfactory reliability in this study ($\alpha_{pre} = .82$, $\alpha_{mid} = .78$, $\alpha_{post} = .87$, $\alpha_{follow-up} = .78$).

Intervention

The ACT intervention manual was developed by the researchers, J.C. and J.B., recognised trainers in ACT. In addition to the manual, an audio CD was created to accompany the intervention and help participants practise skills at home. The manual and the CD facilitated the provision of a highly structured and replicable ACT intervention for cancer patients. The researcher, D.F., a clinical psychologist trained in ACT, delivered the intervention. Supervision of the intervention was provided by the researchers and ACT trainers, J.B. and J.C. The highly structured and manualised intervention, along with regular supervision, helped to ensure that the ACT intervention was delivered with fidelity.

The intervention consisted of four modules comprising the essential ingredients of ACT. The modules were covered over nine 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. The four modules were as follows:

(1) *Increasing effective action orientation* (sessions 1–3): This first module aimed to develop participants' awareness of distressing thoughts and feelings. It helped participants recognise and let go of unhelpful emotion control strategies. It utilised ACT methods (e.g. defusion) to reduce behavioural reactivity to emotions and thoughts and increase the extent that a person was able to choose actions based on what they cared about (rather than being dominated by emotions and thoughts).

(2) *Mindfulness* (sessions 4–6): Participants were encouraged to engage in mindfulness practices in order 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 learned to use mindfulness to better connect with what they care about.

(3) *Self as context* (session 7): This module aimed to develop participants' sense of self as separate from their distressing thoughts and feelings. Participants developed 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 8–9): This section involved helping participants identify what they value in a number of areas, including relationships, health, education, and spirituality. At the end of this module, participants clearly articulated their values and linked these to action plans.

Procedures

Patients at the Cancer Care Centre, Wollongong Hospital, who scored five or more on the Distress Thermometer were offered a place in the nine-session ACT intervention ($n = 45$). Individual therapy sessions of 45-minute duration were conducted on a weekly basis. Participants completed measures at four time points: before the first session (pre), after session 4 (mid), after session 9 (post), and 3 months after the intervention (follow-up). There were a number of participants who withdrew from the intervention throughout the nine weeks due to conflicting appointments and prior commitments. Of the 45 participants, 28 completed all nine individual sessions of intervention. The data from this completer group ($n = 28$) were analysed separately and compared to the group that were intended for treatment ($n = 45$).

Statistical analyses

The data were examined to identify intervention dropouts and missing data. An intention-to-treat (ITT) analysis was conducted using the expectation-maximisation algorithm to impute missing values. This method produces unbiased estimates superior to mean and regression imputation methods [32]. Little's chi-square test was conducted for the expectation-maximisation procedures to test the assumption that data were missing completely at random. The chi-square was not significant, $p > 0.05$, suggesting that data were missing completely at random. Continuous and process measures were analysed using General linear model (GLM) repeated measure analysis of variance (ANOVA), with significant results followed up by Bonferroni-corrected contrasts.

Completer analyses were also conducted on the sample of 28 participants who completed all nine sessions of intervention including measures on at least three out of four time points. The results and effect sizes were similar to the ITT analyses, and therefore, only the results from the ITT analyses ($n = 45$) were reported. Finally, exploratory analyses on processes of change were conducted using regression analysis.

Results

Outcome measures

The means and standard deviations of the study variables at each time point are presented in Table 1. Visual representation of the means is shown in Figure 1. GLM repeated ANOVAs indicated that participants differed at the intervention time points for distress ($F(3,114) = 13.53$, MSE = 5.36, Eta-Squared = .26), mood disturbance ($F(3,114) = 20.48$, MSE = 53.11, Eta-Squared = .35), and quality of life ($F(3,114) = 7.46$, MSE = 104.6, Eta-Squared = .16). Bonferroni-corrected contrasts (see Table 1) suggested that distress, mood, and quality of life significantly improved from pre to post and from pre to follow-up. There was also significant improvement from pre to mid for mood, but not for distress or quality of life. According to effect size conventions, the effect sizes for distress and mood would be considered large, ($>.8$), whereas the effect on quality of life would be considered medium (.50) [33].

Depression, Anxiety, and Stress Scale norms were utilised to estimate the clinical significance of the intervention on mood disturbance [34]. Participants were classified as experiencing 'normal' levels of symptoms if they were equal to or less than one standard deviation above the mean of the depression, anxiety, or stress scales (which is classified as 'normal' or 'mild' in the DASS manual [34]). At pre-intervention, 41%, 38.5% and 46.2% of participants were classified as having normal levels of depression, anxiety and stress, respectively. However, at follow-up, the participants experiencing normal levels of mood increased to 90.0%, 68.2% and 86.4%, respectively.

Table 1. Means (M), standard deviations (SD), and effect sizes (EF) for measures at pre, mid, post, and 3-month follow-up ($n = 45$)

Measure	M	SD	Effect size
Distress			
Pre	7.53	2.92	—
Mid	6.38	2.55	.42
Post	4.55	2.42	1.11
Follow-up	4.97	2.91	.87
Mood disturbance			
Pre	24.26	11.66	—
Mid	19.44	10.75	.43
Post	13.75	9.39	.99
Follow-up	13.00	8.13	1.12
Quality of life			
Pre	62.68	18.33	—
Mid	66.77	16.13	.23
Post	72.23	15.44	.56
Follow-up	71.57	19.78	.47
Psychological flexibility			
Pre	38.38	10.66	—
Mid	42.18	9.17	.38
Post	45.24	10.65	.64
Follow-up	50.94	7.20	1.38

Distress measured by DT, mood disturbance measured by DASS, quality of life measured by FACT, and psychological flexibility measured by AAQ-II. Subscripts following means denote significant differences between the time points (pre, mid, post, and follow-up) at $p < 0.05$ using a Bonferroni-corrected test. Means with different subscripts differ significantly, and means with the same subscripts do not differ significantly. For example, on the AAQ-II, pre differs significantly from mid, post, and follow-up, mid does not differ significantly from post but does differ significantly from follow-up, and post differs significantly from follow-up. Effect sizes are relative to pre-intervention baseline means.
DT, Distress Thermometer; DASS, Depression, Anxiety, and Stress Scale; FACT, Functional Assessment of Cancer Therapy; AAQ-II, Acceptance and Action Questionnaire II.

Exploratory process analyses

The AAQ-II was chosen as an ACT-consistent process measure because it was designed to assess psychological flexibility, a hypothesised primary process in ACT. The GLM repeated ANOVA was highly significant for the AAQ-II ($F(3,114) = 20.49$, MSE $= 53.54$, Eta-Squared $= .35$), with significant change from pre to mid and post, and continued significant improvement at follow-up (see Table 1 and Figure 1).

Regression analyses examined the relationship between earlier changes in the process measure and later changes in the outcome measures. Residual gain scores were used to control for both initial differences and measurement error inherent in the use of repeated measures [35,36]. Results showed no effect of pre to mid changes on the AAQ-II predicting mid to post changes on outcome measures (all $p > 0.1$). However, mid to post-changes on the AAQ-II did predict post to follow-up changes in quality of life ($\beta = 0.75$, $p < 0.001$), distress ($\beta = -0.43$, $p < 0.05$), and mood ($\beta = -0.44$, $p < 0.05$). This suggests that improvements in psychological flexibility from mid to post predicted improvements in all three symptom categories from post to follow-up, even after controlling for earlier changes in symptoms.

Discussion

This preliminary study examined the effectiveness of an ACT intervention at improving quality of life among
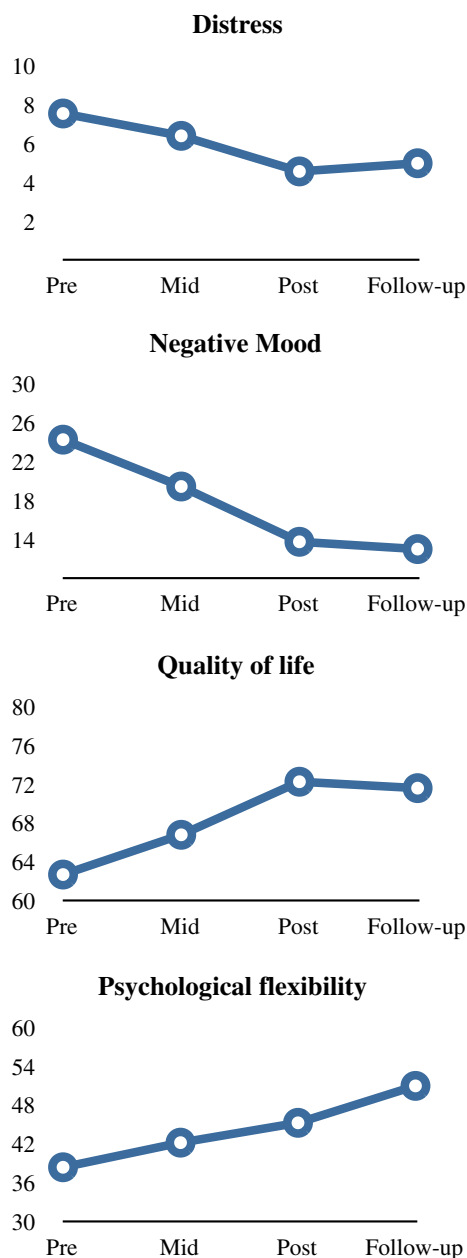
Figure 1. Means for measures at pre, mid, post, and at 3-month follow-up ($n = 45$)

individuals with cancer. Over the course of nine individual, ACT-based therapy sessions, participants reported significant improvements on measures of distress, mood disturbance, and quality of life. The findings revealed significant improvements from pre to post-intervention and 3-month follow-up. No significant differences were found from post-intervention to 3-month follow-up, suggesting that the improvements made over the course of the intervention were maintained at 3-month follow-up. The effect sizes obtained for improvements in distress and mood were large (ranging from .87 to 1.12) and compare favourably to the effect sizes reported in other studies of psychological interventions for cancer patients, such as CBT [7]. This study adds to previous research examining ACT for cancer patients [26,27] by providing outcomes for a diverse range of patients over the course of a nine-session intervention with 3-month follow-up data.

Psychological flexibility is a hypothesised primary process in ACT. Therefore, we examined the relationship between changes in psychological flexibility and changes in symptoms. First, the data revealed a significant increase in psychological flexibility as ratings of acceptance or avoidance of unpleasant thoughts and feelings on the AAQ-II, over the course of the intervention. Second, mid to post changes in psychological flexibility predicted post to follow-up changes in quality of life, distress, and mood. This suggests that improvements in psychological flexibility preceded improvements in all three symptom categories, even after controlling for earlier changes in symptoms. This finding supports the main premise of ACT that acceptance of distress leads to changes in well-being [8]. It is not clear from this study why psychological flexibility only predicted outcome measure changes from mid to post-intervention and not earlier. Nor does there appear to be any comparable data about why such a finding may arise. However, this lack of an early effect would need to be replicated before its reliability could be established.

There are several limitations worth noting. First, the sample size was small, which restricts the generalisability of results. Despite this limitation, significant results were obtained over the course of intervention with effect sizes comparable to those obtained in studies examining the effectiveness of CBT at improving quality of life among individuals with cancer [7]. Second, there was an absence of a control group. In future research studies, it would be important to examine the effectiveness of ACT against a treatment as usual group or an intervention already known to be effective for cancer patients. Third, the use of self-report measures may have led to socially desirable responding. Future research could incorporate behavioural measures, for example of valued living, and systematically examine participants' engagement in valued actions. Finally, it is acknowledged that simple attention could have explained some or all of the effects found, given the design of the study. However, it is noted that the effect sizes observed in this study compare well to those observed in CBT [7].

This study showed that an ACT-based intervention can yield significant results with large effect sizes for cancer patients. Further research in this field is encouraged, utilising a larger sample in a randomised controlled trial with more behavioural-oriented outcome measures.

Acknowledgements

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