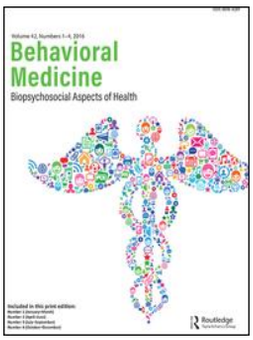

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REVIEW

Acceptance and Commitment Therapy in Cancer: Review of Applications and Findings

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ABSTRACT

This study aimed to analyze published studies regarding the usefulness of Acceptance and Commitment Therapy in the treatment of oncological patients. A systematic review of the literature was conducted using the Web of Science, Google Scholar and Dialnet (2000–2016). Nineteen articles fulfilled the inclusion criteria. Those patients who received interventions based on Acceptance and Commitment Therapy showed a better emotional state and quality of life and greater psychological flexibility. Acceptance and Commitment Therapy proved to be useful in the psychological treatment of oncological patients. However, the heterogeneity and limitations of the studies, principally with regard to sample characteristics, study design and manner in which mechanisms responsible for changes are evaluated, make further studies necessary with a view to ascertaining what patient and/or intervention characteristics might improve results. Randomized controlled trials comparing the efficacy of Acceptance and Commitment Therapy with no treatment, with treatment with placebo and with other efficacious therapies, including a study of medium- and long-term results, would be of particular interest.

KEYWORDS

Acceptance and Commitment Therapy; cancer; contextual therapies; emotional distress; psychological therapy

Introduction

In Europe, it is estimated that around 387 people out of every 100,000 are diagnosed with cancer every year.[1] A high percentage of these people undergo emotional difficulties. Depressive disorders are the most prevalent throughout the oncological process, with figures varying, depending on the study, from 3.7% to 49%.[2–4] These data underline the importance of possessing effective psychological interventions with which to address the emotional difficulties of this population. The oncological process has a series of implications which contribute to the high prevalence of emotional problems throughout the process. Of these, three are particularly noteworthy. The first is related to physical discomfort and the limitations and after-effects associated with the disease and treatment, which, in some cases, persist long after the oncological treatment has finished and in spite of a positive prognosis.[5] The second implication involves how the social context responds to the situation created by the disease. This response frequently encourages a reduction in involvement in activities (time off work and abandoning or delegating of everyday responsibilities) as a means of protecting the patient's health. The third implication is the unpleasant thoughts, emotions, sensations and memories experienced by patients as a result of the oncological diagnosis and treatment.

These implications increase the likelihood of patients abandoning or reducing their commitment to relevant and/or enjoyable activities during the oncological treatment or even after its completion. Discomfort and physical limitations may make it difficult to carry out activities in the same way as they were carried out before the disease.[6] Abandoning or delegating certain tasks in this way may provide relief in the short term but also reduces opportunities for contact with the more rewarding situations and worthwhile aspects of life. Similarly, it is common for people to attempt to avoid unpleasant internal experiences in order to alleviate the distress which these imply. This response, however, generates more distress[7] and distances people even more from all that is relevant to them.

Several studies into quality of life have found that during the treatment phase, oncological patients report numerous changes in everyday work, leisure, and domestic activities. Changes in relationships with friends and in leisure activities, in particular, have consistently been

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associated with a depressed emotional state, negative assessments of quality of life, tiredness, insomnia and pain. When treatment finishes, a gradual resumption of most everyday activities is observed, although this is always to a lesser degree in patients with a more severe state of depression.[6,8]

The oncological process, therefore, involves a situation characterized by a greater exposure to disease- and treatment-related adverse conditions and by a progressive behavioral inhibition which limits the possibilities of maintaining contact with rewarding and worthwhile situations of life. This situation explains the high prevalence of emotional difficulties throughout the oncological process and should orientate intervention.

Of the third wave Cognitive-Behavior Therapy interventions, Acceptance and Commitment Therapy (ACT) could be particularly appropriate for the treatment of emotional difficulties in oncological patients. This therapy is aimed at reducing or eliminating experiential avoidance and increasing patients' commitment to that which is of value to them.[9] The coincidence of the aims of ACT and the difficulties faced by oncological patients leads us to believe, as do other authors,[10] that it could be an ideal treatment for the emotional difficulties of such patients.

Given the possible usefulness of ACT in the treatment of emotional difficulties in oncological patients, the aim of this review is to study the results of previously-published studies involving different applications of this therapy with such patients.

Methods

A bibliographical search was carried out in Google Scholar, Dialnet and the following data bases of the Web of Science: Web of Science Core Collection, KCI-Korean Journal Database, MEDLINE, SciELO Citation Index. For the search in Google Scholar and the Web of Science, "acceptance and commitment cancer" were used as key words. In Google Scholar the search was limited to those studies with these terms in the title. In both data bases the search was limited to studies published between the years 2000 and 2016. Patents were excluded. In Dialnet, the terms "aceptación y compromiso cáncer" were used as key words. All publications in English and Spanish were reviewed.

Using these search criteria, 100 results were obtained, 52 of which dealt with topics related to ACT. Those containing results of interventions based on ACT applied to oncological patients were selected. Using these inclusion criteria as a basis, 19 articles were selected for the review. Figure 1 shows the selection process of the studies.

Results

The following sections analyze the designs, the characteristics of the samples, the experimental procedure, the results and the limitations of the studies reviewed. Table 1 shows the most important data of each of the articles.

Study designs

Of the studies reviewed, 10 were randomized controlled trials,[11,14,17,18,20,22–26] 5 were non-randomized trials,[12,16,21,28,29] 3 were case-studies,[15,19,27] and one was a case series study.[13] Five of the controlled randomized trials included pre- and post-evaluations,[14,17,20,25,26] one of them also included two evaluations during the therapy;[17] four included pre, post and a follow-up: of 1 month[11,22] and of 6 months;[23,24] and one included pre, post and follow-ups of 3, 6, and 12 months.[18] Four non-randomized trials included pre, post and at least one follow-up,[12,16,28,29] the maximum being of 3 months. Both the case series study and the case studies included follow-ups. In two of these, the follow-ups were over a longer period, 6[27] and 12 months.[15]

The ACT was compared to a control group[11,14,20,22,25,26] or to a different type of intervention[17,18,23,24] in the randomized controlled trials. In one non-randomized study, the comparison was with a waiting list control group.[28]

Samples

Size and disease-related data

The studies reviewed include single-case studies (e.g.,[15]), studies with small samples (e.g.,[28]), and others with more numerous samples (e.g.,[23]), albeit modest ones in most cases (e.g.,[12]). Those studies published in recent years are, in general, the ones which use larger samples. In all studies except one,[11] the participants were adults.

The type of disease and clinical situation of the patients vary from one study to another and not all the studies offer complete information regarding these factors. The majority of the studies were carried out with patients diagnosed with breast cancer without metastasis. In several studies the patients had finished oncological treatment,[12–15] whilst in the studies of Feros and colleagues[16] and of Rost and associates,[17] 51.1% and 100% of the patients respectively were undergoing oncological treatment at the time of the study.

Presence of emotional difficulties and consumption of psychotropic drugs

The participants in several studies suffered from clinically significant emotional distress.[12,13,15,18,19] In some of them, this fact had been the selection criterion

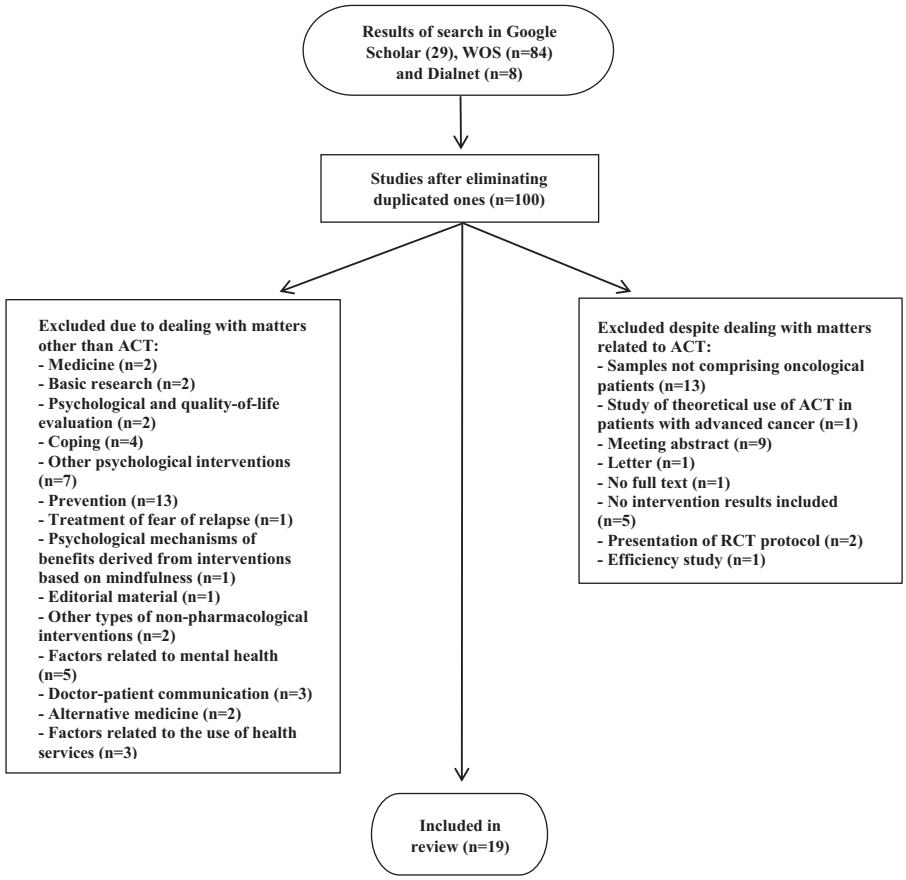

Figure 1. Flow diagram of selection process of studies for review.

for the sample.[12,13,18] In only one study[15] is any reference made to consumption of psychotropic drugs.

Evaluation

As can be seen in Table 1, the different studies largely coincide with regard to evaluation variables and result criteria, to the measures employed and to when these were applied. The variables which were most frequently evaluated were depression, anxiety, general distress, quality of life and psychological flexibility, the latter referring to "the ability to contact the present moment more fully as a conscious human being, and to change or persist in behavior when doing so serves valued ends."[30(p7)] In line with the ideographic and contextual character of ACT, the data used were gathered using observation and both self-report and standardized scales. The most frequently used standardized scales were the Beck Depression Inventory-II (BDI-II),[13,14,17,19,22,26] the Stait-Trait Anxiety Inventory (STAI),[12,13,19] the Beck Anxiety Inventory (BAI),[14,17,25] the Hospital Anxiety and Depression Scale (HADS),[15,18,19,28] the Functional Assessment of Cancer Therapy (FACT)[13,15–18,24] and the Acceptance and Action Questionnaire (AAQ).[13,16,19,22,24,29] Most of the studies included pre-evaluation, post-evaluation and at least one follow-up.

Characteristics of the psychological interventions

All of the interventions studied were brief, of between one and fourteen sessions, and all except six[11,12,18,20–22] were applied to patients individually. The frequency of the sessions, in those studies where such information is given, varied between two sessions a week and one every two weeks.

In general, the interventions aimed to deactivate the avoidance of unpleasant private experiences related to the cancer, to encourage the alternative of accepting such events, to identify important personal values and promote a commitment to actions in accordance with those values. The most commonly used therapeutic strategies were experiential exercises, metaphors, reflexion, discussion and tasks to be done at home.

Two of the studies contained particularly distinctive features. The study carried out by Montesinos and Páez[21] focused on difficulties regarding sexuality and included, apart from the ACT-based intervention, an informative session and training and practice in procedures aimed at promoting physical contact between the

Table 1. Data of review of studies dealing with interventions based on ACT applied to oncological patients.

Study	Design	Objective	N	Cancer type	Cancer stage	Measures	Moments of evaluation	Group formation criteria	Treatment conditions	N° of sessions (frequency, duration)	Results	Limitations
Arch and Mitchell (2016)	Non-randomized trial	To assess the acceptability, feasibility and efficacy of a group intervention designed to address the psychological needs of cancer patients experiencing anxiety during the transition from cancer patient to post-treatment cancer survivor	42	– Breast (n = 25) – Gastrointestinal (n = 6) – Gynecologic (n = 4) – Leukemia/ Lymphoma (n = 3) – Other (n = 4)	I, II, III, IV	– STAI – PHQ-4 – 0–10 analogue scale regarding current anxiety about cancer – CES-D – Physical pain and vitality (RAND SF-36) – CARS – IES-R – OLQ – Cancer Acceptance and Action Cancer Questionnaire – 1–5 analogue scale regarding the usefulness of each session	Three baseline points-Mid-Post-FU (3 m.)	Na	ACT	7 (weekly, 2 hours)	– Anxiety (STAI) declined following the group through Post (p<.001, d = .75) and FU (p<.001, d = 1.00) – Depression (CES-D) declined following the group through Post (p<.001, d = .78) and FU (p<.001, d = .95) – Fear of cancer recurrence (CARS) decreased through Post (p<.05, d = .34) and FU (p = .001, d = .66) – Physical pain (RAND SF-36) decreased through Post (p = .05, d = .36) and FU (p<.01, d = .54) – Trauma symptoms related to cancer (IES-R) diminished at Post (p = .001, d = .58) and FU (p<.001, d = .84) – Vitality (RAND SF-36) increased during baseline (p = .01, d = .29), from baseline to Post (p = .001, d = .52) and FU (p<.001, d = .77) – Sense of life meaning (OLQ) increased from baseline to Post (p<.001, d = .38) and FU (p<.001, d = .49) – Comprehensibility (OLQ) increased from baseline to Post (p = .02, d = .32) and FU (p<.001, d = .61) – Manageability (OLQ) increased from baseline to Post (p = .05, d = .21) and FU (p = .003, d = .37) – Increases in cancer-related psychological flexibility (Cancer Acceptance and Action Cancer Questionnaire) predicted subsequent improvement on 6 of 9 outcomes – Participants who screened positively versus negatively for depression benefitted similarly – High degree of satisfaction with sessions (M = 4.35, SD = .68; 5 = extremely valuable)	– Modest sample – Absence of a C.G. – Sample made up mainly of women (92.86%)
Asadi, Ghojavand and Abedi (2016)	RCT	To determine the impact of consulting based on acceptance and commitment on reducing anger among children and adolescents with cancer	30	NA	NA	– Nilsson Demographic and Children's Anger Inventory	Pre-Post-FU (1 m.)	Random	– C.G.: a meeting without offering a solution (n = 15) – E.G.: medical consulting based on acceptance and commitment (n = 15)	3 (NA, 2 hours)	Anger component: C.G.>E.G.; effect of time, consultation and interaction between time and consulting were significant (p<.01)	– Modest sample – Limited description of intervention – Absence of FU in medium-long term – Absence of measures of psychological flexibility

Datta, Aditya, Chakraborty, Das and Mukhopadhyay (2016)	Non-randomized trial	To examine the effect of ACT on stress, quality of life, meaning of life, and acceptance level	55	NA	Not terminally ill cancer patients	– PSS – WEMWBS – MLQ – AAQ-II	Pre (before giving ACT)-Post-FU (2 m.)	Na	Stress management + ACT	6: 2 stress management (monthly, 40′) + 4 ACT (two-weekly, 40–45′)	– Acceptance (AAQ-II, p = .00) and meaning of life (MLQ, p = .02) improved in FU	– Absence of a C.G. – Some patients received both interventions and others only ACT
Montesinos and Luciano (2016)	Non-randomized trial	To evaluate the effects of a brief version of ACT in breast cancer patients	15	Breast	I,II	– HADS – AP subscale (MINIMAC) – IBQ – Subjective Scales: fear of recurrence in terms of its intensity and interference with valued actions, frequency of valued actions, degree of satisfaction with these valuable actions, degree of usefulness of exposure strategies practiced in session and when carrying out valuable actions, difficulty to practice these strategies	Pre-Post-FU (1 and 3 m.)	Not random	– C.G.: waiting list (n = 7, n final = 4) – E.G.: ACT (n = 8)	1 (1 hour)	– E.G.: Decrease in intensity (subjective scale; Pre-FU 3 m.; p = .017) and interference of fear of relapse (subjective scale; Post, p = .043; FU 1 m., p = .018; FU 3 m., p = .012), emotional distress (HADS; FU 1 m., p = .027) and AP (MINIMAC; Post, p = .035; FU 3 m., p = .016) – FU 3 m.: E.G.<C.G. in intensity (p = .048) and interference (p = .008) of fear of relapse (subjective scales) – Large effect size (.82<d<2.47): intensity and interference of fear of relapse (subjective scales) and AP (MINIMAC) in FU 1 and 3 m., distress (HADS) and hypochondria (IBQ) in FU 1 m. – Percentage of EG patients with emotional distress (HADS): 100% (Pre), 62% (Post), 50% (FU 3 m.) – Percentage of EG patients with hypochondria of clinical intensity (IBQ): 62% (Pre), 37% (Post y FU 3 m.) – Percentage of EG patients with clinically significant AP (MINIMAC): 50% (Pre), 12% (FU 3 m.) – FU 3 m.: all EG patients showed a medium (37%) or high (62%) increase in frequency of valuable actions compared to the pre (subjective scales)	– Limited sample size – Not random – Different size and time from diagnosis of groups – Absence of Post and FU 1 m. measures in C. G.
Pérez and Uribe (2016)	Case-study	To present the psychological intervention using the ACT model in a patient with breast cancer	1	Breast	II	– Interview – Evaluation of conduct in the surgery – Self-reports – BDI-II – HADS – STAI – AAQ – Register of distress and valuable actions – Narrative values form – Values questionnaire	Pre-sessions 4 and 8-Post	Na	ACT	14	– BDI-II: Pre>Post (p<.001) – STAI-R: Pre>Post (p = .04) – STAI-E: Pre>Post (p = .02) – HAD-A: Pre>Post (p = .001) – HAD-D: Pre>Post (p<.001) – Self-reports: reduction in interfering thoughts and in avoidance behavior, increase in non-interfering thoughts and value-related behavior	– Study design – Lack of FU periods – No information regarding AAQ is given

(*Continued on next page*)

Table 1. (*Continued*)

Study	Design	Objective	N	Cancer type	Cancer stage	Measures	Moments of evaluation	Group formation criteria	Treatment conditions	N° of sessions (frequency, duration)	Results	Limitations
Esmali and Alizadeh (2015)	RCT	To determine the effectiveness of group psychotherapy based on acceptance and commitment on increasing of mental health and the quality of patients' life with breast cancer	30	Breast	NA	– QOL_BR23 – GHQ	Pre-Post	Random	– C.G. (n = 15) – E.G. (ACT) (n = 15)	8 (in 4 weeks, 90′)	– Significant differences between groups in favor of the E.G. in: depression (GHQ; F = 7.137, p<.015), social function (GHQ; F = 14.223, p<.001), anxiety (GHQ; F = 18.690, p<.001), physical function (GHQ; F = 14.219, p<.001), social health (QOL_BR23; F = 8.130, p<.001), physical health (QOL_BR23; F = 19.965, p<.001), total score of mental health (GHQ; F = 42.887, p<.001) and total score of quality of life (QOL_BR23; F = 16.788, p<.001)	– Lack of FU periods – Absence of psychological flexibility measures
Kangas, McDonald, Williams and Smee (2015)	Case series study	To teste an ACT-based (manualized) therapy program specifically tailored to assist clinically distressed adult BT survivors to reduce their anxiety and depression	4	Brain	NA	– SCID-DSM—MDD – SCID-DSM—anxiety disorder(s) – STAI – BDI-II – AAQ-9 – FACT-G – total score – FACT – BT subscale – Dichotomous question about additional stress since last assessment – Ratings of sleep quality – Analogue scale regarding expected benefits from program	Pre-Post-FU (1 and 3 m.)	Na	BT-ACT program	8: 6 (weekly, 90′) + 2 (two-weekly, 90′)	– Post and FU: Three participants no longer met criteria for anxiety (SCID-DSM—anxiety disorder/s) or depression (SCID-DSM—MDD) and showed improvements in all measures (STAI, BDI-II, AAQ-9, FACT-G – total score, FACT – BT subscale, ratings of sleep quality) – Expected benefits from program: range 6–10 (higher scores greater perceived benefits on 1–10 analogue scale)	– Study design
Mohabbat-Bahar, Maleki-Rizi, Akbari and Moradi-Joo (2015)	RCT	To examine the effects of group training based on ACT on anxiety and depression in women with breast cancer	30	Breast	I, II, III	– BAI – BDI-II	Pre-Post	Random	– C.G. – E.G. (ACT)	8 (in 4 consecutive weeks, 90)	Anxiety (BAI) and depression (BDI-II) symptoms: – E.G: Pre>Post (p<.05) – Post: C.G.>E.G. (p = .00)	– Convenience sampling method – Sociodemographic variables were not taken into account (e.g. occupation) – Lack of FU periods – The characteristics of the CG are not specified – Absence of psychological flexibility measures

Najvani, Neshatdoost, Abedi and Mokarian (2015)	RCT	To examine the effect of ACT on depression and psychological flexibility in women with breast cancer	16	Breast	I, II, III	– Checklist of surveying age, disease duration, education level – BDI-II – AAQ-II	Pre-Post-FU (1 m.)	Random	– C.G. (n = 8) – E.G. (ACT) (n = 8)	8 (weekly, 2 hours)	– Depression (BDI-II): E.G.<C.G. (p<.001) – Psychological flexibility (AAQ-II): E.G.>C.G. (p<.001) – Depression (E.G.): Pre>Post, Pre>FU (p<.01); Post>FU (p < .05. – Psychological flexibility (E.G.): Pre<Post, Pre<FU, Post<FU (p< .01)	– Absence of clinical interview for depression diagnosis – Absence of medium/long-term FU
Gholamhosseini and Mojtabaie (2014)	RCT	To determine the effectiveness of ACT to reduce the symptoms of anxiety in women with breast cancer	30	Breast	NA	– Clinical interview – BAI	Pre-Post	Random	– C.G. (n = 15) – E.G. (ACT) (n = 15)	– C.G.: did not receive any intervention – E.G.: 8 (45–60)	– Anxiety (BAI): E.G.<C.G. (p = 0.00, F = 84.99) – Eta squared = .594	– Lack of FU periods – Absence of psychological flexibility measures
Hawkes, Pakenham, Chambers, Patrao and Courneya (2014)	RCT	To describe the effect of a multiple health behavior, change intervention for colorectal cancer survivors on psychosocial outcomes and quality of life	410	Colorectal	No metastatic disease	– Posttraumatic Growth Inventory* – FACIT-Sp – AAQ-II – MAAS – BSI-18 – FACT-C version 4 – Study-specific self-administered questionnaire to assess intervention satisfaction and quality of study materials	Baseline-6 m. (Post)-12 m. (FU)	Random	– HC (n = 205) – UC (n = 205): received four freely available educational brochures produced by Cancer Council Australia on understanding colorectal cancer and cutting cancer risk, diet, and PA, and a quarterly study newsletter to enhance participant retention	– HC: 11 (10 two-weekly, final session 1 m. afterwards)	– Posttraumatic growth*: HC>UC (6 m., p<.001; 12 m., p<.05) – Posttraumatic growth-new possibilities*: HC>UC (6 m., p<.001; 12 m., p<.05) – Posttraumatic growth-relating to others*: HC>UC (6 m., p<.001; 12 m., p<.05) – Posttraumatic growth-appreciation of life*: HC>UC (6 m., p<.01) – Posttraumatic growth-personal strength*: HC>UC (6 m., p<.05) – Spirituality (FACIT-Sp): HC>UC (6 m., p<.05) – Spirituality-faith (FACIT-Sp): HC>UC (6 m., p<.01) – Acceptance (AAQ-II): HC>UC (6 m., p<.01) – Cancer-specific quality of life-physical well-being (FACT-C): HC>UC (6 m., p<.05; 12 m., p<.05) – Significant indirect effects of the ACT processes (acceptance and mindfulness (MAAS)) for the 6-month changes in posttraumatic growth, spirituality and quality of life (physical well-being) – High satisfaction with intervention and with materials – UC: acceptance 12 m.>Pre (p<.01); mindfulness 6 m.>Pre, 12 m.>Pre (p<.05)	– Bias of self-report measures – Data were collected by telephone interview which limited the possibility of collecting objective biomedical data – Intervention satisfaction data were only available for 68% of the participants – Did not investigate theeffect of the remaining ACT processes – Made multiple comparisons for study outcomes at the level of $\alpha = .05$. Consequently, it is possible that false positives occurred by chance
Mojtabaie and Asghari (2014)	RCT	To determine the effectiveness of ACT to reduce the symptoms of depression in women with breast cancer	30	Breast	NA	– Clinical interview – BDI-II	Pre-Post	Random	– G.C. (n = 15) – G.E. (n = 15)	– C.G.: did not receive any intervention – E.G.: 8 (45–60)	– BDI-II post: G.E.<G.C. (p = .000, F = 84.991; Eta squared = .759)	– Lack of FU periods – Absence of psychological flexibility measures

(*Continued on next page*)

Table 1. (*Continued*)

Study	Design	Objective	N	Cancer type	Cancer stage	Measures	Moments of evaluation	Group formation criteria	Treatment conditions	N° of sessions (frequency, duration)	Results	Limitations
Feros, Lane, Ciarrochi and Blackledge (2013)	Non-randomized trial	To examine the effectiveness of an ACT intervention among cancer patients	45	– Breast (48.9%) – Other cancers: genitourinary, head and neck, lymphoma, lung, and stomach	– 51.1% under cancer treatment – 11.1% advanced disease	– DT – DASS – FACT – AAQ-II	Pre-Mid-Post-FU (3 m.)	Na	ACT	9 (weekly, 45)	– Distress (DT), mood (DASS) and quality of life (FACT) significantly improved from pre to post and from pre to FU – Significant improvement from pre to mid for mood (DASS) – Effect sizes: large (>.8) for distress (DT) and mood (DASS), medium (.50) on quality of life (FACT) – DASS: Pre: 41%, 38.5% and 46.2% of participants having normal levels of depression, anxiety and stress, respectively. FU: The percentages increased to 90.0%, 68.2% and 86.4%, respectively – AAQ-II: significant change from pre to mid, post, and FU, from mid to FU, and from post to FU – Mid to post changes on the AAQ-II did predict post to FU changes in quality of life (FACT; $\beta = .75$, p<.001), distress (DT; $\beta = .43$, p<.05) and mood (DASS; $\beta = .44$, p<.05)	– Sample size small – Absence of a C.G. – Bias of self-report measures
Hawkes et al. (2013)	RCT	To determine the effects of a telephone-delivered multiple health behavior change intervention for colorectal cancer survivors on health outcomes	410	Colorectal	No metastatic disease	– Modified version of the leisure score index of the Godin Leisure-Time Exercise Questionnaire – Short Form–36 – 13-item Functional Assessment of Chronic Illness Therapy Fatigue Scale – BMI – Cancer Council Victoria Food Frequency Questionnaire – Current smoking status	Baseline-6 m. (Post)-12 m. (FU)	Random	– HC (n = 205) – UC (n = 205): same intervention as in Hawkes et al. (2014)	– HC: 11 (10 two-weekly, final session 1 m. afterwards)	– FU: significant intervention effects for moderate PA (28.5 minutes per week; p = .023) – To meet Australian PA recommendations: HC>UC (16.4% v 9.2%; p = .047) – Intervention effects for: BMI at 6 (−0.5 kg/m2; p = .035) and 12 m. (−0.9 kg/m^2; p = .001); dietary intake, including: total fat at 6 (−8.5%; p = .001) and 12 m. (−7.0%; p = .006), saturated fat at 6 (−3.5%; P = .002) and 12 m. (−2.8%; p = .016), and vegetables at 6 m. (0.4 servings per day; p = .001)	– Bias of self-report measures – Participants were not blinded to study condition – Made multiple comparisons for study outcomes at the level of $\alpha = .05$, so it is possible that false positives occurred by chance
Rost, Wilson, Buchanan, Hildebrandt and Mutch (2012)	RCT	To gather preliminary data on the efficacy of ACT and to compare its effects to that of a TAU	47	Ovarian	III, IV	– Demographic questionnaire – BDI-II – BAI – CECS – WBSI – COPE – FACT-G	Pre-sessions 4, 8 and 12	Random	– TAU: commonly used cognitive and behavioral components – ACT	12 (1 hour, over the course of a 4-m. period)	– POMS Distress measure: ACT<TAU (t (42.73) = 2.49, p = .017, effect size = .89) – FACT Total measure: ACT>TAU (t (32.85) = 3.40, p = .002, effect size = 1.35) – Acceptance (COPE): ACT>TAU (t (43.05) = −5.17, p<.001, effect size = 2.02) – Mental Disengagement (COPE): ACT<TAU (t(46.26) = 9.01, p<.001, effect size = 3.49) – CECS: ACT<TAU (t(37.76) = 11.03, p<.001, effect size = 6.11) – WBSI: ACT<TAU (t(35.87) = 6.70, p<.001, effect size = 3.02)	– One therapist in conducting both interventions – Limited quality of treatment integrity checks – Failed to include any measures of social validity and acceptability of treatment – Lack of FU periods

											– BAI: ACT<TAU (t(20.63) = −2.90, p = .009, effect size = 1.26) – BDI-II: ACT<TAU (t(34.87) = 2.67, p = .012 effect size = 1.69), – Changes in mental disengagement and planning (COPE) mediated the changes in distress and quality of life – TAU: increase in mental disengagement (t(44.76) = 5.95, p<.001, effect size = 1.66), emotional control (t(37.20) = 5.94, p<.001, effect size = 2.36) and thought suppression (t(36.15) = 3.32, p = .002, effect size = 1.06) over time; improvements in anxiety (t(19.83) = −3.75, p = .001, effect size = 1.25) and depression (t(35.01) = −3.75, p = .001, effect size = 1.59) over time	
Karekla and Constantinou (2010)	Case-study	– To explore religious coping and its dimensions – To examine and critique current methods of assessing religious coping – To present an ACT approach to the psychological treatment of individuals suffering from cancer	1	Breast	NA	– VLQ	Intervention-Post-FU (3 and 6 m.)	Na	ACT	8 (in the span of 4 m.)	Post, FU (3 and 6 m.): verbalizations reflecting level of satisfaction with life, commitment to value-related actions and perception of intervention usefulness	– Study design – Qualitative information
Montesinos and Páez (2008)	Non-randomized trial	To show a preliminary experience	8 cancer patients and their partners	Breast	No metastatic disease	– Participants verbalizations register – Self-report regarding level of satisfaction with intervention	Intervention-Post	Na	Informative session + workshop (psychological intervention based on ACT, training and practice in procedures to promote physical contact)	2 (weekly; 1st: 2 hours, 2nd: 7 hours)	– Satisfaction with partner's participating (0–10): 10 – Satisfaction with activities carried out (0–10): 10 – Willingness to work on these aspects more thoroughly (0–10): patients:10; partners: 9	– Reduced number of participants – Lack of FU periods. – Absence of standardized instruments
Páez, Luciano and Gutiérrez (2007)	RCT	To compare the effect of an ACT protocol with another based on TCC	12	Breast	NA	– HADS – FACT-B – Values questionnaire	Pre-Post-FU (3, 6 and 12 m.)	Random	– ACT (n = 6) – CT (n = 6)	8 (weekly): 2 individual (1 hour), 5 group (90), 1 individual (1 hour)	ACT: – Valuable areas affected: Pre>Post, Pre>FU 12 m. (p<.05) – Anxiety (HADS), depression (HADS) and quality of life (FACT-B): Pre>FU 12 m. (p<.05) CT: – Valuable areas affected and depression (HADS): Pre>Post, Pre>FU 12 m. (p<.05) ACT-CT: – Valuable areas affected FU 12 m.: ACT<CT (U = 3.00, p = .015)	– Limited sample size – Relatively biased sample (participants taken from a cancer patients association)

(*Continued on next page*)

Table 1. (*Continued*)

Study	Design	Objective	N	Cancer type	Cancer stage	Measures	Moments of evaluation	Group formation criteria	Treatment conditions	N° of sessions (frequency, duration)	Results	Limitations
Montesinos, Hernández and Luciano (2001)	Case-study	To show the application possibilities and efficacy of ACT in cancer patients with TEA	1	Breast	Survivor (disease-free after completing treatment)	– Semi-structured interview – FACT-G – MINIMAC – HADS – CTASS – Diary	Pre-Intervention-FU (15 days, 1, 2.5, 4.5, 7.5 and 12 m.)	Na	ACT	12 (weekly, 1 hour)	– Decrease in anxious preoccupation (verbalizations, MINIMAC) – Increase in acceptance (verbalizations) – Elimination of use of tranquilizers – Decrease in anxiety and depression (HADS) – Patient information: decrease in avoidance and increase in value-related actions	– Study design

Note. Na: not applicable. NA: not available. STAI: State-Trait Anxiety Inventory. PHQ-4: 4-item Patient Health Questionnaire for Anxiety and Depression. CES-D: Center for Epidemiological Studies Depression Scale. RAND SF-36: RAND 36-Item Health Survey 1.0. CARS: Adapted version (for all cancer types) of the Overall Fear Scale from the Concerns about Recurrence Scale. IES-R: Revised Impact of Events Scale. OLQ: Orientation to Life Questionnaire. m.: month/s. Mid: Mid-intervention. C.G.: Comparison Group. RCT: Randomized Controlled Trial. E.G.: Experimental Group. HADS: Hospital Anxiety and Depression Scale. AP: Anxious Preoccupation subscale of MINIMAC. MINIMAC: abridged version of Mental Adjustment to Cancer Scale. IBQ: Illness Behaviour Questionnaire. BDI-II: Beck Depression Inventory-II. PSS: Perceived Stress Scale. WEMWBS: Warwick-Edinburgh Mental Well-being Scale. MLQ: Meaning of Life Questionnaire. AAQ-II: Acceptance and Action Questionnaire II. QOL_BR23: questionnaire of Quality of Life for patients with breast cancer. GHQ: B-Goldberg mental Health Questionnaire. SCID-DSM—MDD: structured clinical interview of the Diagnostic and Statistical Manual for Mental Disorders—major depressive disorder. SCID-DSM—anxiety disorder(s): structured clinical interview of the Diagnostic and Statistical Manual for Mental Disorders—anxiety disorder(s). AAQ: Acceptance and Action Questionnaire. FACT-G: Functional Assessment of Cancer Therapy scale—General. FACT − BT: Functional Assessment of Cancer Therapy scale—Brain Tumour. BAI: Beck Anxiety Inventory. FACIT-Sp: Functional Assessment of Chronic Illness Therapy–Spiritual Well-being module. MAAS: Mindful Attention Awareness Scale. BSI-18: Brief Symptom Inventory. FACT-C: Functional Assessment of Cancer Therapy-Colorectal. HC: Telephone-based health coaching intervention. UC: Usual care. DT: Distress Thermometer. DASS: Depression, Anxiety, and Stress Scale. FACT: Functional Assessment of Cancer Therapy. BMI: body mass index. PA: physical activity. POMS: Profile of Mood States. CECS: Courtland Emotional Control Scale. WBSI: White Bear Thought Suppression Inventory. TAU: treatment as usual. VLQ: Valued Living Questionnaire. FACT-B: Functional Assessment of Cancer Therapy- Breast. CT: Cognitive Therapy. TEA: Trauma of experiential avoidance. CTASS: Cues for Tension and Anxiety Survey Scale. Pre: pre-treatment. Post: post-treatment. FU: follow-up.

couple. In the studies carried out by Hawkes and colleagues,[23,24] the intervention included telephone-delivered health coaching sessions, a participant handbook, regular motivational postcards, a pedometer, and a quarterly study newsletter sent to usual care participants. The telephone sessions addressed the cancer experience, colorectal cancer-related symptoms, specific ACT processes in relation to lifestyle behaviors, strategies to enhance improvement in health behaviors and individual goals. Intervention techniques included ACT strategies, problem solving, action planning/goal setting, as well as reviewing and ongoing monitoring of health behaviors.

Facilitators and supervision

Four studies offer information regarding the professionals who carried out the interventions. In the study by Arch and Mitchell,[12] the groups were jointly conducted by a clinical psychologist with 10 years of experience with ACT and an experienced oncology social worker trained in ACT. In the study carried out by Hawkes et al.,[23] the health coaches had university degrees in nursing, psychology, or health promotion and at least 5 years of experience in the field. They also received study-specific training. In the study published by Rost et al.,[17] both interventions were carried out by a therapist, whilst in Páez et al.[18] each of the protocols was applied by a different psychologist, both with equivalent training in the therapy being implemented. In the study by Montesinos and associates[15] sessions were carried out by a therapist with clinical experience in private practice and experience in ACT as a co-therapist. Three of the studies,[12,15,23] also refer to the carrying out of supervision sessions.

Intervention results

Anxiety

Several studies report significant improvements in anxiety in the post-evaluation[12,14,17,19,20,25] and follow-ups (3[12] and 12 months[18]) in comparison to the pre-evaluation. Anxiety was evaluated using the STAI,[12,19] the BAI,[14,17,25] the HADS[18,19] and the B-Goldberg mental Health Questionnaire (GHQ).[20]

Depression

In depression, the studies also report significant improvements in the post-evaluation[12,14,17,19,20,22,26] and follow-ups (1[22], 3[12] and 12 months[18]). Depression was evaluated using the Center for Epidemiological Studies Depression Scale,[12] the BDI-II,[14,17,19,22,26] the HADS[18,19] and the GHQ.[20]

A further two studies also found improvements in anxiety and depression although they do not reflect statistical analysis results due to the limitations of the study designs. In anxiety, improvements were found in the post-evaluation[13] and in the follow-ups after 1,[13,15] 2.5,[15] 3,[13] 4.5 and 12 months.[15] In the case of depression, improvements were found in the post-evaluation[13] and in the follow-ups after 15 days,[15] 1,[13,15] 2.5,[15] 3,[13] 7.5, and 12 months.[15] In one of these studies,[15] anxiety and depression were evaluated using the HADS. In the other,[13] anxiety was evaluated using the STAI and the structured clinical interview of the Diagnostic and Statistical Manual for Mental Disorders—anxiety disorder(s). Depression was evaluated using the structured clinical interview of the Diagnostic and Statistical Manual for Mental Disorders—major depressive disorder and the BDI-II.

Emotional distress

The studies report significant improvements in emotional distress in the post-evaluation[16,17,20,28] and 3-month follow-up.[16,28] In these studies, emotional distress was evaluated using the Distress Thermometer,[16] the Depression, Anxiety, and Stress Scale,[16] the Profile of Mood States,[17] the GHQ[20] and the HADS.[28]

Quality of life

The studies report significant improvements in quality of life in the post-evaluation[16,17,20,24] and follow-ups of 3,[16] 6[24] and 12 months.[18] In these studies, quality of life was evaluated using different versions of the FACT[13,16,17,18,24] and using the questionnaire of Quality of Life for patients with breast cancer.[20] In the study carried out by Kangas and coauthors[13] an improvement in quality of life was also found in the post-evaluation and in the 1- and 3-month follow-ups, although, as with anxiety and depression, the results are of purely descriptive value.

Psychological flexibility

There was also found to be an increase in psychological flexibility following the intervention in the post-evaluation[12,13,15–19,22,24,27,28] and follow-ups (15 days,[15] 1,[13,15,22,28] 2,[29] 2.5,[15] 3,[12,13,16,27,28] 4.5,[15] 6[27] and 12 months[15,18]). Psychological flexibility was evaluated using the Orientation to Life Questionnaire,[12] different versions of the Acceptance and Action Questionnaire,[13,16,22,24,29] self-reports,[15,19,27,28] the Courtland Emotional Control Scale,[17] the White Bear Thought Suppression Inventory,[17] the COPE,[17] which assesses general strategies of coping, the Values questionnaire,[18] the Mindful Attention Awareness Scale,[24] the abridged version of Mental Adjustment to Cancer Scale[15,28] and the Meaning of Life Questionnaire.[29]

In some studies that included follow-up measures, certain improvements were shown only during the follow-up[15,18,29] while, in other cases,[12,16,22,28] improvements during the follow-up were a continuation of those registered during the treatment. When interventions based on ACT are compared to a control group or to an intervention of a different type, ACT shows better results.[11,14,17,18,20,22–26] With regard to the mechanisms responsible for the changes, several studies find that the changes in the processes of psychological flexibility mediate the changes in emotional difficulties and in quality of life.[12,16,17,24]

Intervention adherence

Two studies contain information regarding adherence. In the study published by Arch and Mitchell,[12] all participants attended at least one group session and the median attendance was 6 out of 7 sessions. Hawkes et al.[23] report that 72.2% of participants received all 11 telephone sessions. The median number of sessions was 10.

Satisfaction with the intervention

Satisfaction was evaluated in three studies.[12,21,24] In all of them, the participants expressed a high degree of satisfaction.

Limitations

One of the limitations of the studies reviewed is related to the characteristics of the sample. In several studies the sample size is small. Other studies use larger samples but principally consisting of patients diagnosed with breast or colorectal cancers without metastases, thus limiting the degree to which results can be generalized.

Other limitations are those related to the design of the study. Several papers are based on single-case studies, others have no control group and few include medium/long-term follow-ups. Only two studies compare ACT to a different type of therapy, to cognitive therapy in the case of Páez and colleagues[18] and to cognitive-behavioral therapy in the case of Rost and associates.[17]

Despite the importance of identifying the mechanisms responsible for any changes which may occur, several of the studies revised applied multicomponent treatments or failed to evaluate changes in the supposed active principles of the treatment,[11,14,20,23–26] making precaution necessary when concluding what factors were responsible for the change. Other limitations in the evaluation process are the use of non-validated instruments[12] and of subjective measures[15,19,21,27,28] and the fact that only in one study[23] were evaluators blinded to the group assignment of the participants.

Regarding future studies, information regarding the proposed research protocols of two such studies[31,32] suggest that these may well overcome some of the previous limitations. In particular, these studies would address previous limitations regarding sample size, cancer type of participants and study design.

Discussion

The review was a comprehensive one in terms of the data bases consulted and the search criteria, terms and time period. Nineteen articles were found which dealt with the subject of the study, most of them published in the last few years. This increase in publications in recent years could be the result of a growing interest in the application of ACT for the psychological treatment of cancer patients.

The studies are heterogenic with regard to their design, sample characteristics, intervention aims and methodological rigor. This heterogeneity is understandable given that ACT is a relatively new therapy, especially regarding its application to oncological patients.

The limitations related to the design of the studies are particularly significant. Only one study analyses the efficacy of ACT in comparison to a different therapy which has proved useful in treating emotional problems in oncological patients,[17] and few studies compare the ACT results over a period of time or to other psychological-placebo interventions. Similarly, very few examine medium- and long-term effects. Despite the difficulties involved in achieving a representative sample size which is large enough to permit the use of a rigorous experimental design, in order to test the efficacy of ACT, it is necessary, as with any other therapy, to evaluate its superiority and specificity. In this sense, single-case studies are of particular interest. Whilst having limitations with regard to the generalization of results, they do appear to facilitate the analysis of potential therapeutic ingredients. Until now, those single-case ACT studies published, as well as providing information regarding the application of what is still a relatively recent therapy, coincide in showing, through observation and self-reports, the role played by experience avoidance conducts and commitment to worthwhile actions in the emotional state of oncological patients. Contextual therapies regard these same response patterns as being the defining conditions of psychological problems, and, in ACT, these patterns become therapeutic objectives. These single-case studies could therefore be said to show the therapeutic usefulness of ACT.

Similarly, it is important to point out that those studies which analyze the changes in the conditions treated during the intervention, observe an increase in the psychological flexibility of the subjects.[12,13,15–

[19,22,24,27–29] Some of these studies conclude that the changes in the scores of psychological flexibility predict the changes in emotional state and quality of life. It is important to point out that the majority of these studies focus on acceptance, and those which evaluate commitment to worthwhile actions do so mainly through subjective measures in single-case studies or studies using small samples. However, it is important to bear in mind that only two studies[12,23] contain information regarding participants' adherence to the therapy, thus reducing the possibility of attributing changes to the intervention.

Several studies compare ACT with a control group or with a different type of intervention. In all of them, ACT shows better results than the group to which it is compared. Nevertheless, the interventions carried out in the comparison group also achieve significant changes in distress, anxiety, depression and quality of life, albeit inferior to ACT. In two studies,[18,24] changes are found in conditions which, at least in principle, are not included in the objectives of the intervention, these being acceptance and mindfulness. This would suggest that interventions other than ACT also favor psychological flexibility. The changes in the group receiving cognitive-behavioral therapy in the study carried out by Rost and colleagues[17] were in the direction which was to be expected, with an increase in mental disengagement, in emotional control and thought suppression. These results raise two questions: firstly, what the exact therapeutic ingredients are and, secondly, to what extent the therapies are specific, in terms of their approach and procedure, in inducing the clinical change. Although analysis of therapeutic ingredients in Clinical Psychology is subject to ongoing debate, the analysis of the functionality of behaviors, which characterizes ACT and the other contextual therapies, would appear to be an ideal methodology for exploring the conditions on which psychological change depends. Whilst not ignoring the value of controlled studies, case studies are also of vital importance when analyzing the weight carried by each of the processes employed in ACT in the induction of clinical change and even whether the order in which they are introduced during the intervention has a differential effect on the clinical benefits obtained.

We believe that the analysis of the findings and limitations of published studies carried out in this review allows a precise evaluation of the contributions made by those studies and of the aspects of ACT which require further research. Nevertheless, limitations of our review would include how results may have been influenced by the publication bias and the possibility of having excluded studies of interest due to their having been published in languages other than English or Spanish.

Conclusions

Emotional difficulties are extremely common in oncological patients and for this reason it is vitally important that there exist psychological interventions which are effective in treating these difficulties. Although a number of psychological treatments have proved to be useful, the oncological process has a series of implications which make it necessary to review the suitability of these methods when applied to patients with cancer.

Amongst the different treatments, we consider that the contextual approach to psychological problems employed in ACT may make it a particularly useful treatment for oncological patients. All the studies reviewed, despite the heterogeneity of the experimental designs, report improvements in emotional state, quality of life and changes in psychological flexibility following the intervention. Furthermore, in those studies where such information is given, patients consider the intervention to be relevant and evaluate it positively. Although publications on the subject are limited in number and contain certain methodological shortcomings, the analysis of behavioral functionality appears to be able to make a vital contribution to identifying which patient and/or intervention characteristics could improve the results of the therapy.

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