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Evaluating the Effect of Acceptance and Commitment Therapy on Anxiety and Quality of Life in Stomach Cancer Patients

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Quantitative Study

Abstract

Background: Stomach cancer is one of the most common cancers and can cause psychological problems and negatively impact patients' lives. The present research evaluated the effect of acceptance and commitment therapy (ACT) on anxiety and quality of life (QOL) in stomach cancer patients.

Methods: The present semi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population consisted of 738 stomach cancer patients who visited Hiwa Cancer Hospital in Sulaymaniyah, Iraq, in 2022. Using simple random sampling, 150 people were selected and divided into two experimental and control groups (75 each). The Beck Anxiety Inventory (BAI; Beck et al., 1988) and SF-36 Quality of Life Questionnaire (Ware & Sherbourne, 1992) were used to collect data. The collected data were analyzed using the independent t-test, chi-square test, and analysis of covariance (ANCOVA) in SPSS software. The significance level was considered to be less than 0.05.

Results: The study findings showed that ACT had a significant effect on decreasing anxiety ($F = 130.91$; $P < 0.001$), and increasing QOL ($F = 110.01$; $P < 0.001$) in stomach cancer patients.

Conclusion: The results indicated that ACT affects the level of anxiety and the QOL of patients with gastric cancer and while reducing anxiety, it increases their QOL. Consequently, it is recommended that treatment personnel consider ACT as an effective psychological intervention in these patients.

Keywords: Stomach cancer; Acceptance and commitment therapy; Anxiety; Quality of life

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Introduction

Stomach cancer is the fourth most prevalent cancer in the world. The process of creating cancerous tissue in the stomach causes the spread of this cancer, which is classified as a multifactorial disease. The causes of this cancer are the presence of infectious, environmental, and genetic factors (Ghiglieri, Dempster, Wright, & Graham-Wisener, 2022). Patients with stomach cancer may experience a variety of mental disorders (Mosher et al., 2022).

Today, with the emergence and expansion of health psychology and positive psychology, attitudes toward disorders have moved beyond the medical framework, as a result, it has been found that individuals' environment and social relationships partly influence the single-factor model and the quality of their mental health (McKinnon, 2017). Acceptance and commitment therapy (ACT) has been proposed as an intervention for improving patients' mental health (Abow, Razak, Abulkassim, Adnan, Rahi, & Fadhil, 2022).

The first stage of the ACT method involves attempting to accept unwanted mental experiences without reacting to them (Wicksell, Olsson, & Hayes , 2011). The second step is to increase people's awareness in the present moment; this means that they become aware of their mental states, notions, and behaviors in the present moment. In the third step, people are taught to detach from negative mental experiences (cognitive detachment), which allows them to act independently of these experiences (Malmir, Jafari, Ramezanalzadeh, & Heydari, 2017). The fourth step is to reduce the person's mental focus on the self-image (cognitive defusing) or personal story, such as being a victim (Vowles, Witkiewitz, Sowden, & Ashworth, 2014). The fifth step is to assist the individual in identifying his/her major personal values, clearly defining them, and translating them into behavioral aims (value clarification). Finally, it creates motivation for committed action, activity aimed at specified goals and values, and acceptance of mental experiences, which can be depressing and anxiety-inducing in the sixth stage (Hajatnia, Tajeri, & Haji-Alizadeh , 2023).

One of the mental disorders caused by cancer is anxiety. Anxiety is characterized by fear and physical symptoms indicating increased autonomic activity (such as heart palpitations and sweating). Anxiety impairs cognitive function and causes perceptual distortions (Akbarinejhad & Faroughi, 2021). New experiences frequently trigger anxiety and can be perceived as a threat to one's identity and self-confidence. Anxiety combined with cancer increases the risk of death, lowers quality of life (QOL), causes functional disability, and raises medical care costs (Twohig, 2009).

Researchers attribute the emergence and spread of mental disorders to poor lifestyle choices and low QOL (Gueserse, Zali, Hassanzadeh, Hatami, & Ahadi, 2022). As a result, in treatment, one should strive to improve and change QOL, as well as to broaden capabilities and create satisfaction with life and well-being in individuals and societies. QOL is one of the most critical aspects of the general concept of mental health (He et al., 2019). According to previous research, two factors affect the QOL; the first is instrumental and reflects the living environment and family situation of the individual, and the second is communication and reflects the quality of interpersonal communication. These factors demonstrates the importance of different aspects of life in improving QOL, and it appears that this improvement should exist in all aspects of life (Maathz et al., 2023).

ACT, whose primary focus is on accepting the present circumstances and the content of thought, has been shown in studies to affect the physical aspect of QOL (Karimi & Aghaei, 2018). A person's assessment of his/her physical pain, need for

medical therapy, the energy to perform daily activities, satisfaction with his/her appearance, sleep, the ability to perform actions, and the ability to work are all physical dimensions of QOL. A person's cognitions, beliefs, and fundamental thoughts are crucial in determining her/his physical condition (Osborn, Demoncada, & Feuerstein, 2006). It is noteworthy that QOL is examined through the examination of the individual's conditions and physical dimensions (primary evaluation), and QOL is examined through the individual's evaluation of these conditions (secondary evaluation). As a result, ACT, whose primary focus is on changing one's beliefs and thoughts, can also impact the physical dimension and psychological assessment of the individual's QOL (Pujiastuti & Herwina, 2022).

Given the impact of cancer on the patient's psyche, it is critical to investigate all types of mental disorders. Assessing the effectiveness of non-pharmacological methods, such as psychological interventions, in these patients is also crucial. The present research evaluated the effect of ACT on anxiety and QOL in stomach cancer patients.

Methods

The current semi-experimental research was conducted using a pretest-posttest design and a control group. The statistical population consisted of 738 stomach cancer patients referred to Hiwa Cancer Hospital in Sulaymaniyah, Iraq, in 2022. Using simple random sampling, 150 people were chosen and divided into experimental and control groups (75 patients in each group). The inclusion criteria included interest in participating in the research, stomach cancer diagnosis confirmation by the hospital doctor for each participant, lack of intake of any psychiatric drugs, lack of participation in a similar therapeutic intervention in the previous year, and reading and writing literacy. The exclusion criteria included the presence of other psychological disorders in the patient, absence from more than two sessions, and lack of completion of questionnaires or presentation of incomplete questionnaires. The participants were assured that their identities would remain confidential to comply with ethical considerations. As can be seen in table 1, the participants in the experimental group participated in eight 90-minute ACT sessions (one session per week).

Data were collected using a demographic questionnaire, the Beck Anxiety Inventory (BAI; Beck et al., 1988), and the SF-36 Quality of Life Questionnaire (Ware & Sherbourne, 1992). The research participants completed these questionnaires during the pretest stage (before the start of the intervention) and the posttest stage (immediately after the end of the intervention). Finally, the values of the desired variables were compared between the two groups to evaluate ACT's effect on patients' anxiety and QOL.

The BAI includes 21 anxiety signs and symptoms. The participants should score these items on a 4-point scale ranging from 0 to 3 (never, mild, moderate, or severe). The total BAI score can range from 0 to 63, with higher scores indicating greater anxiety. The content validity of the BAI was 0.83, and its reliability, using Cronbach's alpha method, was 0.89 in the current research.

The SF-36 is used in clinical practice, health policy evaluation, and general population studies, among other things. This questionnaire measures concepts that are not age, group, or disease-specific. The SF-36 aims to assess the state of health, which is accomplished by adding the scores of the eight health domains.

Table 1. Description of acceptance and commitment therapy sessions

Session	Topic	Description
1	Psychoeducation and therapy goals	Introducing and explaining group work, general assessment and discussion of negative thoughts, feelings, and concerns of the participants, the nature and characteristics of anxiety, focusing on the goal of treatment and the therapist's commitment, performing concentration exercises, and introducing mindfulness
2	Preparation of therapy context for acceptance	Practicing focus, exploring anxiety patterns, , and observing anxiety rather than reacting to it by practicing acceptance of thoughts and feelings
3	Acceptance of and appreciation for life as an alternative to anxiety control	Practicing anxiety acceptance of awareness by explaining the nature of acceptance and understanding of anxiety acceptance, as well as discussing the difference between controlling external events and internal issues
4	Acceptance of and appreciation for life as an alternative to anxiety control	Measuring performance, reflecting on previous sessions' reactions, and introducing oneself as context rather than content
5	Creating flexible behavioral patterns through guided exposure to values	Discussions of emotional tendencies through attempting or performing the desired exercises, practicing the, confronting thoughts and emotions in a guided setting
6	Committing to moving on a valuable life path	Focus on training, measuring performance, reviewing responses to previous sessions, activating beneficial natural behavior through behavioral activation, defusing techniques and focusing on awareness, and identifying mental and linguistic traps
7	Committing to moving on the valuable life path	Experiential life-enhancing exercises including anxiety acceptance exercises, life feeling exercises (internal exercises or visualization), activities related to valuable life goals, and continuing to monitor anxiety-related experiences and quality of life
8	Committing to moving on a valuable life path	Introducing values, increasing the emphasis on behavioral commitment, preparing participants for the end of treatment, providing a summary of treatment steps to prepare for problem recurrence and possible failures, and identifying high-risk situations for participants to implement these principles in their lives

This questionnaire contains 36 questions that examine eight health concepts. The SF-36 has a total score range of 0 to 100 (Hagell, Westergren, & Arestedt, 2017). In the current study, the content validity of the SF-36 was 0.78, and its reliability, according to Cronbach's alpha, was 0.86.

The independent t-test and chi-square test were used for analysis after data collection. Analysis of covariance (ANCOVA) was also used to evaluate the impact of ACT on anxiety and QOL variables. SPSS software (version 23; IBM Corp., Armonk, NY, USA) was used for the analysis, with a significance level of less than 0.05.

Results

Table 2 displays the demographic variables of the participants in both groups.

As can be seen in table 2, 99 participants (66%) were men, and 66 (44%) were over 60 year of age. The mean age of the participants in the experimental and control groups was 56.72 ± 6.51 years and 58.35 ± 6.84 years, respectively. In addition, 130 (86.7%) participants were married, 114 (76%) had a secondary education, and 91 (60.7%) were employed.

Table 2. Demographic variables of the participants in both groups

Variable		Experimental group [n (%)]	Control group [n (%)]	P-value
Gender	Male	47 (62.7)	52 (69.3)	0.18
	Female	28 (37.3)	23 (30.7)	
Age (year)	< 50	26 (34.7)	22 (29.3)	0.12
	50-60	17 (22.7)	19 (25.4)	
	> 60	32 (42.6)	34 (45.3)	
Marital status	Married	64 (85.3)	66 (88.0)	0.64
	Single	11 (14.7)	9 (12.0)	
Education	Secondary	56 (74.7)	58 (77.3)	0.41
	College	19 (25.3)	17 (22.7)	
Job	Employed	44 (58.7)	47 (62.7)	0.56
	Unemployed	31 (41.3)	28 (37.3)	

The findings revealed no statistically significant differences between the two groups' demographic variables ($P > 0.05$). Table 3 summarizes the findings for anxiety and QOL variables at the pretest and posttest stages.

Table 3 illustrates no statistically significant differences between the two groups in the pretest stage ($P > 0.05$). However, there was a significant difference in the values of the variables in the posttest stage ($P < 0.001$). ANCOVA was used to investigate ACT's effect on anxiety and depression variables. The ANCOVA assumptions were examined first, followed by the effect of ACT on the mentioned variables. Table 4 shows the ANCOVA tests for the investigated variables in the two groups.

The results presented in table 4 show that the ACT treatment factor has a significant effect. This effect indicates a significant difference between the two groups in at least one variable (anxiety or QOL) ($P < 0.001$). Tables 5 and 6 show the results of one-way ANCOVA and MANCOVA, respectively.

The results presented in table 5 revealed a statistically significant difference in the values of anxiety and QOL variables between the participants of the two groups in the pretest and posttest stages ($P < 0.001$). As a result, it can be stated that ACT affects the values of anxiety and QOL of patients with stomach cancer, reducing anxiety while increasing QOL.

Discussion

The present research evaluated the effect of ACT on anxiety and QOL in stomach cancer patients. The findings indicated that ACT positively affects the anxiety and QOL of patients with stomach cancer, thereby decreasing anxiety and increasing QOL. The findings of the present research are consistent with many previously conducted studies (Angiola & Bowen, 2013; Zhao et al., 2021; Burns et al., 2023).

In explanation of the present findings, it can be stated that the presence of stomach cancer always causes a person to feel anxious. In addition, this disease causes anxiety in various situations for these individuals, and studies indicate a high prevalence of anxiety among these patients (Kolahdouzan, Kajbaf, Oraizi, Abedi, & Mokarian, 2020).

Table 3. Mean and standard deviation (SD) of anxiety and quality of life variables in different study stages

Variable	Stage	Experimental group (mean ± SD)	Control group (mean ± SD)	P-value
Anxiety	Pre-test	34.57 ± 13.41	34.16 ± 13.26	0.490
	Post-test	25.38 ± 6.14	34.48 ± 13.67	< 0.001
Quality of life	Pre-test	32.76 ± 7.59	33.41 ± 7.73	0.320
	Post-test	79.18 ± 9.06	33.62 ± 8.27	< 0.001

SD: Standard deviation

Table 4. Analysis of covariance tests for the investigated variables in the two groups

Variable	Test	Value	F	Hypothesis df	Error df	P	Partial Eta squared
Anxiety	Pillai's Trace	0.374	17.26	3	114	< 0.001	0.374
	Wilks' Lambda	0.608	17.26	3	114	< 0.001	0.374
	Hotelling Trace	0.627	17.26	3	114	< 0.001	0.374
	Roy's Largest Root	0.627	17.26	3	114	< 0.001	0.374
Quality of life	Pillai's Trace	0.134	12.83	3	114	< 0.001	0.134
	Wilks' Lambda	0.868	12.83	3	114	< 0.001	0.134
	Hotelling Trace	0.143	12.83	3	114	< 0.001	0.134
	Roy's Largest Root	0.143	12.83	3	114	< 0.001	0.134

df: Degree of freedom

Acceptance reduces the annoyance of anxiety-provoking conditions for patients in the interim. Although this treatment does not directly target the frequency and content of the anxious person's thoughts, it does reduce anxiety as a result of the use of breaking techniques and acceptance of thoughts and emotions about the disease. The objective here is to assist the individual in perceiving a schema-driven thought as merely a thought and, rather than responding to it, acting in accordance with their priorities and values. These factors significantly reduce anxiety in patients (Feros, Lane, Ciarrochi, & Blackledge, 2013).

Instead of focusing on eliminating and removing the harmful factors that caused the disease, the ACT method helps clients accept their controlled emotions and cognitions and abandon the verbal rules that caused their problems. It also allows them to cease battling with their thoughts and feelings (Weineland, Arvidsson, Kakoulidis, & Dahl, 2012). ACT's therapeutic methods aim to reduce avoidance of psychological experiences and increase awareness, with emphasis on focusing on the present moment in a non-confrontational and non-evaluative manner. Additionally, focusing on altering the content of psychological experiences modifies how these experiences influence behavior. This process teaches the patient to distance him/herself from pain and disturbed states to lessen the behavioral impact of these experiences (Ruiz, 2010).

Acceptance of the problem, on the other hand, creates and strengthens the ability to control internal events, thoughts, feelings, and subsequent emotions, and strengthening these beliefs leads to psychological flexibility (Ito & Muto, 2020). The psychological flexibility created is effective in reducing patients' anxiety, and by reducing anxiety, it improves social disability and QOL.

Values are another important aspect of ACT. In the present research, participants were asked to identify the values in their lives that anxiety prevents them from achieving. Then, they were asked to specify goals to achieve those values and commit to attempting to accomplish those value-based goals.

Table 5. The findings of one-way analysis of covariance in the investigation of the impact of acceptance and commitment therapy

Variable	Source	SS	df	MS	F	P	Effect size
Anxiety	Pretest	472.19	1	472.19	45.32	< 0.001	0.861
	Group	1364.07	1	1364.07	130.91	< 0.001	0.947
	Error	281.43	27	10.42			
Quality of life	Pretest	925.44	1	925.44	48.28	< 0.001	0.713
	Group	2108.76	1	2108.76	110.01	< 0.001	0.925
	Error	517.61	27	19.17			

df: Degree of freedom; SS: Sum of squares ; MS: Mean square

Indeed, this component of the treatment was effective in increasing the individual's motivation to confront fear and anxiety (Galvez-Sanchez, Montoro, Moreno-Padilla, Reyes Del Paso, de la Coba, 2021). In general, clarifying values and internalizing committed action during ACT provide people with sufficient motivation to change (Mirsharifa, Mirzaian, & Dousti, 2019). This issue is a suitable explanation for the improvement in the mental health of patients with stomach cancer as a result of reducing anxiety and increasing QOL.

Cognitive defusion is another essential factor in ACT. Cognitive defusion and its exercises reduce anxiety-inducing thoughts (Hulbert-Williams, Storey, & Wilson, 2015). Given the importance of dysfunctional beliefs in exacerbating anxiety symptoms, reducing cognitive defusion significantly improves QOL (Mosher et al., 2021). This treatment assists the patient in seeing him/herself as being free of the anxiety caused by stomach cancer. It also helps the patient become merely an external, disembodied observer of thoughts and feelings, thus facilitating the acceptance of the self as context. In addition, rather than ignoring emotions and inner experiences, ACT guides the patient to become aware of them, accept them, and use them appropriately. As a result, the patient should develop a suitable relationship with his/her circumstances and interactions and experience them from a different angle (Jawad, Abulkassim, Mohameed DAA-H, Razak, Al-Baghdady, 2023).

Among the limitations of the current research, the lack of a follow-up stage and the research sample was limited to patients suffering from one type of disease, so caution should be taken in generalizing the results of this study. The effectiveness of ACT on other patients and in different communities should be evaluated and compared with the findings of the current study in future studies. It is also suggested that other interventional training methods be considered and used in patients with stomach cancer.

Conclusion

The results of the present study show that ACT affects the anxiety and QOL scores of patients with stomach cancer, reducing anxiety while increasing QOL. Given the positive effectiveness of ACT on the investigated variables, hospital consultants should use this method along with other treatment methods to resolve the mental health issues of these patients.

Conflict of Interests

Authors have no conflict of interests.

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References

Abow FH, Razak TA, Abulkassim R, Adnan M, Rahi AFA, Fadhil AM. Comparing the effectiveness of acceptance and commitment therapy and hope therapy on pain anxiety and self-acceptance in patients with leukemia: effectiveness of ACT and hope therapy in patients with leukemia. *Int J Body Mind Cult*. 2022;10(1):99-108. doi: 10.22122/ijbmc.v10i1.425 [doi].

Akbarinejhad H, Faroughi P. Comparison of the effectiveness of acceptance and commitment therapy and logotherapy on the psychological well-being and death anxiety of women with AIDS. *Qom Univ Med Sci J*. 2021;14(11):48-60

Angiola JE, Bowen AM. Quality of life in advanced cancer: An acceptance and commitment therapy view. *Couns. Psychol*. 2013;41(2):313-35. doi: 10.1177/0011000012461955 [doi].

Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol*. 1988;56(6):893-7. doi:10.1037//0022-006x.56.6.893 [doi]. Retrieved from PM:3204199

Burns MF, Secinti E, Johns SA, Wu W, Helft PR, Turk AA, et al. Impact of acceptance and commitment therapy on physical and psychological symptoms in advanced gastrointestinal cancer patients and caregivers: Secondary results of a pilot randomized trial. *J Contextual Behav Sci*. 2023;27:107-15. doi:10.1016/j.jcbs.2023.01.001 [doi]. Retrieved from PM:37064761

Feros DL, Lane L, Ciarrochi J, Blackledge JT. Acceptance and commitment therapy (ACT) for improving the lives of cancer patients: a preliminary study. *Psychooncology*. 2013;22(2):459-64. doi:10.1002/pon.2083 [doi]. Retrieved from PM:23382134

Galvez-Sanchez CM, Montoro CI, Moreno-Padilla M, Reyes Del Paso GA, de la Coba P. Effectiveness of acceptance and commitment therapy in central pain sensitization syndromes: A systematic review. *J Clin Med*. 2021;10(12). doi:jcm10122706 [pii];jcm-10-02706 [pii];10.3390/jcm10122706 [doi]. Retrieved from PM:34205244

Ghiglieri C, Dempster M, Wright S, Graham-Wisener L. Psychosocial functioning in individuals with advanced oesophago-gastric cancer: a mixed methods systematic review. Research Square 2022 [Preprint]. doi: 10.21203/rs.3.rs-2032873/v1 [doi].

Gueserse M, Zali A, Hassanzadeh S, Hatami M, Ahadi M. A comparative study of the effectiveness of acceptance and commitment therapy and transcranial direct current stimulation on anxiety, depression, and physical symptoms of individuals suffering from chronic pain. *Int J Body Mind Cult*. 2022;9(1):11-21. doi: 10.22122/ijbmc.v9i1.336 [doi]. Retrieved from https://ijbmc.org/index.php/ijbmc/article/view/336

Hagell P, Westergren A, Arestedt K. Beware of the origin of numbers: Standard scoring of the SF-12 and SF-36 summary measures distorts measurement and score interpretations. *Res Nurs Health*. 2017;40(4):378-86. doi:10.1002/nur.21806 [doi]. Retrieved from PM:28732149

Hajatnia B, Tajeri B, Haji-Alizadeh K. Comparing the effectiveness of spirituality therapy and acceptance and commitment therapy on sleep quality, resilience, and death anxiety in the elderly: Spirituality therapy and ACT in the elderly. *Int J Body Mind Cult*. 2023;10(2):207-15. doi: 10.22122/ijbmc.v10i2.327 [doi].

He Y, Jian H, Yan M, Zhu J, Li G, Lou VWQ, et al. Coping, mood and health-related quality of life: A cross-sectional study in Chinese patients with advanced lung cancer. *BMJ Open*. 2019;9(5):e023672. doi:bmjopen-2018-023672 [pii];10.1136/bmjopen-2018-023672 [doi]. Retrieved from PM:31061015

Hulbert-Williams NJ, Storey L, Wilson KG. Psychological interventions for patients with cancer: Psychological flexibility and the potential utility of acceptance and commitment therapy. *Eur J Cancer Care (Engl)*. 2015;24(1):15-27. doi:10.1111/ecc.12223 [doi]. Retrieved from PM:25100576

Ito M, Muto T. Effectiveness of acceptance and commitment therapy for irritable bowel syndrome non-patients: A pilot randomized waiting list controlled trial. *Journal of Contextual Behavioral Science*. 2020;15:85-91. doi: 10.1016/j.jcbs.2019.11.009 [doi].

Jawad MA, Abulkassim R, Mohameed DAA-H, Razak TA, Al-Baghdady HFA. The effectiveness of acceptance and commitment therapy on physical health and quality of life in patients with gastric (Stomach) cancer. *Int J Body Mind Cult*. 2023;9(sp):120-8. doi: 10.22122/ijbmc.v9isp.419 [doi].

Karimi M, Aghaei A. The effectiveness of group application of acceptance and commitment therapy on anxiety, depression, and stress among high school female students. *International Journal of Educational and Psychological Researches*. 2018;4(2):71-7. doi: 10.4103/jepr.jepr_24_16[doi].

Kolahdouzan SA, Kajbaf MB, Oraizi HR, Abedi MR, Mokarian F. The effect of a death anxiety therapeutic package based on acceptance and commitment therapy on death

avoidance, mental health and quality of life of cancer patients. *Iran J Psychiatry Clin Psychol*. 2020;26(1):16-31. doi: 10.32598/ijpcp.26.1.3044.2 [doi].

Maathz P, McCracken LM, Eriksson V, Sade F, Aneblom G, Rikner A, et al. A feasibility trial of online acceptance and commitment therapy for women with provoked vestibulodynia. *Scand J Pain*. 2023;23(3):476-82. doi:sjpain-2022-0146 [pii];10.1515/sjpain-2022-0146 [doi]. Retrieved from PM:37401654

Malmir T, Jafari H, Ramezanalzadeh Z, Heydari J. Determining the effectiveness of acceptance and commitment therapy (ACT) on life expectancy and anxiety among bereaved patients. *Mater Sociomed*. 2017;29(4):242-6. doi:MSM-29-242 [pii];10.5455/msm.2017.29.242-246 [doi]. Retrieved from PM:29284992

McKinnon SA. The effects of acceptance and commitment therapy on cognitive fusion and psychological well-being among disressed newly diagnosed breast cancer patients [MSc Thesis]. San Diego, CA: San Diego State University; 2017.

Mirsharifa SM, Mirzaian B, Dousti Y. The efficacy of acceptance and commitment therapy (ACT) matrix on depression and psychological capital of the patients with irritable bowel syndrome. *Open Access Maced J Med Sci*. 2019;7(3):421-7. doi:OAMJMS-7-421 [pii];10.3889/oamjms.2019.076 [doi]. Retrieved from PM:30834014

Mosher CE, Secinti E, Kroenke K, Helft PR, Turk AA, Loehrer PJ, Sr., et al. Acceptance and commitment therapy for fatigue interference in advanced gastrointestinal cancer and caregiver burden: protocol of a pilot randomized controlled trial. *Pilot Feasibility Stud*. 2021;7(1):99. doi:10.1186/s40814-021-00837-9 [pii];837 [pii];10.1186/s40814-021-00837-9 [doi]. Retrieved from PM:33879253

Mosher CE, Secinti E, Wu W, Kashy DA, Kroenke K, Bricker JB, et al. Acceptance and commitment therapy for patient fatigue interference and caregiver burden in advanced gastrointestinal cancer: Results of a pilot randomized trial. *Palliat Med*. 2022;36(7):1104-17. doi:10.1177/02692163221099610 [doi]. Retrieved from PM:35637615

Osborn RL, Demoncada AC, Feuerstein M. Psychosocial interventions for depression, anxiety, and quality of life in cancer survivors: meta-analyses. *Int J Psychiatry Med*. 2006;36(1):13-34. doi:10.2190/EUFN-RV1K-Y3TR-FK0L [doi]. Retrieved from PM:16927576

Pujiastuti L, Herwina ER. Influence of Acceptance Commitment Therapy (ACT) on Quality of Life of Cancer Patients: Literature Review. *KESANS: International Journal of Health and Science*. 2022;1(11):994-1001. doi: 10.54543/kesans.v1i11.105 [doi].

Ruiz FJ. A review of acceptance and commitment therapy (ACT) empirical evidence: Correlational, experimental psychopathology, component and outcome studies. *International Journal of Psychology & Psychological Therapy*. 2010;10(1):125-62.

Twohig MP. Acceptance and commitment therapy for treatment-resistant posttraumatic stress disorder: A case study. *Cognitive and Behavioral Practice*. 2009;16(3):243-52. doi: 10.1016/j.cbpra.2008.10.002 [doi].

Vowles KE, Witkiewitz K, Sowden G, Ashworth J. Acceptance and commitment therapy for chronic pain: evidence of mediation and clinically significant change following an abbreviated interdisciplinary program of rehabilitation. *J Pain*. 2014;15(1):101-13. doi:S1526-5900(13)01297-2 [pii];10.1016/j.jpain.2013.10.002 [doi]. Retrieved from PM:24373572

Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care*. 1992;30(6):473-83. Retrieved from PM:1593914

Weineland S, Arvidsson D, Kakoulidis TP, Dahl J. Acceptance and commitment therapy for bariatric surgery patients, a pilot RCT. *Obes Res Clin Pract*. 2012;6(1):e1-e90. doi:S1871-403X(11)00024-X [pii];10.1016/j.orcp.2011.04.004 [doi]. Retrieved from PM:24331170

Wicksell RK, Olsson GL, Hayes SC. Mediators of change in acceptance and commitment therapy for pediatric chronic pain. *Pain*. 2011;152(12):2792-801. doi:00006396-201112000-00019 [pii];10.1016/j.pain.2011.09.003 [doi]. Retrieved from PM:21995881

Zhao C, Lai L, Zhang L, Cai Z, Ren Z, Shi C, et al. The effects of acceptance and commitment therapy on the psychological and physical outcomes among cancer patients: A meta-analysis with trial sequential analysis. *J Psychosom Res*. 2021;140:110304. doi:S0022-3999(20)30866-7 [pii];10.1016/j.jpsychores.2020.110304 [doi]. Retrieved from PM:33248396