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Comparing the Effectiveness of Acceptance and Commitment Therapy and Hope Therapy on Pain Anxiety and Self-Acceptance in Patients with Leukemia

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Quantitative Study

Abstract

Background: Leukemia is one of the most prevalent types of cancer that can also result in severe psychological damage. The current study aimed to investigate the effectiveness of acceptance and commitment therapy (ACT) and hope therapy on pain anxiety and self-acceptance in patients with leukemia.

Methods: The current study was a semi-experimental research with a pre-test and post-test design and the control group. The statistical population of the current study, which included 167 individuals, comprised all of the patients with leukemia who were sent to the Princess Noorah Oncology Center in Jeddah, Saudi Arabia, in the year 2020. Twenty individuals were divided into three groups using simple random sampling: the ACT group, the hope therapy group, and the control group. The Pain Anxiety Symptoms Scale (PASS) developed by McCracken et al. to assess anxiety related specifically to pain was used throughout this study. We also used the Chamberlain and Haaga Unconditional Self-Acceptance Questionnaire (USAQ) to measure unconditional self-acceptance levels. Using the SPSS software, a multivariate analysis of covariance (MANCOVA) was used to analyze the data.

Results: The mean ± standard deviation (SD) of pain anxiety in the ACT group decreased from 78.49 ± 6.83 in the pre-test to 53.67 ± 5.41 in the post-test ($P < 0.001$). In the hope therapy group, it decreased from 79.18 ± 6.32 in the pre-test to 66.46 ± 5.89 in the post-test ($P < 0.001$). The mean ± SD of self-acceptance in the ACT group increased from 62.39 ± 6.14 in the pre-test to 93.57 ± 7.64 in the post-test ($P < 0.001$); in the hope therapy group, it increased from 63.21 ± 6.32 in the pre-test to 89.72 ± 7.53 in the post-test ($P < 0001$), but the mean ± SD of both variables in the pre-test and post-test of the control group showed no significant difference. In addition, the Bonferroni post-hoc test revealed that the ACT approach had a stronger impact than the hope therapy ($P < 0.01$).

Conclusion: According to the findings of this study, patients with leukemia who participated in either ACT or hope therapy experienced a significant improvement in their ability to accept themselves and experience less anxiety and discomfort as a result of their treatment. However, the effects of ACT were greater than those of hope therapy.
Keywords: Acceptance and commitment therapy; Hope; Leukemia; Anxiety

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Introduction

Cancer is still one of the most serious and, in many cases, incurable diseases, threatening the lives of many and posing a significant risk to a large proportion of the human population despite significant advances in medical science and the growth of human knowledge in the control and treatment of various diseases (Sepanta, Shirzad, & Bamdad, 2019). Cancer affects a person's mental health in various ways, including altering the person's mental image of his or her own body, which increases mental tension and challenges the individual's mental health (Mun et al., 2019). Cancer generally causes a decrease in psychological well-being, pain anxiety, threats to self-image and self-esteem, loss of freedom, physical discomfort, denial, anger, depression, uncertainty, and loneliness (Marinovic & Hunter, 2022).

There are four subscales of anxiety about pain: cognitive anxiety symptoms related to pain, avoiding and escaping pain, fearful evaluation of pain, and physiological anxiety symptoms related to pain (Saghaei & Mostafazadeh, 2019). A fear of irrational or morbid pain is no longer able to adapt to a person's needs, but it can also cause mental health issues by interfering with cognitive and behavioral functioning (Corman et al., 2021). The desire to avoid the source of pain grows stronger as maladaptive cognitive and behavioral strategies are maintained. The feeling a person has about himself or herself, his or her abilities, and the current state in which he or she finds himself/herself is known as self-acceptance. Regarding the most basic definition, self-acceptance means accepting one's positive and negative aspects of one's existence equally (Abraham, Wei, Desai, Chen, & Seminario-Vidal, 2022).

Psychotherapy is a non-pharmacological treatment used in psychology to help people cope with chronic illness. In order to examine the variables of pain anxiety and self-acceptance, two psychotherapy approaches were used and compared in this study. Behavioral therapy based on awareness is known as acceptance and commitment therapy (ACT). In this method, instead of challenging people's thoughts, they are taught to accept them uncritically, and the goal is to teach people how to identify their core values and take action on those values. Acceptance and commitment is the cognitive approach that resembles choice theory and reality therapy (Li, Wong, Jin, Chen, Chong, & Bai, 2021). The foundation of acceptance and commitment strategies and techniques is the understanding that a worthwhile life is accompanied by suffering, following a path of values necessitates dedication, and words cannot replace lived experience. This method eliminates the reactive elements of behavior (Zhao et al., 2021). Relational frame theory (RFT), a branch of cognitive science that focuses on human language, is the foundation of ACT. RFT contends that people may not be able to successfully deal with psychological distress using their rational problem-solving abilities. Based on this premise, ACT therapy was created with the intention of educating patients that, despite the fact that psychological suffering is common, there are ways to learn how to live better, more fulfilling lives by changing the way we perceive suffering (Faryabi, Rafieipour, Haji-Alizadeh, & Khodavardian, 2021).

Snyder Hope Therapy is the only psychological treatment that views hope as the primary treatment objective. Snyder (2000), the originator of the theory of hope and the treatment based on it, has defined hope as a structure comprising the ability to design pathways to desired goals and the agency required to use these pathways. Cancer and optimism are related in two ways (Yu & Liu, 2021). First, optimistic individuals are more focused on the problem and more proactive in their efforts to solve it. They are more likely to conduct cancer screenings. Second, optimists exhibit

less distress and greater adaptability when confronted with a cancer diagnosis and treatment. Conversely, those with greater hope demonstrate excellent resistance to long and painful treatments during treatment. Promoting hope, one factor that gives meaning to life, assists individuals in adjusting to cancer, decreasing their psychological distress, and enhancing their quality of life and general health (Lu, Lu, Shao, Wang, Xu, & Zhang, 2022).

Considering psychological issues and their impact on the onset or exacerbation of symptoms of psychosomatic diseases, such as cancer, it is crucial to provide suitable living conditions for these patients. Patients, officials, specialists, patients' families, and other interested parties can obtain helpful information from the findings of this study, allowing them to make the most significant possible effort for patients' well-being. The current study aimed to investigate the effectiveness of ACT and hope therapy on pain anxiety and self-acceptance in patients with leukemia.

Methods

The current study was a semi-experimental research with a pre-test and post-test design and the control group. The statistical population of the current study, which included 167 individuals, comprised all of the patients with leukemia who were sent to the Princess Noorah Oncology Center in Jeddah, Saudi Arabia, in the year 2020. After confirming the admission criteria, diagnosis, and screening criteria (pain anxiety score above 50 and self-acceptance below 50), purposeful sampling was used to include 20 individuals in three groups: the ACT group, the hope therapy group, and the control group. Then, two experimental interventions, ACT and hope therapy, were administered to the two experimental groups. The inclusion criteria of this study included having leukemia based on the medical record, previous tests, and the attending physician's approval, being literate, not having other dangerous underlying diseases, not using psychiatric drugs, and providing informed consent. Exclusion criteria included a history of taking psychiatric drugs and receiving psychological treatments in the previous year, the absence of more than two sessions in the meetings, and an increase in the severity of symptoms and patient dysfunction. Patients were assigned randomly to the three groups mentioned above. In order to comply with ethical considerations, the research objectives and general parameters were stated first. Patients were then reassured that their identities would remain confidential and they could withdraw from the study anytime.

The Pain Anxiety Symptoms Scale (PASS) (McCracken, Zayfert, & Gross, 1992) is a self-report instrument designed to measure pain-related anxiety and fear responses. It is the primary scale of 40 questions for measuring pain anxiety symptoms. The range of scores for the short form is 0 to 100, and subjects must respond to the questions using a scale ranging from 0 (never) to 5 (always). The overall score is generally related to multiple aspects of patient functioning. The short form of the PASS includes the subscales of avoidance, fearful appraisal, and physiological response. Cronbach's alpha indicates that the validity of this questionnaire ranges between 0.69 and 0.81, and the internal consistency coefficient ranges between 0.73 and 0.89 for this questionnaire (Park, Jang, Oh, & Lee, 2020). In the present study, the validity and reliability of this questionnaire were determined to be 0.81 and 0.87, respectively.

The Unconditional Self-Acceptance Questionnaire (USAQ) (Chamberlain & Haaga, 2001) consists of twenty statements and is intended for individuals aged 14 and older. This questionnaire's score range is between 0 and 100, and subjects must respond to its questions on a scale ranging from 0 (never) to 5 (always). Using

Cronbach's alpha method, the internal consistency of the questionnaire was determined to be 0.72 (Su, Wang, Li, Yu, & Zhang, 2019). In the current study, the validity and reliability of this questionnaire were obtained 0.83 and 0.86, respectively.

All three groups were given a pre-test before receiving eight weekly 90-minute sessions of ACT or hope therapy for two experimental groups. The control group received no intervention, and all three groups were given a post-test after the study. After completing the post-test and research, the control group members arbitrarily selected one of the treatment methods and underwent the intervention. The descriptions of ACT and hope therapy sessions are provided in tables 1 and 2, respectively.

To analyze the data associated with the research hypotheses, descriptive statistics [mean and standard deviation (SD)] and inferential statistics derived from multivariate analysis of covariance (MANCOVA) using the SPSS software (version 21, IBM Corporation, Armonk, NY, USA) were employed.

Results

The mean ± SD of age of the participants in the ACT group was 47.52 ± 6.84 years, 49.36 ± 7.18 years for the hope therapy group, and 46.63 ± 6.51 years for the control group, with a range of 30 to 60 years. Table 3 displays the scores relating to pain anxiety and self-acceptance variables for all three groups during the pre-test and post-test phases.

Table 3 demonstrates that the post-test mean ± SD of pain anxiety and self-acceptance was significantly lower than the pre-test mean ± SD for the ACT and hope therapy treatment groups ($P < 0.001$). Besides, there was no difference between the pre-test and post-test results of the control group.

Box's M and Levene's tests were conducted to satisfy their prerequisites before utilizing the parametric test of MANCOVA. Based on the Box's M test, none of the variables were statistically significant. The homogeneity condition was satisfied. The equality of covariance between groups was established based on Wilks' lambda test and its non-significance for all variables.

The use of covariance analysis tests was therefore permitted. The results of MANCOVA are presented in table 4.

Table 1. Summary of therapy sessions based on acceptance and commitment

Session	Description of session
1	Clients and therapists get acquainted, a warning that the treatment may cause emotional distress, a commitment to complete treatment sessions by ethical principles, a statement of research objectives, and pre-test administration.
2	Identifying the harmful effects of trying to control anxiety, negative emotions, and unpleasant thoughts and highlighting the paradoxical nature of this endeavor.
3	Recognizing control as the problem, to establish non-defensive communication with previously avoided emotions. Introducing acceptance as an alternative to control through the metaphor of a lie detector.
4	Reviewing acceptance as a preferred and alternative behavior to control the practice of breaking and instructing the limitations of language and its role in suffering while introducing meanings.
5	Using mindfulness techniques to contact the present moment, assisting clients in living with their inner experiences in the present through the practice of being aware of and releasing inner experiences, and recognizing the significance of being present.
6	Accepting yourself and understanding yourself as the context within which inner experiences occur.
7	Defining the concept of attributes in life and elucidating meanings using a list of values in various aspects of life, such as intimate relationships, family relationships, friendships, career, educational growth and progress, and leisure activities, acknowledging problematic inner experiences.
8	Using re-exercises and metaphors to summarize past sessions and therapy, conducting the post-test, and reviewing the concepts covered during the sessions.

Table 2. Summary of hope therapy sessions

Session	Description of session
1	Introducing and determining rules, introducing the structure of meetings, determining goals and types, the significance of the need for goals in various aspects of life, the methods for achieving goals, the motivation required to pursue goals, and the implementation of the pre-test.
2	The significance and role of stress coping strategies on anxiety in the case of cancer, a description of the components of the hope theory of goals, agents, and pathways, a description of the relationship between thought and feeling, expressions of ways to increase hopeful thinking through goal setting, and explanations of continuity of progress and the need to reevaluate goals.
3	Practically expressing strategies for goal setting, setting objective goals considering the endpoint as a desire-based approach, dividing significant goals into sub-goals, using positive thinking and repeating positive words, and incorporating positive thinking and positive words.
4	Teaching strategies for creativity by strengthening pathfinder thought through gradual planning and strategies to strengthen the will through fantasy techniques, mental imagery, role modeling, and positive self-talk, understanding how to deal with obstacles, challenges, and crises, identifying pleasant thoughts to change ineffective beliefs and attitudes, and training to deal with crises through the imaginative creation of alternative routes.
5	Examining the causes of negative self-reflection actions and articulating the methods for altering negative self-reflection, compiling a list of current events and interpreting their significance, and expressing the two primary areas of physical and mental motivation.
6	Expressing the power of the path to achieving goals and providing strategies for enhancing the power of the path (having multiple paths and listing them, and visualizing the success of the paths), strategies for generating and sustaining hope.
7	Expressing another method for increasing mental will (goal reevaluation), and finally expressing two strategies for increasing physical will.
8	Expressing the possibility of relapse and slips, methods of overcoming slips, applying optimistic thinking in daily life, particularly in critical situations of cancer treatment, providing an opportunity for members to talk more about the experience of grouping, summarizing, open presentation, and post-test performance.

The results from table 4 showed that the F-values calculated in the group variable, pain anxiety, and self-acceptance were at a significant level ($P < 0.01$) and this means that at least one of the treatments on pain anxiety and self-acceptance on patients with leukemia has been effective. Therefore, a test called Bonferroni post-hoc test was done, and the results are shown in table 5.

As shown in table 5, the ACT approach had a stronger impact than the hope therapy, despite the fact that both treatments had a positive impact on pain anxiety and sense of self-acceptance in patients with leukemia.

Discussion

The current study aimed to investigate the effectiveness of ACT and hope therapy on pain anxiety and self-acceptance in patients with leukemia.

Table 3. Mean and standard deviation (SD) values for all three groups during the pre-test and post-test phases

Variable	Group	Pre-test (mean ± SD)	Post-test (mean ± SD)	P-value
Pain anxiety	Acceptance and commitment	78.49 ± 6.83	53.67 ± 5.41	< 0.001
	Hope therapy	79.18 ± 6.32	66.46 ± 5.89	< 0.001
	Control	78.82 ± 7.13	79.38 ± 7.34	0.730
Self-acceptance	Acceptance and commitment	62.39 ± 6.14	93.57 ± 7.64	< 0.001
	Hope therapy	63.21 ± 6.32	89.72 ± 7.53	< 0.001
	Control	61.59 ± 5.74	62.46 ± 6.18	0.640

SD: Standard deviation

Table 4. Results of multivariate analysis of covariance (MANCOVA)

Variable	Source of changes	Sum of squares	df	Mean squares	F-value	P-value	Eta squared
Pain anxiety	Group	5491.638	1	5491.638	54.746	< 0.001	0.473
	Error	1167.542	12	97.295			
Self-acceptance	Group	7964.613	1	7964.613	72.528	< 0.001	0.761
	Error	1362.401	12	113.533			

df: Degree of freedom

The results showed that both treatments positively impacted pain anxiety and self-acceptance in patients with leukemia. Besides, there was no significant difference between ACT methods and hope therapy outcomes. While both methods had a significant advantage over the control group, neither was superior. Several other studies have produced findings that are consistent (Haase, 2020; Suzuki, Ishikawa, & Okada, 2021; Wayant et al., 2021) and inconsistent (Hi & Uzar-Ozcetin, 2020; Jang et al., 2022) with the results of this study.

The study's results are consistent with the findings of Hann and McCracken (2014) and Arch et al. (2012) research on the effectiveness of ACT for individuals with chronic pain disorders and anxiety disorders. To explain these findings, it can be stated that pain tolerance is strongly associated with greater participation in daily activities. Additionally, it has been observed that acceptance is strongly associated with cognitive pain control. Therefore, the researchers concluded that accepting pain was the best way to distinguish between painful and non-painful aspects of life. Multiple studies support the significance of pain acceptance in the daily functioning of individuals with chronic pain. In clinical samples, it has been observed that the acceptance of pain is related to the experience of pain, whereas psychological problems and physical disabilities are much less significant, and psychological well-being is more prominent.

ACT is an acceptance-based intervention that is very effective for people who experience unwanted psychological events like pain. Acceptance-based interventions cause people to be less sensitive to chronic pain. ACT is one of the subsets of the acceptance-based approach to reducing pain in patients with chronic pain. Acceptance appears to be the essential process involved in the therapeutic achievements of reducing the effect of painful experiences on emotional functions and predicting future individual functions. Turner et al. (2015) demonstrated that the four-hour experience of this treatment significantly reduced the pain experienced in these patients compared to other standard medical treatments.

It can also be stated that the amount of daily activities performed by patients with chronic pain is directly related to their mental health. Recent research has found that accepting pain with a higher quality of life in patients with back pain is linked to reducing the effect of pain periods on function of patients with cancer and maintaining adaptive function in patients with multiple pains.

Table 5. Bonferroni post-hoc test for comparing the groups

Variable	Paired comparison	Mean difference	Standard error	P-value
Pain anxiety	Acceptance and commitment/hope therapy	0.46	0.78	0.344
	Control/hope therapy	-6.27	0.78	0.001
	Control/acceptance and commitment	-8.09	0.93	0.001
Self-acceptance	Acceptance and commitment/hope therapy	-0.76	0.89	0.288
	Control/hope therapy	-6.38	0.81	0.001
	Control/acceptance and commitment	-9.12	0.96	0.001

Laboratory studies also show that acceptance-based strategies are highly effective in dealing with laboratory-induced pain. Clinical studies show that acceptance-based strategies are essential in reducing pain symptoms and improving the quality of life in the presence of pain. Psychological flexibility is the main theoretical structure in acceptance based on behavioral treatments such as ACT (Rumlerová, Friso, Torres Romero, Kavenska, & Politi, 2022).

The results of the present study indicated that hope therapy training increased life expectancy in patients with cancer. This result is consistent with Herth (2000) research findings. In his study, Herth administered hope therapy to patients with cancer and demonstrated that this intervention increased their life expectancy and quality of life. In addition, Snyder (1999) stated that hope therapy interventions enhanced the quality of life for patients with chronic illnesses. According to these researchers, increasing hope improves self-care, quality of life, and overall health in this population of patients. According to Snyder et al. (2006), hope and the meaning of life are interconnected, and he considers hope as one of the meaning's components. In addition, behavioral strategies assist the patient in actively pursuing the established goals, which can effectively extend life expectancy.

It is possible to explain these findings by saying that hope enables a person to overcome stressful situations and make constant efforts to achieve his or her goals. As a result, those who have more hope put forth more effort to achieve more goals, achieve their goals with more confidence, and compare them to more challenging goals, whereas those who have less hope do the opposite. A person's ability to see beyond his/her current situation, disorder, and pain is enhanced when he/she has a sense of hope. Among the many benefits of boosting one's faith in the future, it is possible to point to an increased sense of purpose in one's life, increased capacity for work-related energy, a continued capacity for joy and contentment in one's daily activities, as well as an increased capacity for personal growth and development. On the other hand, patients with cancer are living longer thanks to advances in diagnostics and treatment (Anderson, 2020).

This study has limitations that must be considered when extrapolating its results. The current study examined patients with leukemia in a treatment center; therefore, caution should be exercised when extrapolating the results to other individuals in cities and regions. Due to a lack of time and access to clients, no follow-up studies were conducted, which was another limitation of this study. It is suggested that research be conducted to compare the efficacy of ACT and hope therapy on other types of cancer. It is recommended to conduct a follow-up test after the treatment period to evaluate the long-term effects of this treatment method, stabilize the final sessions' training, and conduct reminder sessions after the treatment period to prevent the treatment effect from diminishing.

Conclusion

According to the findings of this study, patients with leukemia who participated in either ACT or hope therapy experienced a significant improvement in their ability to accept themselves and experience less anxiety and discomfort as a result of their treatment. However, the effects of ACT were greater than those of hope therapy.

Conflict of Interests

Authors have no conflict of interests.

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None.

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