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Effectiveness of Acceptance and Commitment Therapy on COVID-19 Induced Anxiety among Worried People

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Quantitative Study

Abstract

Background: The current research was conducted with the aim to examine the effectiveness of acceptance and commitment therapy (ACT) on COVID-19 induced anxiety among worried people in Ahvaz, Iran.

Methods: This semi-experimental research was performed with experimental and control groups and a pretest-posttest design. The statistical sample of the research included all people worried due to COVID-19 in Ahvaz from among whom 30 were recruited using convenience sampling method and were randomly divided into the experimental or control groups. The subjects completed the Corona Disease Anxiety Scale (CDAS) designed by Alipour et al. in 2020. The experimental group received 8 sessions of ACT while the control group received no treatment. The data were analyzed using ANOVA in SPSS software.

Results: The results showed that after controlling for the pretest, the experimental group showed significant reduction in their anxiety score in comparison with the control group ($P < 0.01$).

Conclusion: The results of the research indicated that ACT effectively decreased subjects' COVID-19 induced anxiety through promoting psychological flexibility, decreasing struggle and control, and increasing mindfulness.

Keywords: Acceptance and commitment therapy; Corona; COVID-19; Anxiety

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Introduction

Coronavirus disease is a virus similar to SARS and Mercury and was named Corona because of the similarity of the surface of the virus to the corona of the sun. The disease is probably caused by a bat and has been transmitted to humans through a mammalian host as an unknown mediator (Phelan, Katz, & Gostin, 2020). COVID-19 is the name provided by the World Health Organization (WHO) on February 11, 2020 for the disease caused by the new SARS-CoV2-2 corona. The signs and symptoms of COVID-19 fall into the three categories of fever, dry cough and boredom (most common symptoms), more or less sore throat, diarrhea, conjunctivitis, headache, loss of taste or smell and grain on the skin or discoloration of the fingers or legs (less common symptoms), and finally, difficulty in breathing or shortness of breath, pain or pressure on the chest, and loss of speech or movement (severe symptoms) (World Health Organization, 2020). The disease first initiated in Wuhan, China, in late 2019 and has spread around the world. Covid-19 stands for Coronavirus 2019. As of early May 2021, more than 147,700,000 cases and more than 3,100,000 deaths have been reported worldwide, and more than 2.3 million cases and 69,000 deaths in Iran due to COVID-19 (Worldometers, 2020).

Many macro-to-micro measures have been taken to prevent the spread of Coronavirus disease. At the macro level, short and long term quarantines, social distancing, traffic plans, environmental disinfections, etc. can be performed, and at the micro level, staying at home, keeping a safe distance, frequent hand washing, and wearing a mask and gloves can be pointed out. These public health measures that are designed to slow down and prevent the spread of COVID-19 have drastically changed our lifestyles and are threatening our physical and mental health (Santabarbara et al., 2021). However, during this epidemic period in which our lives have changed completely (Nikcevic, Marino, Kolubinski, Leach, & Spada, 2021), a fundamental issue caused and increased by the epidemic is the psychological distress associated with the epidemic including fear (Ahorsu, Lin, Imani, Saffari, Griffiths, & Pakpour, 2020), anxiety (Lee, 2020), stress (Taylor, Landry, Paluszek, Fergus, McKay, & Asmundson, 2020), depression (Bueno-Notivol, Gracia-Garcia, Olaya, Lasheras, Lopez-Anton, & Santabarbara, 2021) and an anxiety syndrome characterized by avoidance, examination, worry, and monitoring (Nikcevic & Spada, 2020). The existence of a disease which has caused a global epidemic and requires great precautions causes a great deal of anxiety among individuals (Lima et al., 2020). Anxiety is a common symptom among both COVID-19 patients and others who are directly (such as health care workers) or indirectly (such as patients' families or ordinary people living in high-risk areas) affected by this disease and it can reduce their quality of life (QOL) (Alipour, Ghadami, Alipour, & Abdollahzadeh, 2020). It seems that the lack of knowledge about this disease and the fear of the unknown, which can reduce the perception of immunity in humans, can be the causes of high anxiety due to COVID-19 disease (Bajema et al., 2020). In times of crisis, the structure of life is greatly disturbed. During quarantine and care, the routine of life is disrupted and the individual is less able to predict and plan for his/her future. This uncertainty and concern about the future on the one hand, and the fear of getting infected, the fear of death, the fear of infecting loved ones, etc. on the other hand, can cause anxiety (Saffarinia, 2020). Anxiety can weaken the immune system and increase vulnerability to the disease, and can negatively affect the quality of decision-making and planning. Therefore, overcoming this obstacle and teaching the individual how to deal with a crisis is more important than ever. Acceptance and Commitment Therapy (ACT) was developed by Steven Hayes in the

1980s as a third wave therapy. ACT uses processes of acceptance, awareness, and values for psychological resilience, which is the ability of value-based actions in the presence of thoughts and emotions (Manchon, Quiles, Leon, & Lopez-Roig, 2020). Moreover, with the aim of educating people to perform effectively in the face of challenging events (Little, Tarbox, & Alzaabi, 2020), various studies have shown that ACT is effective on the treatment of anxiety (Rezapour Mirsaleh, Esmaeelbeigi, & Salari, 2019; Valizade, Manshaee, & Kareshki, 2018). O'Hayer, O'Loughlin, Nurse, Smith, and Stephen (2021) conducted a study on the treatment of symptoms of anxiety and depression in 28 people with cystic fibrosis through 6 sessions of ACT and follow-up 3 months before and after treatment. They found that ACT treatment improves anxiety and depressive symptoms, increases psychological flexibility, and reduces psychosocial distress. Dober, Mikocka-Walus, Evans, Beswick, Emerson, and Olive (2021) conducted a study on 19 patients with inflammatory bowel disease in an ACT-based exploratory intervention method. The research indicated that ACT treatment increases psychological flexibility and relieves anxiety in inflammatory bowel patients. Furthermore, Ritzert, Berghoff, Tifft, and Forsyth (2020) performed an online survey on participants from around the world using Ad 503, self-help method, and book therapy for anxiety; they found that ACT had an effect on anxiety, depression, and mental illness. In a study conducted by de Almeida Sampaio et al. (2020) on 92 people with generalized anxiety disorder (GAD), who were randomly selected in 10 sessions of group behavior therapy based on acceptance-based behavior therapy (ABBT) admission and nondirective supportive therapy (NDST) with 3-month follow-up, it was found that the group ACT participants recovered faster than the group NDST participants. Generally, studies have shown that ACT is one of the most effective treatments for reducing the psychological problems of people with physical illnesses or critical situations. COVID-19 is an unknown and difficult disease, and there are a limited number of studies with data on anxiety and COVID-19 in the general population; since 2007, there has only been one study on Covid-19 (Fardin, 2020), and two Chinese studies in the general population (Rajkumar, 2020), which were published in July 2020 in a systematic review and meta-analysis (Salari et al., 2020). Accordingly, the present study was conducted with the aim to evaluate the effectiveness of ACT on reducing anxiety caused by COVID-19 in worried people in Ahvaz, Iran.

Methods

The present study was a quasi-experimental research with experimental and control groups and a pretest- posttest design. The statistical population included all people worried about COVID-19 in Ahvaz during 2020-2021. From among them, 20 people were selected through convenience sampling method and were evenly matched in the experimental and control groups based on pretest scores.

Instrument

Corona Disease Anxiety Scale (CDAS): The Corona Disease Anxiety Scale (CDAS) was created by Alipour et al. (2020) and includes 18 items and the 2 factors of psychological symptoms (items 1 to 9) and physical symptoms (items 10 to 18). The items of the CDAS are scored on a 4-point Likert scale ranging from 0 (never) to 3 (always). The total score of this scale ranges from 0 to 54, with higher scores indicating greater anxiety associated with coronavirus disease. A score between 0 and 16, 17 and 29, and 30 and 54 indicates lack of anxiety or mild anxiety, moderate anxiety, and high anxiety, respectively. Alipour et al. (2020) reported the Cronbach's alpha coefficients of the first and second factors and the whole scale to be 0.88, 0.87, and 0.92, respectively. The criterion validity of this scale was found to be 0.483, 0.507,

0.418, 0.333, and 0.269 by calculating its correlation with the total score of the General Health Questionnaire (GHQ-28) and the components of anxiety, physical symptoms, social dysfunction, and depression, which were all significant ($P < 0.01$).

Procedure

To select a research sample, 50 people were selected from among the people who had contacted the counseling centers of Ahvaz city for psychological counseling about coronavirus disease, and were invited to participate in the research. All subjects completed the CDAS (pretest) and 20 were selected completely randomly from among those with a score higher than 17. Then, the experimental and control group subjects were matched based on the scores obtained in the pretest. To observe hygienic items including keeping distance, providing disposable gloves and masks, and disinfecting tools and equipment (such as chairs, door handles, etc.), 10 people were considered for each group. Then, 8 weekly 90-minute ACT sessions were performed in the experimental group, while the control group did not receive any treatment during this period. At the end of the treatment sessions, a posttest was performed.

The acceptance and commitment treatment guide is summarized in Table 1.

Data analysis: Multivariate analysis of covariance (MANCOVA) and non-variable analysis (ANCOVA) were used to analyze the data. The analyses were performed using SPSS software (version 26; IBM Corp., Armonk, NY, USA). An acceptable level of significance of $P < 0.05$ was considered to confirm the statistical hypotheses.

Results

Among the 20 participants, 10 (50%) were men and 10 (50%) were women. Moreover, the participants' educational levels were diploma and lower (13.33%), associate degree (11.43%), bachelor's degree (49.52%), and master's degree and higher (25.72%). Furthermore, 35.02% of the participants were in the age range of 30-40 years, 32.85% were in the age range of 41-50 years, and 32.13% were 51-60 years. The results of mean and standard deviation of coronary heart disease anxiety and its components are shown in Table 2.

Table 1. Acceptance and Commitment Treatment Guide

Session	Treatment content
1	Introducing subjects to each other, expressing problems, stating expectations of treatment, explaining ethical principles and confidentiality, providing written consent to participate in the research, introducing acceptance and commitment treatment
2	Linking anxiety, illness, and mood, introducing the concept of creative helplessness, introducing the concept of values, using metaphors
3	Addressing the acceptance of anxiety, explaining the relationship between moods and acceptance of suffering and anxiety, explaining the relationship between mood and behavior using examples from the subjects' lives
4	Distinguishing between values and goals, clarifying values, introducing the concept of failure of depressing thoughts and feelings, using metaphors
5	Reviewing assignments and standardizing activities, practicing mindfulness, distinguishing self-observer from self as context
6	Clarification of values versus ambiguity of values, using metaphors
7	Commitment versus passivity, the presentation of a task according to the nature of behavioral activation in the form of committing the subject to specific activities that are marked by larger goals and values
8	Clarifying values, training the subjects to be their own therapist, and addressing the subjects' concerns about termination of treatment

Table 2. Mean and standard deviation of coronavirus disease anxiety and its components

Variables	Statistical indicators	Experimental group (mean ± SD)	Control group (mean ± SD)
Psychological symptoms	Pretest	21.76 ± 3.89	22.01 ± 2.36
	Posttest	8.29 ± 5.11	21.39 ± 3.79
Physical symptoms	Pretest	5.75 ± 1.65	5.66 ± 1.61
	Posttest	1.77 ± 0.60	5.91 ± 1.44
Total score	Pretest	37.51 ± 4.26	27.67 ± 4.10
	Posttest	10.06 ± 3.48	27.3 ± 5.69

SD: Standard deviation

The significance level of Kolmogorov-Smirnov test for the components of psychological symptoms (z = 0.142; P <0.05), physical symptoms (z = 0.163; P < 0.05) and total CDAS score (z = 0.139; P < 0.05) was greater than 0.05; therefore, the assumption of normal distribution of variables is observed. The results of Levene's test in psychological symptoms (F = 2.73; P < 0.05), physical symptoms (F = 3.127; P < 0.05) and total CDAS score (F = 0.702; P < 0.05) were not significant. As a result, the assumption of homogeneity of variances for all variables was confirmed. The results of Box's M test showed that the assumption of variance-covariance homogeneity equality was observed (Box's M = 2.627; F = 0.808; P = 0.489).

Table 3 indicates MANCOVA results for Corona pandemy post-test mean comparsion and its details.

As shown, the significant levels of Wilks' lambda test indicate that there is a significant difference between subjects in the experimental and control groups at the posttest stage in at least one of the dependent variables (coronavirus disease and component of anxiety). (Wilks' lambda: 0.01; P < 0.01; F = 180.142). To determine the difference, 3 ANCOVA tests were performed in MANCOVA text. According to the calculated effect size, 97.3% of the total variances of the experimental and control groups are due to the effect of the independent variable. Additionally, the statistical power of the test is equal to 1.00, indicating that the test was able to reject the null hypothesis with 100% power.

ANCOVA results are shown in Table 4 in the MANCOVA text on the energy consumption of sports viruses and their components.

As shown, F values for the total score of coronavirus anxiety, psychological symptoms, and physical symptoms were 137.43, 202.24, and 42.19, respectively, which were significant at the level of P < 0.01. As a result, according to the means presented in table 2, coronavirus disease anxiety and the components of psychological symptoms and physical symptoms were significantly reduced in the experimental group. In other words, it can be said that ACT has reduced anxiety caused by Covid-19 disease in people in Ahvaz.

Table 3. Multivariate analysis of covariance results on posttest means of coronavirus disease and its components

Test name	Statistical index						
	Value	F	Degree of hypothesis freedom	Degree of Hypothesis error	Significance level	Effect size	Statistical power
Wilks' Lambda	0.014	18.42	4	8	0.001	0.972	1.00

Table 4. Analysis of covariance results in the multivariate analysis of covariance text on coronavirus anxiety variables and its components

Variables	Statistical index				
	SS	df	MS	F	P-value
Total coronavirus heart disease anxiety score	198.36	1	198.36	137.46	0.001
Psychological symptoms	86.39	1	86.39	202.24	0.001
Physical symptoms	46.17	1	46.17	42.19	0.0001

SS: Sum of Squaer; df: Degree of freedom; MS: Mean of Squaer

Discussion

As mentioned, the present study was conducted with the aim to evaluate the effectiveness of ACT on reducing anxiety caused by Covid-19 disease in worried people in Ahvaz. The results of the present study showed that ACT was able to significantly reduce coronavirus disease anxiety and people's concern about the psychological and physical symptoms of this disease.

The cause of psychological symptoms on the CDAS refers to the constant mental occupation of a person with coronavirus disease and obsessive thinking. The cause of physical symptoms refers to the extent to which thinking about coronavirus disease has a negative effect on physical activity and health (including sleep, appetite, social relationships, headaches, palpitations, etc.). To date, no research has been conducted to evaluate the effectiveness of ACT in patients with Covid-19 or coronavirus anxiety disorder. However, the findings of previous studies on the effectiveness of ACT on reducing anxiety support the findings of the present study (Rostami, Keykhosrovani, Poladi Rishehri, & Bahrani, 2020; Rezapour Mirsaleh et al., 2019; Valizade et al., 2018; Tamimi, Soleymani Zadeh, Eftekhari, & Nemati, 2020; Foroutan, Heidari, Askari, Naderi, & Ebrahimi Moghaddam, 2018).

ACT intervention uses the skills of mindfulness, acceptance, and cognitive failure to increase psychological flexibility, and the result of psychological flexibility is nothing but increased ability of clients to connect with their experience in the present and what is possible for them in the moment. Furthermore, they act in a way that aligns with their chosen values. This experience can help clients experience their current situation as it is, and not as scary and dangerous as the mind makes it. In fact, individuals reduce their levels of stress and anxiety and deal effectively and constructively with the environment through providing adaptive and resilient responses to life events in the presence of threatening thoughts and feelings. Moreover, ACT can lead to appropriate thinking and train people to recognize their irrational and unreasonable assessments; thus, it empowers people to deal with the problems ahead, to be hopeful, and to move on with life. According to Foroutan et al. (2018), moving towards the values of life that are associated with pain and problems seems to reduce anxiety in the long run. Therefore, dealing with pain in the path of values, or in other words, acceptance instead of empirical avoidance, has an important role in achieving empowerment and reducing the level of anxiety. In addition, in ACT, cognitive techniques including living a worthwhile life, using metaphor, commitment, cognitive failure, mindfulness and enlightenment, presence in the present moment, coping practice, and active acceptance help people reduce their anxiety (Valizade et al., 2018).

Conclusion

ACT therapists use the concepts of commitment to teach the individual that commitment is, at its most basic level, the performance of behavior that align with

one's values, and not only the approval of the performance. Commitment may also be the determination of activities to achieve one's goals. Following this planning, the individual commits to using mindfulness strategies when faced with cognitive and emotional barriers. Once values are clarified and determined, subjects are instructed to focus on addressing the new learned behaviors.

Any research that is performed undoubtedly has its limitations.

This study was performed on cancer patients in Isfahan Province; therefore, decisions about extending results to other individuals and communities should be made with caution. In this study, changes in individuals were determined based on the self-report scale that was completed only by them and some of the patient's companions. Some limitations of this research include the lack of follow-up stage due to time constraints and lack of suitable cooperation between hospitals and clinics to conduct research.

Finally, it is worth noting that due to the high prevalence of COVID-19 disease at the time of the study (March 2017) in the country, it was not possible to use a larger sample and a follow-up test. For this reason, it is suggested that a larger and more diverse sample be used in future research. In addition, the role of obsessive-compulsive disorder (OCD) in COVID-19 disease and its association with anxiety, coping styles, and self-protection should be investigated.

Conflict of Interests

Authors have no conflict of interests.

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