

The Effectiveness of Virtual Acceptance and Commitment Group Therapy on Mental Health in Women with Corona Anxiety undergoing Covid-19 Treatment

Running Title: Mental Health in Covid-19

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Abstract

The prevalence of Coronavirus disease (COVID-19) has been associated with many psychological problems and concerns. This study aimed to evaluate the effectiveness of virtual acceptance and commitment group therapy on mental health in women undergoing Covid-19 treatment. This study was a randomized controlled trial and a quasi-experimental with a pre-test and post-test design. The statistical population included women undergoing Covid-19 treatment living in Ardakan, Yazd, Iran. Eighteen participants were randomly and equally divided into two groups of 9 cases, including the experimental and control groups. The participants answered the Lovibond Psychological Questionnaire (1995) in the pre-test and post-test stages. The experimental group received virtual-based acceptance and commitment group therapy intervention in 8 one-hour sessions, two sessions per week. In contrast, the control group did not receive any intervention during the study. Finally, the data were analyzed by the covariance analysis method at the significance level of 0.05. The results showed that the mean score of mental health and its dimensions (depression, anxiety, and stress) in the experimental group compared to the control group decreased significantly in the post-test stage ($P < 0.001$). According to the research results, virtual acceptance and commitment to group therapy can effectively reduce the psychological problems of people suffering from COVID-19.

Keywords: COVID-19, Mental health, Acceptance and Commitment, Group therapy, Depression, Anxiety, Stress

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Introduction

Since the outbreak of COVID-19 in Wuhan, China, in December 2019 (1), the virus has spread rapidly throughout China and many other countries (2). So, many people died from Covid-19 disease, which has become a major global health problem (3). On January 30, 2020, the WHO reported the prevalence of COVID-19 as the sixth public health emergency stated international concerns after H1N1 (2009), Polio (2014), Ebola in West Africa (2014), Zika (2019), and Ebola in the Democratic Republic of the Congo (2019). Therefore, the health centers, governments, and the public should cooperate globally to prevent its spread (4). COVID-19 may be associated with respiratory infections such as colds or more severe illnesses such as MERS and SARS, which in some cases are associated with death (5).

In addition to mortality, the prevalence of COVID-19 has led to many psychological disorders and concerns (5, 6). Anxiety is a panic disorder in which people are concerned that they may be diagnosed with a disease (7). Anxiety in COVID-19 can be very severe due to its unknown nature, lack of definitive treatment, high prevalence, and high mortality (8). Fischhoff has also shown that when an infectious disease such as COVID-19 spreads, disease stress, fear of death, and other related problems increase disease anxiety (9).

Many countries, such as China and Italy, completely quarantined their citizens, and countries like Iran imposed strict travel rules because of the Covid 19 pandemic (10). Among

the countries, China has been one of the most successful countries in controlling the prevalence of COVID-19 (11). From the beginning, to prevent the spread of the disease in the city of Wuhan and to control the spread of the pandemic, China took several strict preventive and controller measures such as quarantining cities and restricting people from entering and exiting their communities (12). These protocols, which were excellent results, were praised by WHO and effectively reduced the prevalence of the disease (6).

However, despite the advantages, quarantine inevitably limits people to specific social participation and harms their mental health (13). The quarantine and anxiety conditions related to Coronavirus, which caused economic problems for many people, also reduced mass communication and daily routine can negatively affect a person's mental health (11). The WHO defines mental health as complete physical, mental and social well-being (14). According to various studies, diseases associated with respiratory problems increase anxiety and reduce the quality of life and mental health (15, 16). Huang et al. showed that COVID-19 is associated with depression and can decrease sleep quality, especially in older people. They also revealed that the patients with COVID-19 show higher levels of anxiety and depression (13). Some factors decrease mental health in the context of pandemic and quarantine caused by it, including posttraumatic stress disorder (17), decreased life expectancy and social support, increased loneliness (18), stress, anxiety, and obsessive-compulsive disorder (19). Moreover, many treated

patients of Covid-19 may be concerned about the side effects of Covid-19 drugs, which may increase their mental health problems (20).

Increased mental health in the quarantine conditions of COVID-19 indicates the need for the use of a therapeutic intervention. One recently considered therapy is acceptance and commitment therapy (ACT) (18). ACT, introduced by Steven Hayes (21), is the only intervention in which commitment and mindfulness strategies and behavioral change strategies are used to increase psychological resilience (22). Many people in stressful conditions, such as the outbreak of COVID-19, have made great efforts to eliminate their unpleasant psychological symptoms (23). Various studies have shown the effectiveness and efficiency of ACT in improving the mental health components in outbreaks (24, 25). Different studies show that treatment based on ACT would be effective for depression and anxiety (26, 27), stress (23, 28, 29), and can reduce psychological distress (30-32). Despite the benefits of ACT, its use in situations such as the outbreak of COVID-19 has received less attention. Moreover, most of the research conducted in terms of method, type of intervention, and research community differ from the present study. Therefore, according to the existing research gap, this study was conducted on the effectiveness of virtual acceptance and commitment group therapy on mental health in women with anxiety of the Covid 19 under the medical treatment of it.

Methods

The present study was a quasi-experimental one with a pre-test and post-test design and a control

group with random assignment. The statistical population included women undergoing Covid-19 treatment suffering from psychological disorders in Ardakan, Yazd, Iran. Research participants were patients infected with Covid-19 based on positive results of PCR tests during the fourth peak of the Coronavirus outbreak and were under the common treatment. In terms of the severity of the disease, the patients had mild symptoms and were able to receive the education. The evocation announcement of Coronavirus anxiety and virtual Psychological Questionnaire distribution recognized qualified people. One hundred thirteen participants answered the virtual questionnaire. The research tools were designed to invite participants would be invited to participate in an online survey if they scored sufficiently (point above %50 on the Corona Virus Anxiety Scale and receiving Covid-9 treatment). They were given a link to join a virtual group in the Telegram application. Thirty-four participants were entered into the research through this channel. Eighteen people of participants with high scores on the Covid-19 anxiety scale were asked with other research criteria to participate in the next step. Selected ones were randomly and equally divided into two groups of 9, including the experimental and control groups. The participants answered the pre-test of depression, Anxiety and Stress Questionnaire (DASS-21). Inclusion criteria were the patient under Covid-19 treatment, obtaining at least 21 points from the Anxiety Questionnaire, suffering from stress and depression, interest in attending meetings, and not attending another study simultaneously. Exclusion criteria were considered unwillingness to continue

participation and non-compliance with the rules. Ethical considerations were observed using anonymous questionnaires, the confidentiality of the questionnaires, and the right of the participant to withdraw from the study.

Research Tools

The Corona Virus Anxiety Scale

This questionnaire is prepared and validated by Alipour et al. to evaluate the anxiety of Coronavirus prevalence in Iran. The final version of this tool includes 18 items and 2 components. This tool is organized into 4 choices from never (1) to always (3). Items 1 to 9 are related components to psychological symptoms, and items 10 to 18 are related to physical symptoms. Total Corona anxiety score is achieved by adding each item. Total number changes between 0 to 54. Higher scores in this questionnaire show a higher level of anxiety in people. Alipour et al. reported the reliability of this questionnaire by using Cronbach's alpha for psychological factor (0.879), physical factor (0.861), and total questionnaire (0.919). The λ -9 Guttman earned 0.882 for the first factor, 0.864 for the second factor, and 0.992 for the whole questionnaire. The reliability was computed by correlating this tool with GHQ-12. Corona Virus anxiety questionnaire correlation with a total score of GHQ-12 and anxiety components, physical symptoms, society, and depression dysfunction was reported as 0.48, 0.52, 0.42, 0.33, and 0.27, respectively (5).

Anxiety, Stress, and Depression Questionnaire Conclusion

Lovibond's anxiety, stress, and depression questionnaire (DASS-21) was used to measure psychological anxiety. The short form of this scale has 21 items, prepared in 1995 by Lovibond. The items are shown on 4 degrees Likert scale from zero (never) to three (very much), and the higher score indicates much more severe symptoms. Depression, anxiety, and stress are each estimated by seven items. The reliability and viability of this research for the Iranian samples were reported to be appropriate. Retail correlation of depression scale with Beck Depression test was computed at 0.7, retail correlation of anxiety scale with Zank, anxiety Self-Assessment scale 0.67, and retail correlation of Stress scale with perceived stress scale 0.49 (33).

Procedure

After selecting experimental and control groups, explanations about the time and way of the meeting were presented virtually to each experimental group participant. Furthermore, the control group was guaranteed to participate in teaching meetings after the experimental group meetings were finished. The experimental group received virtual ACT in two sessions per week; each session was 1 hour. The meetings were held twice a week, from 9 pm to 10 pm, on the Skyroom platform. Experimental group participants received some teaching methods according to an organized teaching protocol. The participants' questions were replied to in private after the meeting. The control group did not receive any training at that time. Both groups virtually answered the research questionnaire after the sessions finished. The data were analyzed

statistically by SPSS-25 software and the Covariance Analysis test. The researcher designed the group therapy protocol based on the ACT

based in the book Embracing your demons (33). A summary of acceptance and commitment therapy sessions is provided in **Table 1**.

Table 1. A summary of acceptance and commitment therapy

Sessions	Description of Sessions(meetings)
First	Expressing the goals, building trust and treatment relation, negotiating about COVID-19 disease, participants' beliefs and behavior survey, participants' expectations from meetings, setting rules & commitments, negotiating for treatment, acceptance & commitments and goals.
Second	Negotiating about familiarity with symptoms, transmission ways & prevention ways, also the reasons for COVID-19 anxiety, to survey participants' beliefs and behavior related to efforts for COVID-19' stress and anxiety & its consequences, to introduce treatment based on acceptance & commitments, to get the feedback & to deliver the assignments
Third	To check the assignments, To teach 0 strong beliefs that invite the individual to a challenge will never success, Beliefs against humanism beliefs, To derivate creation of negative thoughts & feelings, To negotiate about how individual learn controlling hallucination? , to get the feedback & to deliver the assignments
Fourth	To check the assignments about how feelings control cause new problems, to survey the ways humans use to escape or avoid awkward feelings(fight or flight), to get feedback & to deliver the assignments
Fifth	To check the assignments, to teach six arranged phenomena based on acceptance & commitments, division, to make space or being disclosed, connection, self- sighting, commitments & values, to teach different techniques: 0. Division:
Sixth	mindfulness+ values+ commitments- psyc_ flexibility , 9. Musical mind technique, 3. To name mind stories, to get the feedback & to deliver the assignments
Seventh	To check the assignments, to negotiate around how to understand & believe in mind stories, Not to stick to present beliefs, to focus on everything is happening now instead of attention for auto-beliefs that mind says, To teach 2 ways to lessngetting serious the minds, 1. Mind gratitude, 2. Crazy noise, to get the feedback & to deliver the assignments
Eights	To check the assignments, To negotiate around this if a thought is serious what will occur? To survey whether this thought is effective. To explain the real meaning of acceptance in the view based on acceptance & commitments, To make preparedness for ending the sessions, to get the feedback & to deliver the assignments
Ninth	To check the assignments, to add up, to answer the participants' questions, and to complete them after the test.

Findings

There were 1 elementary, 2 high school, and 6 college-educated participants in the experimental group and 4 high school and 5 college-educated in the control group. The mean age of the experimental group was 30.78 (standard deviation

of 6.7), and in the control group was 33.20 (standard deviation of 7.54). The mean score of coronary anxiety in the experimental group was 31.11 (standard deviation of 6.73), and in the control group was 29.79 (standard deviation of 5.14).

Table 2. The average and deviations of variable scores for test phases and experimental & control groups separately

Group		Stage	Minimum	Maximum	Mean	Std. Deviation
Experiment	Depression	Pre-test	4.00	18.00	11.4444	4.82470
		Post-test	5.00	9.00	6.7778	1.39443
	Anxiety	Pre-test	3.00	17.00	10.3333	5.09902
		Post-test	3.00	9.00	6.4444	2.18581
	Stress	Pre-test	6.00	20.00	12.6667	4.35890
		Post-test	5.00	15.00	8.0000	3.16228
Control	Depression	Pre-test	8.00	15.00	10.8889	2.02759
		Post-test	10.00	15.00	12.0000	1.58114
	Anxiety	Pre-test	10.00	17.00	12.3333	2.54951
		Post-test	10.00	17.00	12.8889	2.20479
	Stress	Pre-test	8.00	16.00	12.5556	2.55495
		Post-test	9.00	18.00	14.2222	2.77389

Findings showed that the average and deviation scores for participants in the experimental and control groups in the pre-test did not show a high difference in mental health, depression, anxiety

and stress. While, both groups had different scores in the post-test (**Table 2**). The covariance analysis defaults are shown in **Table 2**.

Table 2. The covariance analysis defaults

Variable	Group	Shapiro-Wilk		Homogeneity of Regression Slopes		Levene's Test ²		Box's Test ¹
		Statistic	Sig.	F	Sig.	F	Sig.	P>0.01
Depression	Experiment	0.957	0.862	1.15	1.15	0.36	0.554	
	Control	0.672	0.948					
Anxiety	Experiment	0.940	0.600	0.23	0.23	0.36	0.557	
	Control	0.122	0.870					
Stress	Experiment	0.970	0.859	4/59	0.05	4.34	0.06	
	Control	0.890	0.970					

¹.Box's Test of Equality of Covariance Matrices ². Levene's Test of Equality of Error Variances

The results showed that all the assumptions of the analysis of covariance have been observed

correctly (P> 0.05), and the use of this test was allowed (**Table 3,4**).

Table 3. The results of Covariance Analysis

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Observed Power
Group	Pillai's Trace	0.838	18.931 ^b	3.000	11.000	.000	0.838	1.000
	Wilks' Lambda	0.162	18.931 ^b	3.000	11.000	.000	0.838	1.000
	Hotelling's Trace	5.163	18.931 ^b	3.000	11.000	.000	.838	1.000
	Roy's Largest Root	5.163	18.931 ^b	3.000	11.000	.000	.838	1.000

Table 4. The results for Covariance Analysis For every variable

Source	Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power ^d
Group	Depression	113.657	1	113.657	53.086	.000	0.803	1.000
	Anxiety	146.225	1	146.225	30.756	.000	0.703	.999
	Stress	194.468	1	194.468	38.089	.000	0.746	1.000
Error	Depression	27.833	13	2.141				
	Anxiety	61.807	13	4.754				
	Stress	66.373	13	5.106				

Tables 3 and **4** show Covariance analysis results to survey the significance of average differences in depression, anxiety and stress variables. After controlling the pre-test, the post-test differences between the experimental and control groups were significant in all variables ($P < 0.001$). Accordingly, it can be said that treatment group that was based on acceptance and commitment to virtual method had affected depression, anxiety and stress of women with Corona anxiety under the medical treatment of Covid-19 (**Table 3, 4**)

Discussion

This research aimed to study effectiveness of virtual ACT group therapy on mental health in women with anxiety of coronaviruses pandemic

under the medical treatment of it. The results showed that implementing group therapy virtually based on the ACT has significantly reduced depression, anxiety, and stress scores in the experimental group.

The results of this research are in line with the findings obtained from Kakavand et al. (29), Polakanahu et al. (2019), Azemi et al. (30), and Alavi et al. (31). Zemestani et al. evaluated the effectiveness of ACT on depression and anxiety of mothers with children with attention deficit hyperactivity disorder. They concluded that the intervention based on the ACT Changes changes people's relationships, thoughts, and feelings in a way that they do not see as a sign of reduced depression and anxiety (26). In a study, Levin et

al. concluded that ACT reduced psychological flexibility by improving psychological resilience. There are some psychological problems. Thus, these interventions can improve psychological flexibility and decrease psychological issues such as depression, anxiety, and stress by altering individuals' perceptions of not threateningly recognizing the symptoms of psychological disorders and changing their relationship to their thoughts and feelings (32).

Pirhayati and Barghi Irani evaluated the effectiveness of ACT on mental health and cognitive function in the elderly with age-related macular degeneration. They concluded that ACT is a substitute for modern life education (33). As a context and effort to revive values, it increases individuals' psychological well-being and mental health. In acceptance and commitment training sessions, individuals were taught to practice based on functional contextualism, which is an essential theoretical basis of the acceptance and commitment approach, instead of changing painful feelings and thoughts (traumatic symptoms such as stress, anxiety, and depression). This is a fundamental obstacle to a rich and meaningful life; move towards creating a new form of life, that is, creating a rich life by taking steps toward their values. People have learned to make changes in their lives instead of trying to improve their mental health. The result is a reduction in depression, anxiety, and stress symptoms, not a goal.

ACT therapy, unlike traditional cognitive behavioral therapy, emphasizes acceptance and commitment rather than trying to change thoughts. This feature causes a person's energy to

be spent on achieving goals instead of eliminating his thoughts and emotions, which is the goal of life. Psychotherapy with ACT first teaches people that trying to stop negative thoughts and emotions will increase psychological distress. They learn to accept these thoughts and emotions and try to restore and achieve their values in a committed way.

The most important limitations of the present study were the small number of samples, the impossibility of holding face-to-face meetings due to the prevalence and risk of Covid-19, the lack of follow-up period, and the lack of control over interfering variables. It is suggested that virtual acceptance and commitment-based therapies should be used to reduce psychological problems in the risky outbreak of diseases such as Covid-19, where it is not possible to hold face-to-face training sessions. It is also suggested that other components related to pathogens such as quality of life, lifestyle, and life expectancy be examined in future research.

Conclusion

Acceptance and commitment-based psycho-educational protocol training significantly reduces the components of psychological distress, i.e., depression, anxiety, and stress, in women undergoing Covid-19 treatment. Therefore, this method can be used as an effective combined intervention with medications in pandemics.

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