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The COVID-19 Anxiety and Psychological Well-being Following Resilience-Based Cognitive Behavioral Therapy (R-CBT)

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Abstract

Objective: This study attempted to use resilience-based cognitive-behavioral intervention (R-CBT) through online learning to reduce COVID-19 anxiety and improve psychological well-being.

Method: Fourteen Payame Noor University Telephone Counseling Center students with Corona anxiety, selected by volunteer sampling, received nine sessions of R-CBT using a learning management system (LMS). The participants completed the Corona Disease Anxiety Scale (Alipour et al.2020) and Ryff Scales of Psychological Well-being (Ryff, 1989) in a pre-test, post-test, and follow-up. Finally, the data were analyzed using repeated measures.

Results: The results demonstrated the significant effect of R-CBT on COVID-19 anxiety and psychological well-being ($p<0.0001$). LSD post-hoc test indicated a significant difference ($p<0.05$) among the pre-test, post-test, and follow-up stages regarding COVID-19 anxiety. Accordingly, the level of stress decreased in the post-test and follow-up stage. The results also revealed a significant difference among the pre-test, post-test, and follow-up stages regarding psychological well-being ($p<0.05$). Accordingly, the level of psychological well-being increased in the post-test and follow-up stage. However, no significant difference was observed between the post-test and follow-up stages, which highlighted the non-stability of the effect of the intervention over time.

Conclusion: According to the results, it could be concluded that online sessions of R-CBT were effective likewise in-person sessions and could be used in pandemic conditions or long-distance therapy to improve the psychological condition of anxious patients.

Keywords: Coronavirus disease, Stress, Well-being, Cognitive Behavioral Therapy, Resilience.

Introduction

Even though19 the virus was detected for the first time in Wuhan, China, in December 2019, the World Health Organization (WHO) declared the commencement of a pandemic caused by this virus on March 11, 2020, and warned about its fast-spreading prevalence. As noted by governments, scientific societies, and physicians, COVID-19 affected the physical, economic, and mental health of human beings all over the world. Worldwide and injection of vaccines, the pandemic was exacerbated in Iran due to virus mutations.

Due to the COVID-19 disease (McKibbin & Fernando, 2021) and the associated job insecurity, job loss (Blustein et al., 2020; Giorgi et al., 2020), and psychological issues, an economic crisis occurred in the entire world. In Italy, for instance, 42.2% of people had sleep disorders, a24.7% demonstrated depression symptoms, 23.2% suffered from acute anxiety (Giorgi et al., 2020), and 29.5% showed symptoms of Post-Traumatic Stress Disorder (PTSD) (Forte et al., 2020). Anxiety disorders were among the most prevalent psychological disorders during the pandemic. Lee et al. (2020) investigated

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the prevalence of psychological disorders during the pandemic. They reported a prevalence of 45.3% for depression, 47% for anxiety, 15.2% for health anxiety, 27.8% for COVID-19 phobia, and 27.8% for death anxiety. In another study, the prevalence of PTSD related to COVID-19 was 29.5% in the Italian population (Forte et al., 2020). In addition, considerable clinical insomnia, acute stress, anxiety, and depression increased massively compared with the pre-pandemic era (Morin & Carrier, 2021). COVID-19 phobia also has been reported (Arora, Jha, Alat, & Das, 2020). Furthermore, the prevalence of COVID-19 coupled with quarantine resulted in negative impacts on mental health and anxiety (Brooks et al., 2020). Wang et al. (2020) claimed that anxiety and negative emotions were caused by quarantine and social distancing. A drastic change in mental health was also observed in the Iranian population. For instance, (Alipour, Kalantari, & Salavati Rahqi, 2021) demonstrated an increase in physical symptoms, anxiety symptoms, social functioning, and depression symptoms.

Anxiety and stress play a prominent role in the etiology of physical disorders and exert a negative impact on the immune system, which results in early infection. A few studies revealed increasing anxiety disorders in tandem with acute mutations of COVID-19 (Yao, Chen, & Xu, 2020). Consequently, a decrease in COVID-19 anxiety can affect disease prevention and progression. Nevertheless, it should be noted that a lack of mental disorders does not indicate mental well-being. To consider a human being mentally healthy, scientists highlight positive characteristics and personal development (Ryff & Singer, 1998).

Consequently, psychological well-being is a key element in the disease (Rasoolzadegan et al., 2020) and mental health. Psychological well-being is beyond the lack of psychological distresses like anxiety and depression (Trudel-Fitzgerald et al., 2019). Thus, one of the main aims of mental healthcare is to promote well-being (Yarnell, Barry, & Grunberg, 2019).

Psychological well-being has been defined as emotional health, overall functionality, and a combination of positive feelings and effective functioning (Huppert, 2009). Ryff (1989) defined psychological well-being as a process of self-actualization with six dimensions, authority, mastery of the environment, personal development, positive relationships with other human beings, goal-oriented, and self-acceptance. Psychological well-being protects human beings from both mental (Lamers et al., 2015) and physical disorders (Ryff, 2014), consequently increasing health and life expectancy (Weiss, Westerhof, & Bohlmeijer, 2016). A large body of research has supported the relationship between psychological well-being and physical health (DuBois et al., 2015; Trudel-Fitzgerald et al., 2019). Accordingly, increasing psychological well-being can prevent severe COVID-19 infection, eventually resulting in mental health.

Apart from all the actions taken into consideration by medical institutions to inhibit the growth of the virus, some interventions must be designed to decrease the drastic impact of COVID-19 on mental health and increase individuals' well-being. Resilience-based cognitive-behavioral therapy combines cognitive-behavioral therapy, positive psychotherapy, and resilience, which emphasizes cognitive factors and cognition distortions as the main predictors of mental disorders and psychological distress. According to Beck's model, cognition distortions consist of general beliefs and schemas about self, others, and the universe, which cause typical and automatic thoughts in specific situations. In this model, various techniques are proposed to alter these distorted cognitions that result in emotional distress and behavioral problems (Hofmann et al., 2012). On the other hand, resilience is one of the key terms defined in positive psychology. According to Newman (2003), resilience is the ability to adapt to hardships. In positive psychology, instead of focusing on psychopathology, the importance of

internal defense, coping mechanisms, and positive thinking is highlighted, which helps human beings adapt to complicated and stressful life dilemmas, losses, and pains. Positive psychology focuses on the ability to live a happy life and reach hope instead of pain. Being a suitable alternative to disease-driven approaches, positive psychology is a health-driven approach that focuses on developing skills and positive emotions. Resilience-based cognitive-behavioral therapy helps individuals decrease their psychological issues by clarifying their thoughts, emotions, and behaviors. More importantly, it helps them achieve mental health and internal defenses to cope with diseases like COVID-19 and not to be distorted by psychiatric disorders.

One of the issues raised for vulnerable people is their fear of infection with viruses and social distancing. As a result, to keep themselves and their loved ones away from the virus and avoid its consequences, they may not seek psychological help. Consequently, policies like online or phone therapy should be implemented regarding social distancing and health protocols. Researchers have highlighted the use of online technologies to overcome geographical obstacles during the pandemic (Perrin et al., 2020). Some advantages of phone therapy services include reducing the waiting time, saving time and money for patients, and eliminating commuting for therapists (Pietrabissa et al., 2015). Previous research indicated that online services were effective in reducing anxiety and depression (Sadock et al.,2017) and improved patient recovery (Lanoye et al., 2017).

On the other hand, Kleiboer et al. (2015) implemented a self-guided internet-based program to decrease mental pressure and anxiety symptoms. They observed no significant difference between the implemented program and traditional in-person treatments. Considering the effectiveness of online and phone therapies, they can be taken into account during pandemics. For instance, Saladino et al. (2020) revealed the effectiveness of Skype and webcam therapies. Brog et al. (2021) also reported the effectiveness of a self-help internet-based therapy for a case with mental distress.

Although no research has been published on the prevalence of COVID-19 phobia in Iran, the increasing number of teletherapy indicates of phobic anxiety towards COVID-19. On the other hand, holding virtual classes, students' loss of their jobs, and difficulty paying university fees have resulted in the vulnerability of Payam-e-Nour university students. To overcome COVID-19-related anxiety, promote psychological health, and prevent the consequences, interventions and therapies should be planned to reduce psychological symptoms and promote mental health. Regarding social distancing and adherence to health protocols, interventions must be taken virtually. Therefore, the present study aims to investigate whether virtual group therapy using resilience-based cognitive behavioral therapy can help reduce anxiety and promote psychological well-being.

Method

Participants

This quasi-experimental study was conducted on 50 students who suffered from anxiety and stress from COVID-19 and had counseling sessions with Bushehr (Iran) Payame Noor University's Counseling Center via telephone from February to April 2021. They were selected through purposive sampling. Among these students, seventeen individuals were chosen and participated in the study through volunteer sampling. The study's inclusion criteria were being a student at Bushehr Payame Noor University, being female, and having made a call to the counseling center due to stress and anxiety related to COVID-19. The exclusion criteria were having a history of mental disorders, being under medications, or being on psychological treatments simultaneously. Finally, among seventeen students, fourteen individuals participated in all treatment sessions and were analyzed.

Ethical statement

This trial was registered in the Iranian Registry of Clinical Trials (IRCT code: 51498, ethics code: IR.PNU.REC, 110, 1399). Regarding the ethical considerations, all research steps were explained to the participants. In addition, they were informed about the voluntary nature of participation in the research and the confidentiality of their data. Written informed consent was also obtained from the participants.

Procedure

Seventeen students of Payame Noor University who experienced Covide-19 and high COVID-19 anxiety were selected through volunteer sampling. After completing the informed consent form indicating their voluntary participation, the participants were asked to complete the research questionnaires. Afterward, nine 90-minute resilience-based cognitive behavioral therapy sessions were held online via the LMS platform of Payame Noor University. During these sessions, three participants dropped out due to personal and familial issues; at last, fourteen participants were analyzed. After all the sessions were finished, the participants were

Session	Sessions content
First Session	Introducing the members, explaining the resilience-based cognitive behavioral therapy and its effectiveness, and explaining the meaning of resilience.
Second Session	Defining stress and its sources, probable consequences of stress on health, teaching the cognitive triangle, the importance of self-talk in raising and controlling stress (distinguishing between logical and illogical self-talks), teaching conscientiousness to control emotions, teaching meditation, and assigning homework.
Third Session	Evaluating homework, describing the relationship among thoughts, emotions, and physical sensations, the role of thought traps in stress, identifying thinking/cognitive biases and methods to overcome them, teaching diaphragmatic breathing, mental imagery, increasing self-esteem and self-efficacy, introducing self-care methods during the pandemic, and assigning homework.
Fourth Session	Assessing homework, altering cognitive biases and thoughts through exploring shreds of evidence and probabilities, evaluating the advantages and disadvantages, exploring ruminations and negative thoughts about COVID-19 disease, and assigning homework.
Fifth Session	Evaluating homework, teaching adaptation techniques for stress, mental and physical techniques like coping mechanisms, relaxing, controlled breathing, and breath counts, teaching decision-making and assigning homework.
Sixth Session	Evaluating homework, stress adaptation skills from a behavioral aspect (efficient and inefficient skills during the pandemic), teaching problem-solving, meditation (positive self-inductions and imaginations), and assigning homework.
Seventh Session	Evaluating homework, emotion-regulation techniques to cope with COVID-19 anxiety, efficient and inefficient emotion-based adaptation skills, taking responsibility for oneself and others during the COVID-19 pandemic and psychological training to understand the real conditions during the pandemic.
Eighth Session	Evaluating homework, anger management, teaching the cognitive and emotional aspects of anger, illogical thoughts about anger, teaching short-term methods to manage anger, mantra relaxation, and time management.
Ninth Session	Evaluating homework, anger management from the behavioral aspect, teaching assertiveness and expression instead of aggression, teaching how to gain and keep social support and compromise with others, conclusion, and providing feedback.

Table 1- Content Validity Index (CVI) of Resilience-based cognitive behavioral therapy

Consent issue	Referees						Mean consent	General consent
1. Conformity of the content of the prepared sessions	1	0.83	1	1	1	1	0.97	0.985
2. The appropriateness of the sessions, structures, and steps needed for resilience-based cognitive behavioral therapy	1	1	1	1	1	1	0.100	
3. Time adequacy for training each step and skill of resilience-based cognitive behavioral therapy	1	1	1	1	0.83	1	0.97	
4. Therapy package adequacy	1	0.83	1	1	1	1	0.97	
5. General assessment of the therapy package	1	1	1	1	1	1	0.100	

asked to complete the questionnaires again. Four weeks later, follow-up questionnaires were also distributed among the participants. The mean age and the deviation of participants were 27 ± 7.24 years. In terms of marital status, 5 (35.71%) were married, and 9 (64.28%) were single.

The data were entered into the SPSS 21 software and were analyzed using descriptive and inferential statistics. Descriptive statistics calculated percentage, frequency, mean, and standard deviation. Inferential statistics also included repeated measures ANOVA and post-hoc tests.

Intervention

Resilience-based cognitive behavioral therapy (R-CBT)

The sessions were designed based on stress and anxiety management protocols by Antoni, Ironson, & Schneiderman (2007) and resilience protocols toward COVID-19 (Henderson et al., 1997). What follows includes a brief description of the sessions:

Content Validity Index (CVI) (Waltz & Bausell, 1981) was used to evaluate the validity of the therapy package. In doing so, experts were required to rate the relevance of each item from 1 (irrelevant) to 4 (totally relevant). Six experts evaluated the therapy package. They were also asked to assess each session's structure, procedure, and content. Furthermore, they were required to fill out an open-ended questionnaire to add their comments and critics for promoting the resilience-based cognitive behavioral therapy package's content, structure, and procedure.

The CVI of all the resilience-based cognitive behavioral therapy package items was 0.985. Since the minimum acceptable ratio for CVI is 0.79, the results were acceptable. Additionally, the agreement coefficient (convergent agreement) was 0.100 and the total agreement coefficient was 0.985, which was acceptable (Table 1).

Measures

Corona Disease Anxiety Scale (CDAS)

This scale was developed and validated by Alipour et al. (2020) to measure the anxiety caused by the COVID-19 pandemic in Iran. This scale was used to categorize the participants into mild, moderate, and severe levels of anxiety. The final version of this scale consisted of 18 items divided into two factors. Items 1-9 assessed mental and 10-18 assessed physical symptoms. The items could be responded to via a four-point Likert scale (0=never, 1=sometimes, 2=mostly, and 3=always). Thus, the lowest and highest scores were 0 and 54, respectively, and higher scores represented higher levels of anxiety. The reliability of this scale was

approved by Cronbach's alpha coefficient of 0.879 for the first factor, 0.861 for the second factor, and 0.919 for the total score. Furthermore, Guttman's λ-2 rate was 0.882 for the first factor, 0.864 for the second factor, and 0.992 for the whole scale. The criterion validity of the scale was assessed through its correlation with Mental Health Questionnaire (GHQ-28). Based on the results, the correlation coefficients between the CDAS and total score and anxiety, physical symptoms, social dysfunction, and depression subscales of GHQ-28 were 0.483, 0.507, 0.418, 0.333, and 0.269, respectively, which were significant at $p<0.01$.

The Ryff Scales of Psychological Well-Being (RSPWB)

To assess psychological well-being, the short form (18-item) of the RSPWB (Ryff, 1989) was used. RSPWB included six subscales, authority (independence), environmental mastery, personal development, positive relationship with others, purposefulness, and self-acceptance. Each subscale was rated based on a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree), and the total score was considered the overall psychological well-being. The correlation between the short form of RSPWB and the original form ranged from 0.7 to 0.89 (Ryff & Singer, 2006). According to Ryff's research (1989), the factors and convergent validity of this scale were evaluated according to the scores of other psychological well-being scales ($p<0.001$). Moreover, Khanjani et al. (2014) confirmed the internal consistency of the scale by Cronbach's alpha = 0.71. In the present study, Cronbach's alpha was computed as 0.73.

Results

Descriptive statistics of all research variables in the pre-test, post-test, and follow-up are presented in Table (2).

Statistical Repeated-measures ANOVA

The results of the Shapiro–Wilk test showed the normal distribution of the pre-test, post-test, and follow-up scores for COVID-19 anxiety and psychological well-being ($p>0.05$). Mauchly's sphericity test was used to determine whether the sphericity assumption was violated. The results indicated that the anxiety data violated the sphericity assumption. Thus, to report the F ratio, the modified degrees of freedom Greenhouse–Geisser test was implemented (Mauchly's $W=0.44$, $x^2=9.66$, $p=0.008$). However, the test was appropriate for psychological well-being. Therefore, to report the F ratio for the degree of freedom, equivalence tests for the ratio of two variances were used (Mauchly's $W=0.786$, $x^2=3.17$, $p=0.2$).

The study results revealed the significant effect of time on COVID-19 anxiety, indicating significant differences in the interval between these two tests ($df=1.28$, $f=85.57$, $p<0.0001$). Partial eta demonstrated that 86.8% of the observed changes were due to stages (time). The results also showed the significant impact of time on psychological well-being. The findings implied a significant difference between the means of the two periods ($df=2$, $f=8.47$, $p<0.0001$). Partial eta demonstrated that 39.5% of

Table 2- The means and standard deviations of the research variables among the students

	COVID-19 anxiety		Psychological well-being	
Time	Mean	Standard deviation	Standard deviation	Mean
pre-test	26.57	7.0081	12.14021	77.0000
post-test	10.00	6.310	10.87289	82.7143
Follow-up	8.071	4.418	7.69794	85.7857

Table3- Analysis of the impact of time stages on COVID-19 anxiety and psychological well-being

Variables		Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared	Noncent. parameter
Covid-19 anxiety	Time	2896.048	1.288	2248.64	85.574	.0001	.868	110.212
	Error	439.952	16.743	26.277				
Psychological well-being	Time	556.619	2	278.310	8.473	.001	.395	16.945
	Error	854.048	26	32.848				

the observed changes were due to stages (time) (Table 3).

LSD post-hoc test was used to evaluate the effectiveness of the intervention in COVID-19 anxiety and psychological well-being in different stages. The results indicated a significant difference ($p<0.05$) among the pre-test, post-test, and follow-up stages regarding COVID-19 anxiety. Accordingly, the level of anxiety decreased in the follow-up stage. The results also revealed a significant difference ($p<0.05$) among pre-test, post-test, and follow-up stages regarding psychological well-being. Accordingly, the level of psychological well-being increased in the follow-up stage. However, no significant difference was observed between the post-test and follow-up stages, which highlighted the stability of the effect of the intervention over time.

Discussion and conclusion

The results indicated that resilience-based cognitive-behavioral therapy was effective in decreasing COVID-19 anxiety and enhancing psychological well-being among students. These results were consistent with those of the previous studies (Brog et al., 2021; Kleiboer et al., 2015; Sadock et al., 2017; Saladino et al., 2020).

The increasing death rate, as well as the unknown nature of COVID-19, increased anxiety levels. Thus, anxiety and stress related to the transmission of this virus and lack of knowledge for predicting what might happen turned into a great concern for human beings. Understanding the cognitive biases, increasing appropriate knowledge about the disease, disregarding rumors, seeking social support, and coping strategies in resilience-based cognitive-behavioral therapies can help individuals cope with

Table 4- The results of LSD post-hoc test for the evaluation of dual changes during the time

Variables	(I) Factor 1	(J) Factor 2	Mean difference (I-J)	Std. error	Sig.	95% confidence interval for differences	
						Lower bound	Upper bound
COVID-19 anxiety	pre-test	post-test	16.571*	1.943	.0001	12.373	20.770
		Follow-up	18.500*	1.660	.0001	14.914	22.086
	post-test	pre-test	-16.571*	1.943	.0001	-20.770	-12.373
		Follow-up	1.929*	.848	.041	.096	3.761
Psychological well-being	pre-test	post-test	-5.714*	2.350	.030	-10.791	-.638
		Follow-up	-8.786*	2.470	.004	-14.122	-3.450
	post-test	pre-test	5.714*	2.350	.030	.638	10.791
		Follow-up	-3.071	1.567	.072	-6.457	.314

these biased thoughts and overcome their anxiety.

Generally, people with high levels of health anxiety tend to overestimate their trivial and weak physical feelings and interpret them as dangerous symptoms. In the flu, as well as in other viral diseases also, people with high health anxiety levels were likely to interpret their benign muscle pains or weak coughs as the symptoms of the viral disease by mistake (Wheaton et al., 2012). Biases and wrong interpretations can, in turn, raise anxiety among people, resulting in paying more visits to doctors and becoming prone to diseases.

The resilience-based cognitive behavioral therapy focuses on reevaluating cognitive biases and teaching people to address and change their ruminating thinking patterns and their interpretations that negatively affect their emotions and behaviors. R-CBT helps them be more relaxed and modify their biases. On the other hand, teaching how to manage emotions helps them recognize and regulate their anxiety and stress symptoms.

Psychological well-being consists of positive feelings and general life satisfaction in different aspects of personal and professional life (Ekman et al., 2005). Cognitive-behavioral therapy not only focuses on decreasing the disease symptoms but also elevates the levels of valuable feelings like self-esteem and efficacy that enhance psychological well-being. Furthermore, this therapy helps people implement problem-solving skills and experience positive feelings. Highlighting stress coping strategies (Dehghan Manshadi et al., 2020) and reducing cognitive biases result in positive evaluations of life and positive feeling towards oneself. This trend eventually brings about better addressing of inner talents and experiencing psychological well-being.

In the present study, resilience-based cognitive behavioral therapy effectively reduced COVID-19 anxiety. However, there are other concerns besides helping students overcome anxiety and promoting mental health status. Hence, methods have to be implemented to increase psychological well-being in tandem with decreasing COVID-19 anxiety.

This study was conducted among female undergraduate students, so generalizing the results to other populations should be done with due caution. Further studies are recommended to include a control group and add three-, six-, and nine-month follow-ups. Researchers are also suggested to conduct similar studies comparing this method to other psychological therapy techniques to address its specific impacts more accurately. Taken together, psychotherapists and counseling centers can use this method as an effective way to overcome COVID-19 anxiety along with increasing well-being.

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Declarations

Conflict of interest: This study has no conflict of interest with any organization.

Consent to Participate and Consent for publication: Participants gave written informed consent.

Human or Animal Rights: I certify that we have complied with the APA ethical principles regarding research with human participants and/or care and use of animals in the conduct of the research presented in this manuscript.

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