



Effectiveness of Crisis Intervention Program in Post-traumatic Stress Symptoms in COVID-19

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Received 2021 December 30; Revised 2022 February 11; Accepted 2023 July 30.

Abstract

Background: At the close of 2019, the world faced a phenomenon that plunged all human beings into extreme fear and anxiety. A new type of coronavirus began to spread among people across the globe, and this was the beginning of one of the greatest pandemics and its associated problems in the world. People with COVID-19 have low psychological tolerance and are highly exposed to psychological disorders. One of the most important psychological disorders that can harm the mental health of people affected by COVID-19 is post-traumatic stress disorder (PTSD).

Objectives: The present study aimed to evaluate the effectiveness of the crisis intervention program in PTSD symptoms among people with COVID-19.

Method: This applied experimental study was conducted based on a pretest-posttest control group design. The statistical population consisted of all individuals with COVID-19 in Rasht, Iran, in 2019, of whom 30 people were selected using the available sampling method and were randomly assigned to the experimental group (n=15) and the control group (n=15). The participants in the experimental group received 10 sessions of the crisis intervention program. Mississippi (2006) PTSD analogy (Scale) was used to collect data. Data were analyzed using the analysis of covariance.

Results: The results showed a significant difference between the post-test scores of the experimental and control groups, demonstrating that the crisis intervention program was effective in PTSD (re-experience, withdrawal, numbness, arousal, and masochism) in COVID-19. The subjects in the experimental group had significantly less post-traumatic stress in the post-test group than those in the control group ($P<0.01$).

Conclusion: It can be concluded that the use of crisis intervention programs can reduce PTSD in people with COVID-19. Therefore, it is recommended that psychologists use this therapeutic approach to reduce the psychological problems of people in crisis.

Keywords: Crisis intervention, COVID-19, Pandemics, Post-traumatic stress symptoms

1. Background

The disease caused by the novel coronavirus first identified in Wuhan, China, has been named coronavirus disease 2019 (COVID-19). Today, it has spread to every corner of the globe, claiming the lives of numerous people and disrupting the lives of many others (1, 2, 3). Research findings pinpointed that the prevalence of any disease is associated with an increase in numerous problems (4). COVID-19, like previous diseases, has disrupted people's physical and mental lives on a large scale. Based on studies, the virus has reduced the mental health of people (5, 6). People who are not sick but are at high risk for the disease are also not immune to its psychological effects and may develop psychological problems.

In a recent study on people who were highly susceptible to coronavirus infection, the prevalence of traumatic stress (73.4%) was seriously worrying, followed by other problems, such as depression (50.7%), general anxiety (44.7%) and insomnia (36.1%) (7). Other people had been forced to

quarantine themselves and limit many of their activities. They might have also experienced a variety of psychological problems due to the condition caused by the coronavirus (8). The unpredictability of the situation, as well as uncertainty about the treatment method, time of disease control, and its dangerousness, has made this disease one of the most stressful issues in recent conditions (9).

Iranian society is currently experiencing a certain stage that requires macro-theories, while studies on COVID-19 anxiety are being conducted in the country. They generally study this issue in a one-dimensional way and do not offer psychological, social, or spiritual solutions to deal with it. Therefore, emergency decision-making for COVID-19 plays an increasingly important role in improving the ability to respond to accidents (10). Critical situations can take the form of illness, severe physical injury, the sudden death of a loved one, and certain emotional crises resulting from severe transformations, such as divorce, children running away from home, pregnancy, family, and school violence (11). The issue of crisis intervention is one of the most important and interesting areas in

recent years; in the last ten years, many researchers have turned their focus to this field (12).

Crisis intervention is an immediate and short-term psychological care that aims to help people in crisis to restore balance in their bio-psychosocial function and minimize the potential for long-term psychological damage (13). Crisis intervention methods of any strategy deal with individuals and situations in which speed is a fundamental principle. Support and assistance to people in crisis must be at a high pace and with great care, due diligence, and timeliness. Any offered therapy requires integration, understanding, empathy, and understanding of the psychodynamics of the individual and family, as well as knowledge of how people are involved in the response to the crisis. Principles, methods, and techniques to help people in crisis can include reassurance, induction, manipulation, or change of environment, and liquefied drug therapy (14).

In addition, some vulnerable families develop their potential talents and reach a higher functional and emotional level than before the crisis. Finally, the end of crisis intervention will be a situation where there is evidence that the crisis is resolved and the family clearly understands all stages of growth and crisis resolution. The issue of crisis intervention comes at a time when our country is currently suffering from COVID-19. This disease has no specific treatment so far, leading to physical and mental damage to affected people and their families. Psychological methods and techniques of crisis intervention counseling and assistance to accident victims differ from current interventions for ordinary people needing counseling and psychotherapy (15). In general, the purpose of crisis intervention is to increase balance in the individual and alleviate the symptoms of the crisis, return the individual to the level before the crisis, identify related underlying factors, present new ways of thinking, acknowledge emotions, and create new coping and adaptive responses that are used in crises and generally lead to empowerment in the face of crisis (16).

As illustrated in previous studies, acute infectious diseases can lead to anxiety, depression, sleep disorders, and post-traumatic stress disorder (PTSD) in survivors (17). PTSD is a psychological disorder that may develop after exposure to exceptionally threatening or terrifying events. Its main features are re-experiencing, avoidance of traumatic memory, and feeling of constant threat to consciousness or hypervigilance (18). In their study, Zeng et al. (2023) showed that on the 39th day of the declared pandemic of COVID-19 in China, 6.75% of the examined sample exhibited PTSD symptoms. The positive mediating effect of past stressful events was found between COVID-19-related effects and PTSD. COVID-19 indirectly affects PTSD risk through mediating pathways (past stressful events psychological resilience) in PTSD (19).

Shivandi and Hassanvand (20), in their study, concluded that generalized anxiety during the COVID-19 pandemic had a positive effect on the level of aggression and a negative effect on the quality of family relationships and attitudes toward the future. Spiritual health was able to mediate the adverse effects of pervasive anxiety on positive future attitudes and the quality of family relationships; however, it did not show a mediating effect on aggression. Along the same lines, Marati et al. (21) concluded that cognitive-behavioral therapy had a positive effect on the reduction of posttraumatic stress disorder and reported a patient recovery rate of 7.81%. Aliakbari et al. (22) concluded in a study that the most common psychological consequences of the new coronavirus included fear of death, depression, and anxiety. The social consequences of this disease involve decreased social activities, feelings of rejection by society, reduced communication with family and others, and the experience of stigma by the patient and his/her family.

Shirin et al. (23) examined the hereditary and environmental symptoms of PTSD following natural disasters. Their research pointed out that although PTSD had a biological background, it was caused by environmental stimuli, such as natural disasters. In a meta-analytic study, Brooks et al. (24) reviewed 24 articles that examined the effects of epidemics on medical staff and members of the community in different communities. They concluded that the studies examined looked at the negative psychological effects of infectious diseases, including confusion and anger.

During the COVID-19 treatment, an emphasis was put on the importance of psychosocial intervention both in recovery and reduction of mental problems (25). Studies have reported that social support affects the improvement of psychological problems (26). The psychological effects of infectious diseases may persist or develop over time. Therefore, to reduce the incidence of PTSD, decrease the clinical symptoms of PTSD, and improve the prognosis, it is necessary to have an understanding of the factors affecting PTSD, as well as early and effective intervention.

2. Objectives

Therefore, the question that arises here is whether the crisis intervention program is linked to PTSD.

3. Methods

3.1. Study designs and participants

This applied experimental study was conducted based on a pretest-posttest control group design. The statistical population consisted of all individuals with COVID-19 who had a high score on the scale of

Mississippi Scale for Combat-Related PTSD (with more than 70% pulmonary involvement and three months having passed from their discharge) in Rasht, Iran, in 2019. Among this population, 30 cases were selected via the available sampling method. Using the Cohen table that had an effect size of 0.5 and a test

rate of 0.80, the sample size for each group was estimated at 15. To determine whether participants were in the experimental or expectation group, each participant received an envelope containing a number and a randomly chosen identifier. The process of recruitment is illustrated in Figure 1.

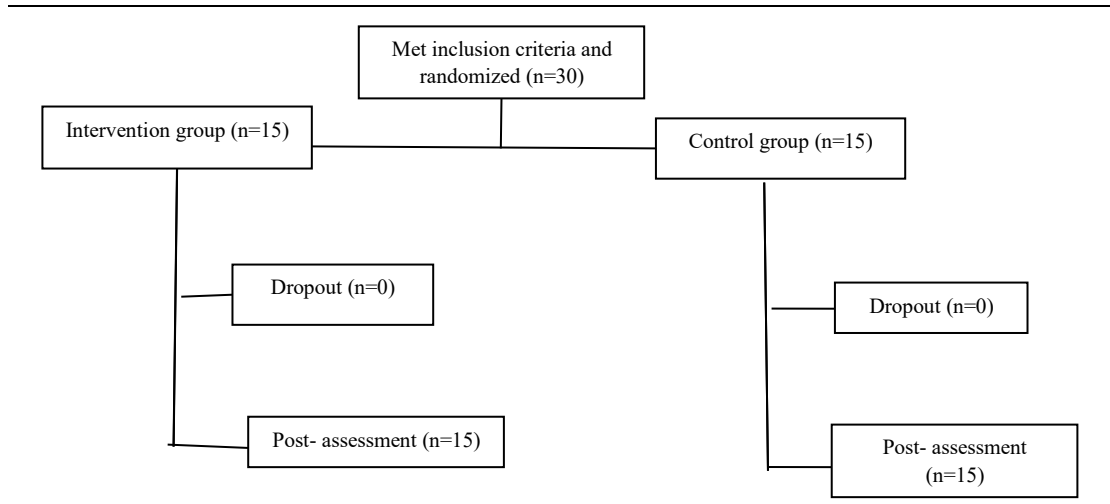


Figure 1. Consort flow chart

3.2. Inclusion and exclusion criteria

The inclusion criteria were as follows: having mental health, no history of severe mental and physical disorders (based on the clinical interview), not attending other treatment programs during the study, and obtaining high scores in the questionnaire. On the other hand, missing more than one training session, not replying to all questions in the questionnaire, and incomplete assignments given during those meetings were regarded as the exclusion criteria.

3.3. Measures

3.3.1. Mississippi Post-traumatic Stress Disorder Scale

The Mississippi Post-Traumatic Stress Disorder Scale, developed by Keane et al. (1998), is a 35-item self-report scale used to assess the severity of the symptoms of PTSD in five subscales, namely re-experience, withdrawal, numbness, arousal (over-arousal), and masochism. The replies are scored on a five-point Likert scale (1=false, 2=infrequent, true, 3=sometimes true, 4=very true, and 5=absolutely true). The total score of this questionnaire is obtained in the range of 35-175. A score of 105 or higher indicates the existence of PTSD. This scale has clinical internal consistency. The reliability coefficient has been obtained rendering a Cronbach's alpha from 0.86 to 0.94. Moreover, the validity coefficient of this list using the classification method (halving the list based on the pair or individuality of the items) was equal to 0.92. This scale is able to differentiate between people with PTSD and those without this disorder (27). This

scale has been validated in Iran by Goodarzi (2003), and Cronbach's alpha has been calculated at 0.92. In order to explain the simultaneous validity of the scale, three tools, namely the life events list, PTSD list, and Padua list, were used. The correlation coefficients of Mississippi with each of the mentioned lists have been reported as 0.75, 0.23, and 0.82, respectively (28). Cronbach's alpha obtained in the present study was equal to 0.88.

3.4. Intervention

This research was implemented in two stages. In the first stage, based on documents, sources, theoretical literature, research background, and existing programs in this field (such as James and Gilliland (29), Yekehkar and Yahyazadeh (30), and Ahmadi (15)), crisis intervention was developed in ten 60-minute sessions (Table 1). Thereafter, in the second stage, the content validity of the educational program was investigated from the point of view of experts in the field of counseling psychology and social workers.

3.5. Procedure

After performing the pre-test, the edited program was performed on the experimental group, while the control group did not receive any intervention and continued its normal routine. In the end, a post-test was administered to measure the effect of the intervention as an experimental variable on post-traumatic stress variables as dependent variables of the research.

Table 1. Summary of crisis intervention sessions (COVID-19) in Rasht in 2019

Sessions (meetings)	Purpose of the meeting	Explanation
First	Introduction, pre-test implementation, and program introduction	Introducing, conducting pre-tests, and introducing a crisis intervention program for people with COVID-19 who were recovering and making arrangements
Second	Psychological retelling, finding areas of self-vulnerability, teaching harm reduction techniques, and normalization	Psychological retelling for about two hours, including reminiscing about the time when the symptoms of COVID-19 exhibited, the feelings and thoughts that arose after the onset of the illness, along with normalizing the response, modulating and discharging emotions in a supported environment, assimilation of emotions in the group, and explaining how to deal with the symptoms of the disorder
Third	Reduce arousal	Defining stress, stressors, and symptoms of PTSD, teaching mental imaging techniques concerning effective exposure to re-experiencing the disease
Fourth	Teaching compassion, finding self-care solutions	Training to form and create more and more diverse feelings related to people's issues to increase care, help, and attention to health, including observing personal hygiene both at home and outside the home
Fifth and sixth	Guided relaxation and mental imagery training	Introducing the symptoms of fear and avoidance, teaching life training techniques in order to eliminate avoidance in the face of the realities that have happened, and giving muscle relaxation
Seventh	Social activation, resumption of social relations and return to the social system, training in effective communication, and dialogue with others	In this session, people with COVID-19 who were recovering were taught how to attract support and social assistance, with an emphasis on the family or social support system, coping skills, and the ability to re-establish effective relationships and communication.
Eighth	Thought control training	Training how to use visual methods, including the method of mentally replacing disturbing thoughts when confronted with thoughts and memories, as well as methods of shrinking and removing memories to deal with disturbing thoughts. Using the techniques of writing debilitating thoughts and accepting situations and the position of power to act and choose between the two available options
Ninth	Reorientation	At this stage, the life goals of the clients were reviewed, new goals were set, and ways to achieve them were determined. The goal of treatment was to mobilize the potential force of the crisis for the growth and dynamism of the client. This was the beginning of a new direction in life. The methods that can be used at this stage are known as renewal and growth methods. Techniques of centralization, empowerment analysis, bombardment of strengths, and reviewing growth experiences were used in this method.
Tenth	Summarizing and running the post-test	In this session, the contents of the previous sessions were summarized, and the assignments performed with the participation of people in crisis (COVID-19 patients) were reviewed and evaluated. In the end, people in crisis were evaluated with post-test and thanked for participating in the sessions

3.6. Intervention satisfaction status

Permission to conduct the study was obtained from the ethics committee of the university. Before the study, the patients were informed about the purpose of the study and were assured of the right to refuse to participate or withdraw from the study at any stage. Informed consent was obtained from each participant before data collection. During the COVID-19 pandemic, the COVID-19 Psychological Crisis Intervention Team was launched. Before the COVID-19 patients were discharged from hospitals, they were informed about the crisis intervention and were invited to participate in the Mississippi PTSD Screening Scale. Individuals with positive PTSS screening were randomly assigned to the crisis intervention group.

3.7. Statistical analysis

To analyze the data in the descriptive statistics section, the measures of central tendency and dispersion (mean and standard deviation) were used. On the other hand, in the inferential statistics section, analysis of covariance was performed. Kolmogorov-Smirnov's test was utilized to check the typical distribution of data. In order to evaluate the effect of the intervention on those three interdependent variables, multivariate variance analysis was

employed. Levene's test was used to assess the variance homogeneity assumption. Box's M test was performed in order to assess the multivariate equality of covariance matrices. A p-value of < 0.05 was considered a statistically significant difference. All statistical procedures were performed in SPSS software (version 25).

4. Results

4.1. Sample characteristics

Based on the obtained results, the mean age scores of participants in the experimental and control groups were 40.06±5.37 and 38±8.73 years, respectively. Moreover, in the experimental group, 4 (26.7%), 5 (33.3%), 5 (33.3%), and 1 (6.7%) cases had an undergraduate, diploma, a bachelor's degree, and a master's degree and higher education, respectively. In the control group, 2 (13.3%), 3 (20%), 6 (40%), and 4 (26.7%) subjects had an undergraduate, diploma, bachelor's degree, and a master's degree and higher education, respectively.

Table 2 shows the mean and standard deviation of PTSD in the control and experimental groups (in order to compare these means, inferential statistics were used). The Shapiro-Wilk test was utilized to check the normal distribution of scores, and

considering the non-significance of the results, the assumption of the normality of the distribution of scores was confirmed ($P>0.05$). The value of the F statistic was not significant for any of the PTSD dimensions ($P >0.05$); therefore, the assumption of the equality of variances in all dimensions was confirmed. In addition, the value of the M box test was 22.96, and the value of F was equal to 1.23, which was not significant ($P>0.05$); therefore, the assumption of the equality of the observed covariance matrix of the dimensions of PTSD between the experimental and control groups was

confirmed, and the multivariate covariance test could be used. After checking the assumptions of multivariate covariance analysis, the test results demonstrated a significant difference between the dimensions of PTSD between the two groups (Wilks Lambda=0.167, $F_{5,19}=18.99$, $P<0.01$). To check which components of PTSD differed from each other between the experimental and control groups, univariate covariance analysis was employed, the results of which are reported in Table 3.

Table 2. Mean and standard deviation of research variables in control and experimental groups

Group	Variable	Pre-test		Post-test	
		Mean	SD	Mean	SD
Control	Re-experience	23.33	2.28	19.46	2.66
	Withdrawal	24.00	1.96	20.73	20.73
	Numbness	24.26	2.96	20	3.04
	Pre-arousal	23.13	2.32	20.46	2.44
	Masochism	23.00	2.03	19.60	2.77
	Post-traumatic stress	117.73	8.14	100.26	10.77
Experimental	Re-experience	24.26	2.54	13.80	1.74
	Withdrawal	23.33	3.22	14.26	1.48
	Numbness	23.80	3.12	14.06	1.57
	Pre-arousal	24.13	2.58	15.86	2.66
	Masochism	23.26	2.57	15	2.53
	Post-traumatic stress	118.80	8.70	73.00	6.14

Table 3. Results of multivariate analysis of covariance to evaluate the effect of treatment on the post-test of the main variables

Variable	Source	Sum of squares	Degree of freedom	Mean of squares	F	Sig*	Effect size
Re-experience	Between groups	270.30	1	270.30	69.33	0.001	0.751
	Error	89.66	23	3.89			
Withdrawal	Between groups	290.89	1	290.89	70.66	0.001	0.754
	Error	94.67	23	4.11			
Numbness	Between groups	282.86	1	282.86	55.16	0.001	0.706
	Error	117.94	23	5.12			
Pre-arousal	Between groups	189.93	1	189.93	42.59	0.001	0.649
	Error	102.57	23	4.46			
Masochism	Between groups	164.16	1	164.16	31.49	0.001	0.578
	Error	119.89	23	5.21			

*Covariance test

According to the values of F illustrated in Table 3, for the post-test of re-experience ($F_{1,23}=69.33$), withdrawal ($F_{1,23}=70.66$), numbness ($F_{1,23}=55.16$), pre-arousal ($F_{1,23}=42.59$), and masochism ($F_{1,23}=31.49$), and their significance level (0.001) (which is less than 0.05 [$P<0.05$]), it can be seen that the developed intervention program in crisis has been effective and able to reduce the dimensions of PTSD; therefore, the research hypothesis is confirmed.

5. Discussion

The present study aimed to evaluate the effectiveness of a crisis intervention program on the symptoms of PTSD in people with COVID-19 in Rasht. The research findings pointed to a significant difference between the adjusted means of the experimental and control groups in terms of post-traumatic stress symptoms (re-experience,

withdrawal, numbness, pre-arousal, and masochism). Therefore, the crisis intervention program significantly reduced post-traumatic stress symptoms (re-experiencing, withdrawal, numbness, pre-arousal, and masochism) in people with COVID-19. Accordingly, the research hypothesis was confirmed. The results of the current study in this field are somewhat consistent with those of studies by Shivandi and Hassanvand (20), Aliakbari et al. (22), and Shirin et al. (12).

In the present explanation, as reported by Zhang and Zhou (16), the crisis intervention approach was used as an emergency treatment method for people with trauma. It encompasses various methods, such as initial critical psychological assistance, stress crisis event debriefing, cognitive-behavioral therapy focusing on the traumatic event, and desensitization through eye movement, reprocessing, and medication. Crisis intervention helps a person to have a good understanding of the crisis, express his/her

feelings and thoughts, and develop interpersonal communication before finding a way to resolve the crisis. It also helps the individual adopt effective problem-solving strategies and more adaptive mechanisms that can reduce the severity of stress and trauma-related disorders, increasing his/her resilience and improving his/her quality of life.

In the study by Shirin (12), it was found that the stress crisis debriefing method, one of the components of stress management in crises as an educational crisis intervention model, helps the person employ coping strategies. On the other hand, people who are not exposed to this method are more likely to use distraction coping styles, as well as cognitive and emotional avoidance. It can be stated that this educational method leads to the reconstruction of stressful events by individuals, leading them to use appropriate coping styles, as well as cognitive and behavioral methods in the face of traumatic events. It facilitates the acquisition of new coping skills for addressing current problems and future occurrences and improves the likelihood of increasing balance in the individual and restoring the individual's performance to pre-crisis levels.

The use of trauma-focused cognitive-behavioral therapy for crisis intervention involves techniques like stopping negative thoughts, recognizing the link between thoughts and feelings, and keeping a daily record of thoughts. This approach helps individuals to correct negative thinking and maladaptive self-talk in stressful situations and interpret challenging events optimistically. Moreover, intervention in crisis can reduce people's mental rumination (31), help them to face unpleasant situations and problems, be aware of their thoughts and feelings, and manage their life issues, which in turn, reduces the severity of stress and trauma-related disorders in individual, and improves the quality of life among people with COVID-19.

One of the limitations of this study was the statistical population of the study, which consisted of people with COVID-19 in Rasht. Therefore, the possibility of generalizing the results is limited. The study also used questionnaire data that might have raised social desirability bias, which occurs when respondents conceal their true opinion on a subject in order to make themselves look good to others. According to the results, it is suggested to evaluate the effectiveness of crisis intervention in people suffering from other crises and compare crisis intervention with cognitive-behavioral therapies, acceptance and commitment therapy, and dialectical behavior therapy. Welfare and counseling centers, under the supervision of relevant organizations, can also use the findings of this study to solve the problems of people with other crises.

6. Conclusion

As evidenced by the results of this study, crisis intervention, as a standardized method and an accepted format, may be an effective intervention method for a wider variety of traumatic and stressful events, such as COVID-19. Clinical staff could make extensive use of this method for mental health in the epidemic context.

Acknowledgments

This paper was an excerpt from a research project approved with the code of ethics IR.ARUMS.REC.1399.328, which was morally supported by the University of Mohaghegh Ardabili, Ardabil, Iran.

Footnotes

Conflicts of Interest: The authors declare that they have no competing interests.

Authors' contributions: First author, study design and data collection; Second, third, fourth, and five authors, presenting ideas and analyzing data. All authors participated in the initial writing and revision of the article, and all, with the final approval of the present article, accepted responsibility for the accuracy of the content.

Financial resources: The present study had no financial support.

References

- Xu Z, Shi L, Wang Y, Zhang J, Huang L, Zhang C, et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. *Lancet Respir Med.* 2020;8(4):420-2. doi: [10.1016/S2213-2600\(20\)30076-X](https://doi.org/10.1016/S2213-2600(20)30076-X). [PubMed: [32085846](https://pubmed.ncbi.nlm.nih.gov/32085846/)].
- Casella M, Rajnik M, Aleem A, Dulebohn SC, Di Napoli R. Features, evaluation and treatment coronavirus (COVID-19). StatPearls Publishing;2020.
- Wheaton MG, Abramowitz JS, Berman NC, Fabricant LE, Olatunji BO. Psychological predictors of anxiety in response to the H1N1 (swine flu) pandemic. *Cogn Ther Res.* 2012;36(3):210-8. doi: [10.1007/s10608-011-9353-3](https://doi.org/10.1007/s10608-011-9353-3).
- Yip PS, Cheung YT, Chau PH, Law YW. The impact of epidemic outbreak: the case of severe acute respiratory syndrome (SARS) and suicide among older adults in Hong Kong. *Crisis.* 2010;31(2):86-92. doi: [10.1027/0227-5910/a000015](https://doi.org/10.1027/0227-5910/a000015). [PubMed: [20418214](https://pubmed.ncbi.nlm.nih.gov/20418214/)].
- Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, Zheng J. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.* 2020;287:112934. doi: [10.1016/j.psychres.2020.112934](https://doi.org/10.1016/j.psychres.2020.112934). [PubMed: [32229390](https://pubmed.ncbi.nlm.nih.gov/32229390/)].
- Bo HX, Li W, Yang Y, Wang Y, Zhang Q, Cheung T, Wu X, Xiang YT. Posttraumatic stress symptoms and attitude toward crisis mental health services among clinically stable patients with COVID-19 in China. *Psychol Med.* 2020;51(6):1052-3. doi: [10.1017/S0033291720000999](https://doi.org/10.1017/S0033291720000999). [PubMed: [32216863](https://pubmed.ncbi.nlm.nih.gov/32216863/)].
- Liu S, Yang L, Zhang C, Xiang YT, Liu Z, Hu S, et al. Online mental health services in China during the COVID-19 outbreak. *Lancet Psychiatry.* 2020;7(4):e17-e18. doi: [10.1016/S2215-0366\(20\)30077-8](https://doi.org/10.1016/S2215-0366(20)30077-8). [PubMed: [32085841](https://pubmed.ncbi.nlm.nih.gov/32085841/)].
- Rajkumar RP. COVID-19 and mental health: A review of the existing literature. *Asian J Psychiatr.* 2020;52:102066. doi: [10.1016/j.ajp.2020.102066](https://doi.org/10.1016/j.ajp.2020.102066). [PubMed: [32302935](https://pubmed.ncbi.nlm.nih.gov/32302935/)].
- Taylor S. The psychology of pandemics: Preparing for the next

- global outbreak of infectious disease. Cambridge Scholars Publishing;2020.
10. Zhou L, Wu X, Xu Z, Fujita H. Emergency decision making for natural disasters: An overview. *Int J Disaster Risk Reduct.* 2018;**27**:567-76. doi: [10.1016/j.ijdrr.2017.09.037](https://doi.org/10.1016/j.ijdrr.2017.09.037).
 11. Simpson SA. A single-session crisis intervention therapy model for emergency psychiatry. *Clin Pract Cases Emerg Med.* 2019;**3**(1):27-32. doi: [10.5811/cpcem.2018.10.40443](https://doi.org/10.5811/cpcem.2018.10.40443). [PubMed: [30775659](https://pubmed.ncbi.nlm.nih.gov/30775659/)]
 12. Syahrir I, Vanany I. Healthcare and disaster supply chain: literature review and future research. *Procedia Manuf.* 2015;**4**:2-9. doi: [10.1016/j.promfg.2015.11.007](https://doi.org/10.1016/j.promfg.2015.11.007).
 13. Silva JA, Siegmund G, Bredemeier J. Crisis interventions in online psychological counseling. *Trends Psychiatry Psychother.* 2015;**37**(4):171-82. doi: [10.1590/2237-6089-2014-0026](https://doi.org/10.1590/2237-6089-2014-0026). [PubMed: [26689385](https://pubmed.ncbi.nlm.nih.gov/26689385/)]
 14. Kratcoski PC. Brief therapy and crisis intervention. *Correctional Counseling and Treatment*; 2017: 239-54.
 15. Ahmadi KH. Principles and techniques of psychological intervention in crisis. Iran Crescent Scientific-Applied Higher Education Institute. Tehran; 2010.
 16. Zhang L, Zhou J, Li L. Crisis intervention in the acute stage after trauma. *Int J Emerg Ment Health.* 2015;**17**(4):714-6.
 17. Fan Y, Shi Y, Zhang J, Sun D, Wang X, Fu G, et al. The effects of narrative exposure therapy on COVID-19 patients with posttraumatic stress symptoms: a randomized controlled trial. *J Affect Disord.* 2021;**293**:141-7. doi: [10.1016/j.jad.2021.06.019](https://doi.org/10.1016/j.jad.2021.06.019). [PubMed: [34186232](https://pubmed.ncbi.nlm.nih.gov/34186232/)]
 18. Wang YX, Guo HT, Du XW, Song W, Lu C, Hao WN. Factors associated with posttraumatic stress disorder of nurses exposed to corona virus disease 2019 in China. *Medicine (Baltimore).* 2020;**99**(26):e20965. doi: [10.1097/MD.00000000000020965](https://doi.org/10.1097/MD.00000000000020965). [PubMed: [32590808](https://pubmed.ncbi.nlm.nih.gov/32590808/)]
 19. Zeng F, John WC, Sun X, Wang Y. COVID-19-associated impact and posttraumatic stress symptoms 39 days after pandemic in a sample of home-quarantined Chinese college students: the mediating effecting of past stressful events, psychological resilience, and social support. *BMC psychiatry.* 2023;**23**(1):379. doi: [10.1186/s12888-023-04906-6](https://doi.org/10.1186/s12888-023-04906-6). [PubMed: [37254082](https://pubmed.ncbi.nlm.nih.gov/37254082/)]
 20. Sheivandi K, Hasanvand F. Developing a model for the psychological consequences of corona epidemic anxiety and studying the mediating role of spiritual health. *QCCPC.* 2021;**11**(42):1-36. doi: [10.22054/qccpc.2020.50918.2346](https://doi.org/10.22054/qccpc.2020.50918.2346).
 21. Merati A, Veiskarami HA, Avand D. The effectiveness of cognitive behavioral therapy on improving posttraumatic stress disorder(case study: people affected by the earthquake, Kermanshah 2017). *JORAR.* 2017;**10**(2):90-100.
 22. Aliakbari Dehkordi M, Eisazadeh F, Aghajanbigloo S. Psychological Consequences of Patients with Coronavirus (COVID- 19): A Qualitative Study. *IJOHP.* 2020;**2**(2):9-20. doi: [10.30473/ijohp.2020.52395.1074](https://doi.org/10.30473/ijohp.2020.52395.1074).
 23. Sheerin CM, Kovalchick LV, Overstreet C, Rappaport LM, Williamson V, Vladimirov V. Genetic and environmental predictors of adolescent PTSD symptom trajectories following a natural disaster. *Brain Sci.* 2019;**9**(6):146. doi: [10.3390/brainsci9060146](https://doi.org/10.3390/brainsci9060146). [PubMed: [31226868](https://pubmed.ncbi.nlm.nih.gov/31226868/)].
 24. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet.* 2020;**395**(10227):912-20. doi: [10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8). [PubMed: [32112714](https://pubmed.ncbi.nlm.nih.gov/32112714/)].
 25. Yang X, Yang X, Kumar P, Cao B, Ma X, Li T. Social support and clinical improvement in COVID-19 positive patients in China. *Nurs Outlook.* 2020;**68**(6):830-7. doi: [10.1016/j.outlook.2020.08.008](https://doi.org/10.1016/j.outlook.2020.08.008). [PubMed: [32980152](https://pubmed.ncbi.nlm.nih.gov/32980152/)].
 26. Xiao H, Zhang Y, Kong D, Li S, Yang N. The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in January and February 2020 in China. *Med Sci Monit.* 2020;**26**:e923549. doi: [10.12659/MSM.923549](https://doi.org/10.12659/MSM.923549). [PubMed: [32132521](https://pubmed.ncbi.nlm.nih.gov/32132521/)].
 27. Keane TM, Caddell JM, Taylor KL. Mississippi Scale for Combat-Related Posttraumatic Stress Disorder: three studies in reliability and validity. *J Consult Clin Psychol.* 1988;**56**(1):85-90. doi: [10.1037//0022-006x.56.1.85](https://doi.org/10.1037//0022-006x.56.1.85). [PubMed: [3346454](https://pubmed.ncbi.nlm.nih.gov/3346454/)].
 28. Goodarzi MA. Evaluating reliability and validity of the Mississippi scale for post-traumatic stress disorder in Shiraz. *J Psychol.* 2003;**7**(3):153-78.
 29. James RK, Gilliland BE. *Crisis Intervention Strategies*. Boston, MA: Cengage Learning; 2008.
 30. Yekhekar, SH, Yahya Zadeh H. *Social work: crisis intervention*. Tehran: Avaye Noor; 2021.
 31. Noroozi S, Mokhtariaraghi H, Barzoki MH. The effectiveness of trauma-focused cognitive-behavioural therapy in the treatment of depression of divorced women. *Australas Medical J.* 2018;**11**(4):245-52. doi: [10.21767/AMJ.2018.3399](https://doi.org/10.21767/AMJ.2018.3399).