



Effect of Psychological Interventions on the Management of Psychological Consequences in the COVID-19 Pandemic: A Systematic Review

Anis Montazeri Khadem¹, Shima Imannezhad², Nooshin Abdollahpour³, Sina Sezavar⁴, Neda Dehghani⁵, *Majid Sezavar⁶

¹MA of Clinical Psychology, Department of Psychology, Kerman Branch, Islamic Azad University, Kerman, Iran. ²Pediatric Neurologist, Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. ³MSc of Biophysics, Department of Biology, Faculty of Sciences, Young Researchers and Elite Club, Mashhad Branch, Islamic Azad University, Mashhad, Iran. ⁴Department of Dentistry, Golestan University of Medical Sciences, Gorgan, Iran. ⁵Department of Midwifery, Firoozabad Branch, Islamic Azad University, Firoozabad, Iran. ⁶Assistant Professor of Pediatric Intensive Care, Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

Background: COVID-19 disease, in addition to endangering physical health, has irreversible psychological effects. Therefore, it is necessary to know effective psychological therapies to deal with coronavirus disease. The aim of this study is to investigate the effect of psychological interventions on the management of psychological consequences of the COVID-19 pandemic.

Materials and Methods: This review was conducted through a systematic search of electronic resources in English, including Medline, Scopus, Web of Science, Cochrane Library, and EMBASE with no time limit from inception up to August 2021, using the following keywords: (COVID-19 OR SARS-CoV.) AND (Mental Disorder OR Mental Health OR Psychiatric Disorders, OR Psychological) AND (Crisis intervention OR Crisis service OR psychological interventions in crises).

Results: Five studies were included in the review. Based on the review results, mental health in the context of the current COVID-19 epidemic in hyperactive children can be enhanced by using Mindfulness-based Interventions and Philosophy for Children. Hyperactivity may improve in primary school children in the context of COVID-19 epidemics using a mandala drawing intervention and an emotion-based directed drawing intervention. Psychological interventions (such as internet-based integrated intervention, online multimedia psychoeducational interventions, and digital cognitive behavioral therapy) caused a statistically significant decrease in the levels of stress, depression, and anxiety and increased resilience in adults with COVID-19.

Conclusion: Psychological interventions improve mental health by reducing stress, depression, and anxiety and increasing the resilience of adults with COVID-19, as well as reducing hyperactivity in children during the COVID-19 pandemic.

Key Words: COVID-19, Management, Psychological Interventions, Psychological Consequences.

*Please cite this article as: Montazeri Khadem A, Imannezhad Sh, Abdollahpour N, Sezavar S, Dehghani N, Sezavar M. Effect of Psychological Interventions on the Management of Psychological Consequences in the COVID-19 Pandemic: A Systematic Review. Med Edu Bull 2021; 2(3): 261-69. DOI: 10.22034/MEB.2021.311026.1029

*Corresponding Author:

Majid Sezavar, MD, Assistant Professor of Pediatric Intensive Care, Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Email: sezavarm@mums.ac.ir

Received date: Feb. 24, 2021; Accepted date: Aug.22, 2021

1- INTRODUCTION

Coronavirus acute respiratory distress syndrome COVID-19 is a pandemic disease (1, 2). It primarily affects the respiratory system and its main clinical symptoms include fever, cough, myalgia, and shortness of breath (3). COVID-19 spread rapidly from China to other parts of the world and was announced as a public health emergency by World Health Organization (WHO) on January 30, 2020. The COVID-19 pandemic has endangered the psychological and physical health of individuals in all countries and has led to the spread of psychological health problems due to its unknown, uncontrollable, unpredictable, and rapidly spreading nature (4, 5).

The high pathogenicity, infectivity, and the subsequent mortality rate of the disease are the factors that affect the psychological health status of different people ranging from patients to medical staff, children, psychiatric patients, and other people in various ways (5, 6). Research has shown that in the early stages of the COVID-19 infection, i.e. when the infection or the virus spreads rapidly, people experience a strong sense of vulnerability, ambiguity, and threatened life, leading to the onset of physical and cognitive symptoms of anxiety (7). The COVID-19 pandemic not only threatens life but has also imposed overwhelming psychological stress on people in China and other parts of the world (8).

Moreover, the number of people with major psychological health problems after the main event, i.e. the COVID-19 outbreak, is often more than people with physical damages because the health-related psychological effects are usually long-lasting (9). The experiences of medical staff during the SARS outbreak showed that this disease has long-term effects on the psychological health of medical staff and it is worth providing effective support and training (10).

The prevalence of COVID-19 disease has increased psychological stress levels in various other ways. For example, fear of getting infected, quarantine-related fear and anxiety, travel restrictions, anxiety and fear of handshakes and social greetings, and, most importantly, anxiety and fear of death of oneself and loved ones are among issues caused by the COVID-19 pandemic (11). Considering the global status of the disease, which has affected, or even paralyzed, almost all economic, political, social, and even military aspects of all countries in the world, psychological effects of this viral disease on the psychological health of different are of great importance (12).

Telephone and online psychological counseling services became widespread in some countries, including China, during the pandemic. Also, the State Council of the People's Republic of China announced that it was launching online institutions in response to the outbreak (13). Overall, recognizing the COVID-19-related psychological problems, as well as recognizing useful psychological capabilities can help governments and related organizations make informed decisions to prevent and treat the disease. Since there are few studies on the effect of psychological interventions on the psychological problems of individuals during the COVID-19 pandemic, the present study was conducted to investigate the effect of psychological interventions on the management of psychological consequences of the COVID-19 pandemic.

2- MATERIALS AND METHODS

2-1. Method

The Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) checklist was used as a template for this review. The participants, interventions, comparators, and outcomes (PICO) framework was used to formulate the review objective and inclusion criteria.

2-2. Eligibility criteria

Participants: All ages.

Interventions: Types of Psychological Interventions on the Management of Psychological Consequences in the COVID-19 Pandemic.

Comparators: Treatment vs. control group, treatment vs. different type of treatment, before vs. after treatment, pharmacological vs. non-pharmacological treatments.

Outcome: Primary outcome: reduction of stress and depression; secondary outcomes: significant changes in other mental health problems include reduced stress and depression and increased resilience.

2-3. Included studies

Randomized controlled trials (RCT), clinical studies both randomized and nonrandomized either retrospective or prospective. Pilot, preliminary, and case report studies were not included due to limited sample size and a higher risk of bias. Studies were published in English up to August 2021.

2-4. Information sources

A systemic search of electronic databases Medline, Scopus, Web of Science, Cochrane Library, and EMBASE was conducted. The search was done independently in duplication by two reviewers and any disagreement between

the reviews was dissolved by the supervisor.

2-5. Study selection

Database search was done for possible studies, abstracts of the studies were screened for identification of eligible studies, full-text articles were obtained and assessed, and a final list of included studies was made (**Figure.1**). This process was done independently and in duplication by two reviewers and any disagreement was resolved by the third reviewer.

2-6. Data collection process

A form was created and followed for each study. Two reviewers collected the data independently. The collected data were combined and compared for accuracy and any discrepancies were solved by a third reviewer.

2-7. Risk of bias in individual studies

Risk of bias assessment was done following The Modified Jadad (14). The assessment was done by two reviewers independently and in duplication and any discrepancies were resolved by the third reviewer (**Table.1**).

2-8. Synthesis of results

Due to the difference in the included studies, study designs, lack of control groups in some studies, sample size, type of intervention used, duration of treatment, and duration of follow-up, meta-analysis was not be conducted.

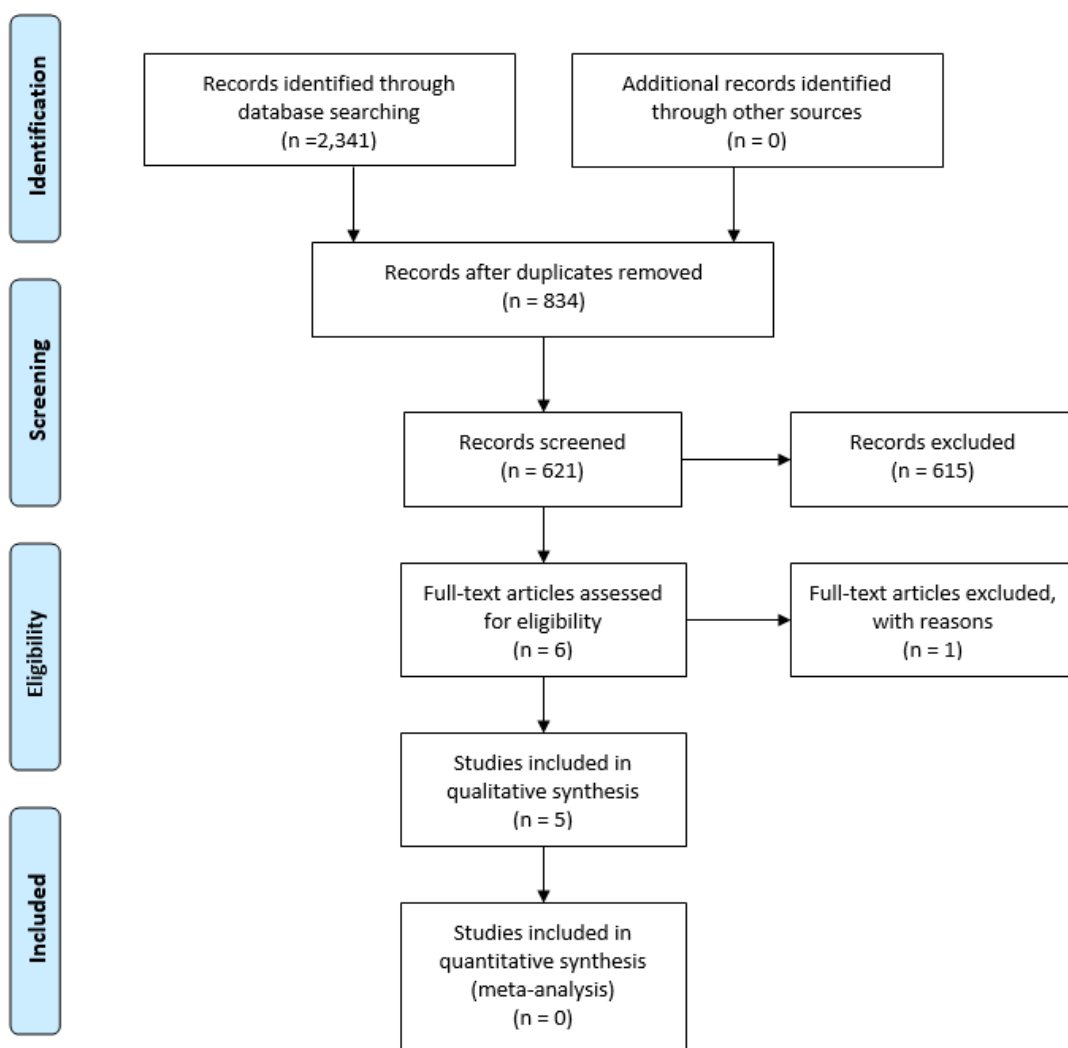


Fig.1. PRISMA statement (2009).

Table-1: Evaluation of the quality of the included studies by the Modified Jadad (14).

Author, Year, Reference	Randomization			Blinding			Dropouts/ Withdrawals
	Randomization is mentioned	Randomization method is appropriate	Randomization method is not appropriate	Blinding is mentioned	Blinding method is appropriate	Blinding method is not appropriate	
Malboeuf-Hurtubise et al., 2021, (15)	+	+	-	-	-	-	+
Malboeuf-Hurtubise et al., 2021, (16)	+		-	-	-	-	+
Wei et al., 2020, (17)	+		-	-	-	-	+
Shaygan et al., 2021, (18)	+	+	-	-	-	-	+
Cheng et al., 2020, (19)	+	+	-	-	-	-	+

3- RESULTS

Five studies were included in the systematic review (**Table.2**). Malboeuf-Hurtubise et al., compared the role of both online and remote group-based mandala drawing and emotion-based directed drawing interventions on the mental health of 22 primary school children during the COVID-19 epidemic. The pilot study utilized a randomized cluster design to scrutinize and compare the effects of both interventions on depression, anxiety, hyperactivity, and inattention in the examined children. According to the analysis of covariance (ANCOVA), after controlling the baseline values, a significant effect of the type of drawing intervention was observed on the inattention level. The mandala drawing group exhibited higher inattention scores at post-test than the emotion-based directed drawing group. Based on post hoc sensitivity analysis, there was a significant decline in pre-to-post hyperactivity scores for the whole sample (15). In another study by Malboeuf-Hurtubise et al., the effects of two interventions were investigated and compared on the anxiety and inattention, as well as on the basic psychological needs (BPN) of 37 elementary school students. According to the ANCOVA test results, the intervention of Philosophy for children (P4C) significantly affected the mental health difficulties in comparison with the baseline levels. Scores on the post-test

measured symptoms seen in the P4C group were lower than in the mindfulness-based intervention (MBI) group. Moreover, the MBI group experienced significantly higher post-test BPN satisfaction than the P4C group (16). Wei et al. conducted a study on patients with confirmed COVID-19 admitted to an isolated ward. They performed an online intervention, including four components breathing exercises, mindfulness, refuge skills, and butterfly hug. The intervention lasted 50 minutes every day for two weeks. The results of the study showed a significant decrease in the scores of the depression and anxiety scale (17). In another study, Shaygan et al. performed online multimedia psychoeducational interventions on patients with COVID-19 admitted to two hospitals in Shiraz for two weeks. These interventions included cognitive-behavioral techniques, stress management techniques, mindfulness-based stress reduction, and positive psychotherapy. The results showed a statistically significant improvement in resilience ($P = 0.04$), and perceived stress of patients ($P = 0.01$) (18). Cheng et al. performed a cognitive behavioral therapy intervention on COVID-19 patients. The results showed a decrease in stress and depression, a significant increase in resilience and general health quality of patients ($P < 0.001$) (19).

Table-2: Baseline characteristics of included studies.

Author, Year, (References)	Country	Participant characteristics	Participant numbers (intervention/control)	Age, year	Type of interventions	Results
Malboeuf-Hurtubise et al., 2021, (15)	Canada	Elementary school students	22	-	Emotion-based directed drawing intervention and a mandala drawing intervention.	The mandala drawing group exhibited higher inattention scores at post-test than the emotion-based directed drawing group, also, there was a significant decline in pre-to-post hyperactivity scores for whole samples.

Malboeuf-Hurtubise et al., 2021, (16)	Canada	Elementary school students	37	-	Philosophy for children (P4C) and mindfulness-based interventions (MBIs)	Lower scores on the post-test measured symptoms was seen in the P4C group than in the mindfulness-based intervention (MBI) group. Moreover, the MBI group experienced significantly higher post-test BPN satisfaction than the P4C group.
Wei et al., 2020, (17)	China	Patients affected With COVID-19	26 (13/13)	40-48	Internet-based integrated intervention focusing on relaxation, self-care, and raising the sense of security	The patients of the intervention group exhibited significantly decreased levels of depression and anxiety symptoms in comparison with control group.
Shaygan et al., 2021, (18)	Iran	Patients affected With COVID-19	48 (26/22)	36	Stress management techniques, mindfulness based, and cognitive behavioral techniques	The patients who used online multimedia psychoeducational interventions reported greater resilience and fewer perceived stress after 2 weeks.
Cheng et al., 2020, (19)	China	Patients affected With COVID-19	206 (102/104)	44-46	Digital cognitive behavioral therapy	The level of stress and depression decreased and the level of resilience of patients showed a significant increase in patients ($P < 0.001$), and the quality of general health improved significantly.

4- DISCUSSION

This study aims to investigate the effect of psychological interventions on the management of psychological consequences of the COVID-19 pandemic. Two studies have investigated the effect of psychological interventions on healthy primary school children during the COVID-19 pandemic and three studies have been performed on adults. The review of research results showed that various psychological interventions such as stress management techniques, mindfulness-based, cognitive-behavioral relaxation techniques, self-care, and raising the sense of security can help reduce the psychological effects of COVID-19 disease and improve physiological health status. The COVID-

19 pandemic is considered an individual and social crisis worldwide, which in turn causes a lot of psychological stress on individuals and society. This crisis can also disrupt the quality of interpersonal family relationships and generate feelings of exclusion from society, which altogether can predispose a person to psychological disorders such as depression, anxiety, and stress (20). People experience unpleasant feelings during home quarantine, and this can lead to experiencing feelings of loneliness and eventually depression. Also, people who lose their loved ones show signs of post-traumatic stress due to their inability to hold funerals (21). Studies have also shown that some families may lose their source of income and students may become anxious about paying their tuition

fees due to the financial outcomes of the coronavirus outbreak. Therefore, this pandemic creates physical and psychological health problems at the national level in addition to its economic impacts (22). Psychological interventions in different stages of the pandemic can be useful and practical. During the COVID-19 pandemic, psychological health professionals can actively perform the relevant interventions by teaching positive skills such as resilience, hope, and spiritual health to enhance a person's psychological health and psychosocial response to the virus (23). Cognitive-behavioral therapy can also be effective in combating beliefs such as overestimating the risk of contracting and fear of dying by helping the person to think logically and to challenge these irrational thoughts and to try to replace them with rational thoughts. This treatment also helps people control their stress and anxiety in the face of COVID-19 by training desensitization methods and muscle relaxation (24).

Other effective psychological interventions affecting COVID-19 related harms include acceptance and commitment therapy (ACT). Many people experience many negative thoughts about their disease and future due to the critical COVID-19 conditions. Experiencing these negative thoughts leads to stress and anxiety responses. ACT helps these people think of thoughts only as thoughts and not reality with training techniques such as mindfulness, and this helps the person take purposeful and value-based actions instead of showing anxiety and stress (25). Self-care is the most important factor in controlling the outcomes of the COVID-19 pandemic. In the meantime, people with conscientious characteristics follow the principles of self-care behaviors such as mask use, social distancing, regular hand washing, and other health protocols, and thus, self-care behaviors and having conscientious characteristics can be

effective factors in dealing with COVID-19 disease (26). Another positive characteristic affecting COVID-19 is resilience. Highly-resilient people view negative events more flexibly and realistically, and also see problems as often limited and temporary compared to other people, and these factors help the person to manage situations in the face of crises such as COVID-19 disease, which causes a lot of stress (27). Providing psychological support to anxious and injured people as well as specialized psychological health services to pandemic survivors are the most important goals of a psychological intervention (28). These psychological interventions, which are performed in person, online, and by phone, include cognitive-behavioral therapy (CBT), mindfulness, dialectical behavior therapy, etc. The above interventions have been carried out by medical staff such as psychiatrists, psychologists, and mental health social workers and have very effective results in treating disorders such as depression, anxiety, and sleep disorders in patients with suspected infections, quarantined family members, medical personnel, and vulnerable groups (e.g. children, the elderly, pregnant women, and the general public). Several artificial intelligence programs have also been used as an intervention during psychological crises caused by the current epidemic (29).

Many of the psychological and anxiety crises created in an epidemic are related to the financial and economic problems faced by many people and are essentially non-endopsychic. It is suggested to form a committee, if possible, to address the problems of high-risk businesses and to set up telephone lines to provide services to these respected people. In short, to prevent the exacerbation of possible problems, it is necessary to provide continuous psychological services, even for those with mild psychological problems during pandemics (30).

5- CONCLUSION

Overall, the research findings showed that COVID-19 disease causes many psychological problems for the general public and it is necessary to perform rapid, continuous, and timely psychological interventions, especially through telephone and online services. Various psychological interventions such as stress management techniques, mindfulness-based, cognitive-behavioral relaxation techniques, self-care, and raising the sense of security can help reduce the effects of COVID-19 and improve psychological health status.

6- AUTHORS' CONTRIBUTIONS

Study conception or design: AM, SI, and MS; Data analyzing and draft manuscript preparation: SI, NA, SS; Critical revision of the paper: AM; Supervision of the research: AM and MS; Final approval of the version to be published: AM, SI, NA, SS, and MS.

7- CONFLICT OF INTEREST: None.

8- REFERENCES

1. Farhat AS, Sayedi SJ, Akhlaghi F, Hamed A, Ghodsi A. Coronavirus (COVID-19) infection in newborns. *International Journal of Pediatrics*. 2020;8(6):11513-7.
2. Ghodsi A, Azarfar A, Ghahremani S. A Review of Coronavirus Disease (COVID-19) in Children. *Journal of Pediatric Nephrology*. 2020;8(3).
3. Ghodsi A, Sarabi M, Malek A, Khakshour A. ent Treatment Guidelines of SARS-CoV-2 Related Multisystem Inflammatory Syndrome in Children: A Literature Review and Expert Opinion. *Journal of Child Science*. 2021;11(01):e133-e40.
4. Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *Journal of autoimmunity*. 2020:102433.
5. Lu, H., Stratton, C. W., & Tang, Y. W. Outbreak of pneumonia of unknown etiology in Wuhan, China: The mystery and the miracle. *Journal of medical virology*, 2020; 92(4): 401-402.
6. Bao, Y., Sun, Y., Meng, S., Shi, J., & Lu, L. (2020). 2019-nCoV epidemic: address mental health care to empower society. *The Lancet*, 2020; 395(10224): 37-8.
7. Chong MY, Wang WC, Hsieh WC, Lee CY, Chiu NM, Yeh WC, et al. Psychological impact of severe acute respiratory syndrome on health workers in a tertiary hospital. *The British journal of psychiatry: the journal of mental science*. 2004;185: 127-33.
8. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. *The lancet. Psychiatry*. 2020;7(4): 300-302.
9. Allsopp K, Brewin CR, Barrett A, Williams R, Hind D, Chitsabesan P, et al. Responding to mental health needs after terror attacks. *BMJ*. 2019;366: 14828.
10. Kang L, Ma S, Chen M, Yang J, Wang Y, Li R, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. *Brain, behavior, and immunity*. 2020.
11. Fardin, M. A. COVID-19 and anxiety: A review of psychological impacts of infectious disease outbreaks. *Archives of clinical infectious diseases*, 2020;15(COVID-19).
12. Li, S., Wang, Y., Xue, J., Zhao, N., & Zhu, T. The impact of COVID-19 epidemic declaration on psychological consequences: a study on active Weibo users. *International journal of environmental research and public health*, 2020;17(6): 2032.
13. The State Council of China. A notification to set up nationwide psychological assistance hotlines against the 2019-nCoV outbreak. Published February 2, 2020. Accessed March 3, 2020. Available from: http://www.gov.cn/xinwen/2020-02/02/content_5473937.htm.
14. Oremus M, Wolfson C, Perrault A, Demers L, Momoli F, Moride Y. Interrater reliability of the modified Jadad quality scale for systematic reviews of Alzheimer's disease drug trials.

15. Malboeuf-Hurtubise C, Léger-Goodes T, et al. Online art therapy in elementary schools during COVID-19: results from a randomized cluster pilot and feasibility study and impact on mental health. *Child and Adolescent Psychiatry and Mental Health*.2021;15(1):1-11.
16. Malboeuf-Hurtubise C, Léger-Goodes T, Mageau GA, Joussemet M, Herba C, Chadi N, et al. Philosophy for children and mindfulness during COVID-19: Results from a randomized cluster trial and impact on mental health in elementary school students. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*. 2021;107:110260.
17. Wei N, Huang B-C, Lu S-J, Hu J-B, Zhou X-Y, Hu C-C, et al. Efficacy of internet-based integrated intervention on depression and anxiety symptoms in patients with COVID-19. *Journal of Zhejiang University Science B*. 2020;21(5):400-4.
18. Shaygan M, Yazdani Z, Valibeygi A. The effect of online multimedia psychoeducational interventions on the resilience and perceived stress of hospitalized patients with COVID-19: a pilot cluster randomized parallel-controlled trial. *BMC psychiatry*. 2021;21(1):1-12.
19. Cheng P, Casement MD, Kalmbach DA, Castelan AC, Drake CL. Digital cognitive behavioral therapy for insomnia promotes later health resilience during the coronavirus disease 19 (COVID-19) pandemic. *Sleep*. 2021;44(4):zsaa258.
20. Nasirzadeh M, Akhondi M, Jamalizadeh nooq A, Khorramnia S. A Survey on Stress, Anxiety, Depression and Resilience due to the Prevalence of COVID-19 among Anar City Households in 2020: A Short Report. *JRUMS*. 2020; 19 (8) :889-98
21. Roccella, M. Children and coronavirus infection (Covid-19): What to tell children to avoid Post-Traumatic Stress Disorder (PTSD). *The Open Pediatric Medicine Journal*, 2020;10(1): 1874- 77.
22. Kernan WD. Health-related impediments to learning among dental and oral surgery Mageau GA, Taylor G, Herba CM, Chadi N, et students. *Journal of prevention & intervention in the community*. 2019;47(1):32-44.
23. Liu, L., Yin, H., & Liu, D. (2017). Zero health worker infection: experiences from the China Ebola treatment unit during the Ebola epidemic in Liberia. *Disaster medicine and public health preparedness*, 11(2): 262-66.
24. Jani M, Mikaeeli N, Rahimi P. The effect of cognitive-behavioral therapy through the Internet on reducing coronary anxiety. *Information and Communication Technology in Educational Sciences* 2010;4(40): 129-45.
25. Afshari A. Comparison of the Efficacy of Acceptance and Commitment Therapy and Mind-Fullness Therapy on Women's Resilience in repeated Abortions. *IJPN*. 2018; 6 (4):11-18.
26. Puyanfarid S, Taheri A, Ghavami M, Ahmadi S, Mohammad pour M. Individual, Gender, and Corona Differences: The Relationship between Personality Traits and Gender Differences with Corona-Related Self-Care Behaviors. *Journal of Cognitive Psychology and Psychiatry*.2020; 7 (4): 67-77.
27. Bester, G., & Kuyper, N. The influence of additional educational support on poverty-stricken adolescents' resilience and academic performance. *Africa Education Review*, 2020;17(3): 158-74.
28. Fathi Ashtiani A, Rahnejat AM, Ahmadi Tahour Soltani M, Taghva A, Ebrahimi MR, Donyavi V, et al. Psychological Consequences and Interventions during the COVID-19 Pandemic: Narrative Review. *Journal of Marine Medicine*. 2020;2(1):1-11.
29. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. *The lancet psychiatry*. 2020;7(4):300-2.
30. Tashvighi M, Parvaneh P, Aghamiri S. Psychological interventions and characteristics affecting COVID-19 and its resulting Psychopathology: A systematic review study. Rooyesh, TUMS, Tehran, Iran.