Clinical Cancer Investigation Journal-ISSN: 2278-0513

Protective Factors of PTSD in COVID-19 Hospitalized Patients: Coping, Spiritual Well-Being & Resilience

Abstract

COVID-19 Pandemic can have adverse psychological effects, including PTSD, on hospitalized patients due to coronavirus disease. This study aimed to investigate the protective factors of anxiety and depression, such as coping, spiritual well-being, and psychological resilience. The present study is a descriptive and cross-sectional study that uses convenience sampling methods. The participants of this study were 100 people from Tehran who were diagnosed with coronavirus by PCR test and were hospitalized. We used The primary care PTSD-5, Coping Scale, Spiritual Well-Being Scale, and Brief Resilience Scale to evaluate the protective factors.

The results showed that there is a significant correlation between resilience with PTSD ($r = -0.228$, p-value <0.05), spiritual health with PTSD ($r = -0.230$, p-value <0.05), and Coping with PTSD ($r = 0.254$, p -value <0.05). Variance analysis shows that $F(3) = 7.046$, $P = 0.001$ model is generally significant. Linear regression analysis showed resilience ($B = 0.022$, standardized $\beta = -0.213$, $P < 0.05$), coping ($B = 0.010$, standardized $\beta = 0.308$, $P < 0.001$) were associated with PTSD scores. However, spiritual well-being ($B = 0.017$, standardized $\beta = -0.233$, $P = -0.077$), was not associated with PTSD scores. Our results underscore how resilience, coping, and spiritual well-being could prevent COVID-19 patients from developing PTSD.

Keywords: *COVID-19, PTSD, coping, resilience, spiritual well-being.*

Amir Sam Kianimoghadam[1], Shahram Hajirezaei[2], Mobina Ghasemi[3], Mahsa Abdollahpur[4], Maryam Bakhtiari[5], Maryam Khesali*[6]

1.Assistant Professor of Clinical Psychology, Department of Clinical Psychology, Religion and Health Research Center, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Email: as.kianimoghadam@gmail.com ORCID: 0000-0001-8686-523X

2. MSc in Clinical Psychology, Psychology Department of Psychiatry, Tehran University of Medical Sciences, Roozbeh Hospital, South Kargar Ave, Tehran, Iran. Email: sh-hajirezaei@alumnus.tums.ac.ir ORCID: 0000-0003-3894-7067

3.Medical Doctor Student, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Email: ghasemi.mobina@gmail.com. ORCID: 0000-0003-0752-2410

4.Master of Science, Department of Clinical Psychology, School of Medicine, Shahid Beheshti University of Medical Science, Tehran, Iran. Email: M.abdollahpur1373@gmail.com ORCID: 0000-0001-6335-2423

5.Professor of Clinical Psychology, Department of Clinical Psychology, Religion and Health Research Center, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Email: dr.bakhtiari54@gmail.com ORCID: 0000-0002-5106-9775

6.Medical Doctor Student, Religion and Health Research Center, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran. (Corresponding author) Email: mariamkhesali@gmail.com Tel:09212466831 ORCID: 0000-0002-6085-1056

Introduction

The persistence of the COVID-19 epidemic has resulted in significant loss of human life worldwide. In most countries, such as Iran, the spread of COVID-19 increased rapidly in February 2020. According to WHO, COVID-19 remains public enemy number one(1, 2). COVID-19 is a respiratory condition caused by a coronavirus that causes severe breathing problems for those with underlying health conditions (3). Researchers have found that COVID-19 affects the brain and triggers neurological symptoms (4, 5) . In order to slow down the spread of the disease, most countries have closed their borders and have enforced strict quarantine rules. However, based on various research, these strict rules have created other problems within the population, such as depression and anxiety.

In some cases, it has worsened the symptoms of individuals suffering from post-traumatic stress disorder[5]. The general

population has shown psychiatric symptoms of depression, anxiety, and PTSD during and after the pandemic [6]. The prevalence of PTSD in a patient with COVID-19 was 6.5%. The predictive factors of PTSD contained psychological distress at the beginning of the illness and hospitalization in the severe care unit [7].

COVID-19 is a virus from the SARS family, so previous knowledge about SARS can be useful in better understanding COVID-19 and its effects on public health [8]. Similar to Covid-19, when SARS became a pandemic, various psychiatric disorders, including depression, post-traumatic stress symptoms (PTSS), post-traumatic stress disorder (PTSD), and anxiety, developed amongst the population. Some reports indicate that some people were suffering from these psychiatric issues 30 months after the SARS pandemic was over [9].

In one study carried out on 714 hospitalized patients during the outbreak of COVID-19, the psychiatric symptoms of patients were monitored. The study indicated that 96.2% of patients showed symptoms of PTSD. It can be concluded that these psychological disorders result from the quality of life of those individuals being poorer compared to before the pandemic.[10]. In another study, the prevalence of depression between patients with COVID-19 and people who were in quarantine was compared. The study showed that the prevalence of depression in the group of patients with COVID-19 was 29.2%, whereas the prevalence of depression in the group of quarantined people was 9.8%. However, there was no significant difference in anxiety prevalence between both groups (6). Furthermore, there is little evidence indicating that psychological factors such as coping styles, resilience, and spiritual well-being work as protective factors in patients with COVID-19 but a study in China showed that more than 50% of Chinese healthcare had experienced depression and about 70% of them experienced distress during the COVID-19 pandemic.(7).

A situation is identified as a stressor when a person believes don't have the resources needed to cope with a situation. However, a perceived absence of resources creates a stressful event (8). An important factor in healthy coping and the promotion of health is resilience. (9) Resilience is explained as healthy adaptation despite adversity, and resilient people use more appropriate coping strategies. Resilience can be promoted by skills, personal attributes, and a supportive social environment that provides resilient behavior(10). Psychological factors that play an important role in resilience are self-esteem, cognitive schemes, social support, coping strategies, and personality traits (11). A study on resilience between the two sexes showed that women generally score higher on social competency and are keener to access social resources. In contrast, men score higher on the perception of self-efficacy(12). Studies have shown that resilience is correlated with some positive outcomes in protection against adverse effects of exposure to stress, and resilience is the best predictor of hopelessness compared to mood, stressful life events, and personality traits (13). Research on mental health has shown that resilience in adolescents is associated with less vulnerability against symptoms of stress, anxiety, depression, and obsessive-compulsive disorder (14). Also, studies on people who survived the SARS epidemic have shown less resilience against stress during virus outbreaks, so resilient individuals had lower levels of worry about SARS (15). Another study showed that resilience is a moderate negative outcome of stress during the COVID-19 epidemic, so "resilience levels distinguish direct and indirect effects of stress on depression." (1). Studies conducted on the general population, during the epidemic of infectious diseases showed that people's coping strategies to reduce psychological distress symptoms are seeking social support, problem-solving, positive thinking, refocusing on planning, positive reappraisal, and avoidance/ denial/ distraction. Furthermore, it was concluded that people who have been seeking social support strategies have experienced less anxiety, depression, and fear(16). In a few studies performed on hospitalized patients with COVID-19 and the control group (healthy controls), has been indicated that the application of adaptive coping strategies and high perceived social support have negatively correlated with depression and anxiety symptoms (17). The Differences between the coping strategies of physicians and nurses working in healthcare during COVID-19 show that nurses have applied more positive reappraisal considerably and avoided coping styles compared to physicians. Also, seeking social support is more expressed in those over 40 years old, while those under 40 applied more avoidance strategies (18).

Numerous studies have shown that spirituality and religiousness can perform a vital role in coping with stressful situations and traumatic experiences such as natural disasters, bereavement, and major diseases (19-21). Although there are differences between the two concepts of religiousness and spirituality, they are used interchangeably. Religiousness is defined as a system of beliefs that resides in a larger context, and spirituality is considered the subjective experiences of transcendence(22). Spirituality and religiousness include identification of religious group, affiliation, personal practices, public practices, personal identification, and coping (23). Both forms of well-being are correlated with lower levels of PTSD symptoms (24). spirituality and religious coping attempts are sometimes associated with higher levels of well-being(25). Some studies have proved the protective role of spiritual well-being; for example, Tartaro et al. have shown that participants with higher spirituality well-being

indicated lower cortisol levels. Moreover, a strong correlation between suicidality, PTSD, and hopelessness with spiritual well-being has been demonstrated (26-28). There are few findings on the protective role of spiritual well-being in patients with Covid-19. In a study conducted to investigate mental health consequences of COVID-19 in Spain, it has been shown Spiritual well-being and loneliness are acknowledged as the main predictors of psychological health(29).

There is no doubt that natural disasters cause acute and widescale stressors and have intense effects on the public's mental health (30). However, there is little evidence for a better understanding of the mental health effects caused by COVID-19(31). Therefore, our knowledge about protective factors such as coping, spiritual well-being, and resilience are inconsiderable. It is urgent to study and monitor the COVID-19 hospitalized patients closely to identify protective factors such as resilience, coping, and others.

Materials and Methods

Subjects

Initially, the goals and methodology of the study were described to patients, and if they agreed, a written consent form was taken. The participants of this study were 100 people (52% female and 42% male) from Tehran, who were diagnosed with coronavirus by PCR test and were hospitalized for 3 to 7 days in Masih Daneshvari, Taleghani, Shahid Mofatteh, Panzdah-e Khordad, Imam Hussein, Shahid Modarres, Loghman, Labbafinejad and Shohada-e Tajrish hospitals from June 14th to September 21st.

In this study, we excluded patients who had earlier been diagnosed with emotional (PTSD), healthcare workers, COVID-19 staff, patients with COVID-19 who have recently been diagnosed (Less than three days), patients suspected of having COVID-19, patients who had close contact with COVID-19, and family members affected by COVID-19 from this analysis. If a participant was under 18, parents or legal guardians would consent to participation.

Data collection

Convenience sampling methods were utilized in this descriptive and cross-sectional study. Available sampling was used to select patients. With the permission of the head of the hospital ward of COVID-19 patients, researchers came to the patients' beds daily, and if the patient consented, the research questions were asked one by one, and the patient's answers were recorded. If the patient became tired or unwilling to continue responding, the researcher would stop. The evaluation consisted of three parts, demographic information, screening, and tools evaluation. Demographic details covered age, weight, height, education, and marital status.

Tools

The primary care PTSD-5 (PC-PTSD-5): The PC-PTSD-5 is a 5-item questionnaire in which items scored dichotomously as either 0 or 1 (0 = No; 1 = Yes). Total PC-PTSD-5 scores are obtained by summing the scores on the five items. High scores mean higher risk. A score of 3 points is considered a reference point for further evaluation to achieve effective screening for PTSD (32). Previous research on PC-PTSD has shown good test-retest reliability (r = 0.83) and predictive validity against the Clinician-Administered PTSD Scale (CAPS; r = 0.83). In the present study, the PC-PTSD-5 was administered verbally by a research assistant (33).

Coping Scale: Coping Scale was assessed by using Hamby, Grych, and Banyard's 13-item Coping Scale, in which each response group was assigned a value from 4 to 1. The total score can be a sum or mean of all the items. Internal consistencies (coefficient alphas) for the 2500 samples were 0.88 and 0.91, respectively. Validity was demonstrated in the main sample with strong correlations with other outcome measures, such as Anger Management (r = 0.57) and Endurance (r = 0.63), and with measures of well-being, such as Subjective Well-being (r = 0.53) and Posttraumatic Growth (r = 0.65)(34).

Spiritual Well-Being: Spiritual Well-Being was assessed using Hamby, Grych, and Banyard's 5-item Spiritual Well-Being Scale. Each response group was assigned a value from 4 to 1. The total score is obtained by summing the scores on all the items. Internal consistencies (coefficient alphas) for the 2500 samples were 0.81 and 0.85, respectively. Validity was demonstrated in the main sample with strong correlations with other outcome measures, such as Subjective Well-Being (r =0.59) and Posttraumatic Growth (r = 0.58), as well as Religious Meaning Making (r =0.71)(35).

Brief Resilience Scale (BRS): We assessed Resilience using Smith's 6-item Brief Resilience Scale. It uses a 5-level summative rating response (1 = strongly disagree and 5 = strongly agree) and 3 reverse-coded items; the item mean for this scale is typically 3.5 of a possible 5 or a scaled average of 21. This scale is reliable. It measures a unitary construct and is negatively related to anxiety, depression, negative affect, and physical symptoms, with a Cronbach range from 0.80 to 0.91 in different samples (36).

Statistical analysis

SPSS 24.0 program was used for conducting all of the statistical analyses. Measurement data were expressed as the mean ± standard deviation (SD). In the multiple group comparisons, a one-way analysis of variance was used. Pearson's correlation was used to examine the association between coping, spiritual well-being, resilience, age, marital status, and education. In addition, linear regressions were used to analyze the relationship between depression, anxiety,

coping, spiritual well-being, and resilience. Depression and anxiety scores were used as dependent variables while coping, spiritual well-being and resilience were used as independent variables. The enter method was used to screen variables. Significance levels were set at 0.05, and all tests were two-sided.

Results

Subject characteristics

In the present study, 109 people participated, but the data of 9 people was excluded from the final analysis due to missing. The female and male participants had mean age and standard deviation of 34.02 ± 10.691 and 38.98 ± 12.830, mean weight of 68.90 ± 9.780 and 76.06 ± 14.558, the height of 162 ± 12.542 and 172.06 ± 8.584 respectively. The female and male participants' education was under diploma 26.9, 27.1, diploma 17.3, 29.2, bachelor's degree 44.2, 39.6, master's degree 9.6, 2.1, and Ph.D. 0,1.9, respectively. The female and male marital status of the participants was single 34.6, 29.2, married 57.7, 70.8, and divorced 7.7, 0 respectively. (Table 1)

Correlation

Table 2 showed there is a significant correlation between resilience with PTSD ($r = -0.228$, p-value <0.05), spiritual health with PTSD ($r = -0.230$, p-value <0.05), and Coping with PTSD ($r = 0.254$, p -value <0.05).

Prediction of depression and anxiety

Table 3 shows that the predictor variables (Coping, Resilience, and Spiritual Well-Being) were able to predict 0.155 of the PTSD score by controlling gender, age, weight, height, education level, and marital status. Table 4 of variance analysis shows that $F = 7.046$, $P = 0.001$ model is generally significant.

Relationship between resilience, spiritual well-being, coping, PTSD

Linear regression analysis showed resilience ($B = 0.022$, standardized $\beta = -0.213$, $P < 0.05$), coping ($B = 0.010$, standardized $\beta = 0.308$, $P < 0.001$) were associated with PTSD scores. However, spiritual well-being ($B = 0.017$, standardized $\beta = -0.233$, $P = -0.077$), was not associated with PTSD scores. While controlling for gender, age, weight, height, education level, and marital status. (25).

Discussion

This cross-sectional study aimed to appraise the protective effects of coping, spiritual well-being, and resilience on PTSD in patients with COVID-19 admitted to several hospitals of Shahid Beheshti University. Both women and men with COVID-19 with an average age of 36 years have participated in this study.

PTSD is a mental disorder that may develop after exposure to a traumatic event. Its symptoms include avoidance, negative alterations in cognitions and mood, and arousal and reactivity. Patients who go through COVID-19, in many ways, are similar to those who have experienced the 2003 Severe Acute Respiratory Syndrome (SARS), also suffering from psychological disorders, including PTSD, anxiety, and depression, even after they have been cured and discharged from hospital (37, 38).

The significance of preparing appropriate psychosocial health services in emergency settings such as the infectious disease epidemic is introduced in the Inter-Agency Standing Committee (IASC) Guidelines on Mental Health and Psychosocial Support in Emergency Settings. The recognition and evaluation of psychological consequences of health emergencies in the general population and patients will help determine the course of psychological services which are needed(39, 40).

Resilience is defined as the ability to mentally and emotionally respond to extreme stress, trauma, or crisis successfully(41). While the association between the states of emergency and psychological disorders is widely known(42), research on the relationship between resilience and psychological health and its protective effect on PTSD is very limited during the outbreak of public health emergencies. Our findings highlight the importance of resilience in protecting PTSD due to the significant negative correlation in covid-19 patients ($r = -0.228$, p-value <0.05).

It is important to have effective coping strategies for stressful situations to prevent experiences leading to stress-related mental disorders. Although each person's susceptibility to stress and specific situations would contribute, coping strategies are expected to help. It is known that people use different coping methods in crisis or catastrophic situations(43). The results of an online survey by Kar and colleagues suggested that people had different coping strategies. Hoping for the best, remaining busy, utilizing religious faith, sharing feelings, and talking to others were among the most frequent coping strategies(44). The results of the current study proved a notable relationship between coping scores and PTSD ($r = 0.254$, p-value <0.05).

Spirituality has been characterized as not only the religious faith but also a dynamic connection to oneself, others, nature, or God in a meaningful manner(45, 46). Researchers have acknowledged that spiritually grounded perspectives could benefit both psychological and physical well-being and were associated with better tolerance to mental and physical stress, prospering aging, and a better ability to cope with serious diseases and isolation (47). Jim and colleagues administered a meta-analysis of 32,000 patients showing that those with greater religious/spirituality had better physical health consequences (48). In another meta-analysis of 49 studies involving 13,512 subjects, Ano & Vasconcelles investigated a positive association between religious coping and psychological adjustment to stress(49) Our study showed that

spirituality was significantly and negatively associated with PTSD (r = - 0.230, p-value <0.05). In other words, individuals with high spirituality are less likely to develop PTSD.

The limitation of this study includes the relatively small sample size and cross-sectional design, as psychiatric symptoms may vary over time. Moreover, this study was conducted among hospital-administered patients, and subsequent information about patients' mental status after discharge is unavailable. More longitudinal researches and well-designed interventional trials are necessary to investigate therapeutic interventions and prevention strategies.

Conclusion

COVID-19 Pandemic has rapidly become a universal health concern resulting in various mental health issues, including anxiety, depression, post-traumatic stress disorder, and other stress-related disorders. In addition, patients admitted to the hospital with COVID-19 experience community isolation, physical distress, and fear of death. These exposures increase the risk of developing PTSD. Furthermore, the risk may increase during the next weeks when these survivors lack urgent social support due to the need to self-quarantine. Our results underscore how resilience, coping, and spiritual well-being could prevent COVID-19 patients from developing PTSD.

Acknowledgments

The authors would like to thank all the patients and health workers who helped them in completing this study.

Conflict of Interest

The authors have no conflicts of interest to declare for this study.

Funding/Support

The present article is financially supported by the ethics committee of Shahid Beheshti University of Medical Sciences.

Ethical Permission

This study has been approved by the ethics committee of Shahid Beheshti University of Medical Sciences with approval code IR.SBMU.RETECH.REC.1399.413.

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Table 1 Characteristics the patients with COVID-19

Characteristic	**Overall (N = 100)**	
	Male	Female
Number (%)	48 (48)	52 (52)

Average age (years)(range) (SD)	38.98 (14-88) (12.830)	34.02 (18-61) (10.691)
Average Weight (range) (SD)	76.06 (40-120) (14.558)	68.90 (47-90) (9.780)
Average Height (range) (SD)	172.06 (150-192) (8.584)	162 (90-180) (12.542)
Education (%)		
Under Diploma	27.1	26.9
Diploma	29.2	17.3
Bachelor	39.6	44.2
Masters	2.1	9.6
PhD	-	1.9
Marital status (%)		
Unmarried/Single	29.2	34.6
Married	70.8	57.7
Divorced	-	7.7

Table. 2 The correlation between variables of the study

	PTSD	**Resilience**	**Spiritual Well-Being**	**Coping**
PTSD	1			
Resilience	-0.228*	1		
Spiritual Well-Being	-0.230*	0.195	1	
Coping	0.254*	0.100	0.141	1

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 3 Model Summary[b]

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.425[a]	0.180	0.155	7.046

a. Predictors: (Constant), Coping, Resilience, Spiritual Well-Being

b. Dependent Variable: CPTSD

Table 4 ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	11.713	3	3.904	7.046	0.000[b]
Residual	53.197	96	0.554		
Total	64.910	99			

a. Dependent Variable: CPTSD

b. Predictors: (Constant), Coping, Resilience, Spiritual Well-Being

Table 5 Coefficients

Variables	B	Beta	t	P-value
Resilience	0.022	-0.213	-2.257	0.026
Spiritual Well-Being	0.017	-0.233	-2.450	-0.077
Coping	0.010	0.308	3.294	0.001