

ORIGINAL RESEARCH

Protective factors for psychological distress in hospital staff during the Coronavirus pandemic

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Abstract

Background and Objective: The aim of the current study was to investigate three factors, including coping, resilience, and spiritual well-being as protective factors for the development of PD among hospital staff during the COVID-19 pandemic.

Materials and Methods: In the current research, convenience sampling method was used to select 300 hospital staff from various hospitals in Tehran. The collected data were analyzed using multiple statistical methods, i.e., Pearson's correlation coefficient, Structural Equation Modeling, and regression analysis.

Results: The findings revealed that nearly 40 percent of the study sample experienced a severe mental disorder. Also, the study findings showed that there was a significant positive correlation between various aspects of spiritual well-being among hospital staff, i.e., communication with self and with God ($P < 0.01$, $r = 0.676$), communication with others and with God ($P < 0.01$, $r = 0.605$) and with self ($P < 0.01$, $r = 0.626$), and lastly communication with nature and with God ($P < 0.01$, $r = 0.686$) and with self ($P < 0.01$, $r = 0.722$) and with others ($P < 0.01$, $r = 0.640$). The results of the simultaneous regression analysis indicated that the three variables of coping, resilience, and spiritual well-being explained 0.072% of the total variance in psychological distress among the hospital staff sample.

Conclusions: The findings of the current study suggested that the three factors of coping, resilience, and spiritual well-being may have a minimal protective role in PD development among the hospital staff population. More research is necessary to draw a conclusion on the role of these variables regarding PD.

Keywords: Personnel, Hospital, Psychological Distress, Resilience, Psychological, Spirituality, COVID-19

Introduction

The outbreak of the coronavirus disease since January 2020, better known as the COVID-19 pandemic, has had a considerable impact on many lives, both physically and psychologically (1). This pandemic has caused psychological distress among the general population (2), as well as a group of individuals who are very involved in the care of infected patients, i.e., hospital staff and frontline workers (3). Some reported symptoms of psychological distress among the general population involved symptoms of Post-traumatic Stress Disorder (PTSD) and anxiety in both populations (2, 3). Having said that, hospital staff have been reported to be among a vulnerable population for developing symptoms of psychological distress (1). Therefore, monitoring the mental health of hospital staff and conducting research to enhance care in this area seems to be necessary, as the pandemic is still going on and this group of individuals have constantly been under pressure by the effects of the pandemic on their lives (3, 4). Even before the COVID-19 outbreak, hospital staff have been among the population who were at risk of being diagnosed with mental disorders, since they experience a great load of psychological and physical stress while doing their jobs (5). One of the factors that are important to be evaluated among this under-stress population involves Psychological Distress (PD), which is known as an emotional suffering state that is related to demands and stressors, which are hard to cope with in an individual's everyday life. Some typical characteristics of PD include symptoms of anxiety and depression (6). The results of a number of studies have shown that the level of PD is high among frontline workers and healthcare professionals, and highlighted the importance of designing interventions and strategies to reduce the burden of psychological impacts of working as this group of individuals (7, 8). Furthermore, previous studies have

suggested that there is a lack of evidence regarding appropriate strategies to overcome post-COVID-19 emotional burden among healthcare staff (8).

A number of factors have been reported to be linked to PD among an at-risk population like hospital staff, with one of them being resilience (8). Resilience is defined as an inborn trait that is regarded as an individual's psychological and physical qualities (9). Previous studies have underscored the role of resilience among frontline workers. For example, Heath and colleagues (2020) concluded that the level of PD the clinicians experienced during the COVID-19 pandemic will be repeated in similar circumstances in the future, and that coming up with strategies to improve resilience in this population is essential to avoid PD among this population (10). Another factor that is associated with PD, and that has been studied in the recent years, involves coping. Historically, coping is defined as cognitive processes that are carried out in order to manage or lessen states of emotional distress, such as anxiety (11). Recent studies have focused on coping among frontline workers during the pandemic (e.g., 12), and their findings suggest that although nurses and other staff were experiencing PD that was associated with the COVID-19 pandemic, but they seemed to be using coping strategies that were supported by research. This result highlighted the importance of using coping behaviors in this population, especially during the pandemic (12). Apart from the two factors mentioned above, spiritual well-being is a factor that has been studied in the healthcare staff population. This concept is defined as existing past an individual's experienced circumstances, with a sense of connectedness within oneself, and relying on the resources within oneself (13). Spiritual well-being has been previously studied among healthcare staff (e.g., 14, 15). For example, Kim and Yeom (2018), reported that spiritual well-being might have a role in lessening burnout in nurses who worked in intensive care units (15). Although many factors have been separately investigated among frontline workers with or without PD (e.g., 8, 12, 15), there still remains a literature gap on the protective factors of PD among hospital staff during the COVID-19 pandemic. It is especially important to evaluate

these factors at this crucial time, as hospital staff and other frontline workers are among an at-risk population for experiencing symptoms of psychological distress (7). Therefore, in an attempt to assess these factors regarding PD among the hospital staff population, the current research aimed to investigate a number of factors, namely resilience, coping, and spiritual well-being, as protective factors for PD development among hospital staff in Iran. The findings of this study could guide policymakers to develop useful interventions to mitigate symptoms of PD and provide support to hospital staffs, especially during the COVID-19 pandemic.

Materials and Methods

The sample in the current study included all hospital staff working in various hospitals in Tehran, namely Masih-Daneshvari, Ayatollah Taleghani, Shahid Dr. Labafinezhad, Shohadaye Tajrish, Mofid pediatrics hospital, Shahid Mofatteh-Varamin, Shahid Modarres, 15th of Khordad, Loghmane-Hakim, Imam Hossien, Akhtar, and Mahdiah hospitals. The participants were only included in the research if they worked in the above centers and if they could write and read in Persian. Furthermore, the participants were excluded from the research if they did not agree to take part in the study via an informed consent.

Measures

Kessler Psychological Distress Scale (K-10)

Psychological distress was measured among the participants using the 10-item Kessler Psychological Distress Scale (K-10). The K-10 identifies high levels of psychological distress that is non-specific, and its basis is a framework of psychophysiological, cognitive, behavioral, and emotional symptom manifestations (16). Respondents answer the items on a 5-point Likert scale, which ranges from 1 (None of the time) to 5 (All of the time). The total score in K-10 is obtained by calculating the sum score of each item, and it ranges from 10 to 50. Respondents with higher scores tend to experience higher levels of PD, and the cut-off score for this scale is 24. Previous studies have shown that K-10 has appropriate reliability with

Cronbach's Alpha higher than .88 (16). Also, the Persian version of K-10 was reported to have high reliability, with Cronbach's Alpha of 0.93 and Spearman-Brown coefficient of 0.91 (17).

Brief Resilience Scale (BRS)

Resilience was measured in the study sample using the 6-item Brief Resilience Scale (BRS). This scale measures resilience on the basis of its original concept (i.e., the concept of recovering from stress or bouncing back from it) (18). Respondents answer the items on a 5-point Likert scale, which ranged from 1 (Completely disagree) to 5 (Completely agree). The total score in BRS is obtained by calculating the sum score of the items, and it ranges from 6 to 30. Respondents with higher scores on this scale tend to have higher levels of resilience. Previous studies have reported that BRS has appropriate test-retest reliability in a one-month interval ($r = 0.69$) as well as high internal consistency ($\alpha = 0.91$) (18). Furthermore, the Persian version of BRS proved to have an appropriate level of internal consistency ($\alpha = 0.76$) and temporal reliability (Intraclass Correlation Coefficient = 0.76) (19).

Life Paths Measurement Packet Coping Scale

Coping behaviors were measured among the study sample using the 13-item Life Paths Measurement Packet Coping Scale. This scale evaluates three various coping methods, i.e., behavioral, emotional, and cognitive methods (20). Respondents answer the items using a 4-point Likert scale ranging from 4 (Mostly true about me) to 1 (Not true about me). The total score in this measure is obtained by calculating the sum of each item score, and those who score higher have greater levels of coping. This coping scale proved to be both reliable and valid, with appropriate internal consistency ($\alpha = 0.91$) and convergent validity ($r = 0.63$) (20).

Spiritual Well-being Questionnaire (SWB)

Spiritual well-being was assessed among hospital staff using the 40-item Spiritual Well-being Questionnaire (SWB) (21). This questionnaire measures various aspects of spiritual well-being with four subscales (each containing 10 items), namely communication with God, communication with nature,

communication with self, and communication with others (21). The total score in SWB is obtained by calculating the sum of each item score, and those who obtain a higher score tend to have a higher level of spiritual well-being. The SWB is in Persian language, and has demonstrated appropriate test-retest reliability ($r = 0.85$), and a very good internal consistency ($\alpha = 0.90$) (21).

Procedure

The present research was first approved by the Research Ethics Committee of the Shahid Beheshti Medical Sciences University, with the code IR.SBMU.RETECH.REC.1399.858. Afterwards, it was conducted cross-sectionally using a descriptive-analytical method. The participants in this study were selected from the hospital staff in Tehran, Iran, using convenience sampling method. Data collection procedure began after the study was approved by the research committee and the code of ethics number was obtained. Every participant completed an informed consent form. In addition to that, prior to the start of data collection, all participants were informed about the nature of the study and the ethical considerations of the research. Data was collected online, and it involved the participants' demographic information, in addition to their response to the study measures. The sample size was calculated using the Free Statistics Calculators software program (22). By considering the effect size of 0.05, power of 0.8, number of predictors 6, and Alpha level 0.5 in this research, the recommended sample size included 278 participants. In order to reduce the missing data effect, the final sample size in the present research included 300 of the hospital staff as study participants (22, 23).

Statistical Analysis

Data analysis took place using several statistical methods, including regression analysis, Structural Equation Modeling (SEM), and Pearson's correlation coefficient. The software programs used for statistical analysis included AMOS, SPSS-24, and MPlus.

Results

Demographic information

The sample in the present study comprised of 168 female hospital staff (56%) and 132 male hospital staff (44%). The marital status of the female participants were as follows: forty-four of them were single (26.2%), 122 were married

(72.6), and 2 were divorced (2.1%). The marital status of the male participants were as follows: forty-two of them were single (31.8%), 74 were married (56.1%), and 16 were divorced (12.1%).

Inferential analysis

Table 1 depicts the descriptive characteristics of the variables among the study sample. The results revealed that the prevalence of psychological distress among hospital staff were as follows: Fourteen participants (4.6%) were likely to be well, 74 had a mild mental disorder (26.4%), 98 participants had a moderate mental disorder (32.6%), and 114 of the hospital staff participants demonstrated a severe level of mental disorder (38%).

Pearson's correlation coefficient was employed to measure the relationship between psychological distress, resilience, coping, and spiritual well-being among the study sample. Prior to the inferential analysis of the collected data, several assumptions that were necessary to be considered were evaluated. The first assumption that was considered included the normal distribution of the studied variables among study participants, which was measured using skewness and kurtosis. Since both of these indexes were between -3 and 3, the skewness (24) and kurtosis (25) indexes showed that the research variables were normal, and that they were symmetrically distributed (Table 1).

Table 1.
Descriptive characteristics of the research variables

Variables	Min.	Max.	Mean	SD	Skewness	Kurtosis
Psychological Distress	12	50	27.78	6.21	0.49	0.83
Coping	23	52	40.62	6.08	-0.06	0.29
Resilience	13	24	18.34	2.49	0.46	1.66
Communication with God	10	50	42.15	6.68	-0.68	1.68
Communication with self	20	50	40.66	6.05	-0.38	-0.14
Communication with others	26	50	42.46	5.04	-0.59	0.20
Communication with nature	21	50	42.58	6.21	-0.66	-0.05

Another assumption that was evaluated involved the assessment of whether there is a linear relationship between the predictor variables and the criterion variable, in a situation where all other predicting variables were kept constant. To assess this assumption, the F-test significance level was utilized. Since the F-value was lower than the pre-determined significance level ($\alpha = 0.05$), therefore, it could be said that there was a linear relationship between the predictor and criterion variables in the present research (Table 3).

The last assumption that was assessed among the research variables was for regression analysis, which included evaluating whether there is a lack of high correlation between the

predicting variables, which is called multicollinearity. This assumption was assessed using Tolerance (TOL) and Variance Inflation Factor (VIF). The findings showed that the TOL rate was lower than one, and the VIF rate was lower than ten. This result indicated that there was no multicollinearity in the independent study variables. Since all assumptions were evaluated and confirmed for Pearson’s correlation coefficient as well as regression analysis, it could be concluded that these statistical tests may be used to evaluate the hypotheses in the current study.

The findings of the Pearson’s correlation coefficient could be viewed in Table 2. The results showed that there was a significant negative correlation between PD and resilience ($P<0.01$, $r=-0.232$), communication with self and communication with God ($P<0.01$, $r=0.676$), communication with others and communication with God ($P<0.01$, $r=0.605$) and communication with self ($P<0.01$, $r=0.626$), communication with nature and communication with God ($P<0.01$, $r=0.686$) and communication with self ($P<0.01$, $r=0.722$) and communication with others ($P<0.01$, $r=0.640$).

Table 2. Pearson’s correlation coefficient test results

Variables	1	2	3	4	5	6	7
1. Psychological Distress	1						
2. Coping	-0.080	1					
3. Resilience	-0.232**	-0.110	1				
4. Communication with God	0.016	-0.113	-0.051	1			
5. Communication with self	0.030	-0.060	0.034	0.676**	1		
6. Communication with others	-0.036	-0.056	0.015	0.605**	0.626**	1	
7. Communication with nature	-0.015	-0.017	0.023	0.686**	0.722**	0.640**	1

$P<0.01$ ** $P<0.05$ *

The simultaneous regression analysis results revealed the calculated correlation coefficient value in this phase to be 0.269, with the value of the determination coefficient being 0.072 (Table 3). The value of the F-statistic showed that the model of regression was significant at 95% confidence level. In accordance with the coefficient of determination, which was calculated in this research, the predicting variables i.e., resilience, coping, and spiritual well-being explained 0.072% of the variance in psychological distress among the hospital staff sample. In addition to that, the findings revealed that there was a significant negative correlation between resilience and

psychological distress among the study sample ($P<0.000$, $\beta=-0.245$, $B=-0.887$) (Table 3).

Table 3. Simultaneous regression analysis results to predict PD based on predictor variables

Predictor variables	B	β	R	R ²	t-statistic	Sig.	F-statistic	Sig.
(Constant)	49.801	-	0.269	0.072	8.849	0.000**	3.811	0.001**
Resilience	-0.887	-0.245			-4.301	0.000**		
Coping	-0.108	-0.106			-1.861	0.064		
Communication with God	0.006	0.007			0.078	0.938		
Communication with self	0.113	0.110			1.224	0.222		
Communication with others	-0.106	-0.086			-1.092	0.276		
Communication with nature	-0.040	-0.040			-0.434	0.665		

$P<0.05$ * $P<0.01$ **

Discussion

The aim of the present research was to investigate if resilience, coping, and spiritual well-being had a predictive role for Psychological Distress (PD) among hospital staff population during the COVID-19 pandemic. The results revealed that nearly forty percent of the study sample experienced a severe mental disorder, and nearly thirty percent of them experienced a moderate mental disorder. This result was similar to previous studies, in that frontline workers were reported to be among the vulnerable groups of individuals for developing symptoms of PD (e.g.,1, 3).

Apart from that, the findings of the Pearson’s correlation coefficient revealed that PD was significantly and negatively correlated with resilience; meaning that the more an individual working in a hospital setting has resilience, the less they will experience PD symptoms. This is in line with previous findings, as they reported that PD was associated with resilience among at-risk groups, such as hospital staff (8). Furthermore, in another study by Heath et al. (2020) the importance of developing strategies to improve resilience in frontline workers was highlighted, as a means of lessening symptoms of PD among this population (10).

Another finding that was yielded from the results of this study was a significant positive correlation between various aspects of spiritual well-being among hospital staff, i.e., communication with self and with God, communication with others and with God and with self, and lastly communication with nature and with God and with self and with others. This result indicates that there is an association

between various aspects of spiritual well-being among the hospital staff population during the COVID-19 pandemic. This finding could be supported by previous research, in that they also underscored the importance of spiritual well-being among an at-risk population, i.e., nurses, for developing symptoms that are associated with PD, such as burnout (15).

Lastly, the findings of the simultaneous regression analysis indicated that considering the coefficient of determination, which was calculated in this research, the three variables of coping, resilience, and spiritual well-being explained 0.072% of the total variance in psychological distress among the hospital staff sample. This finding was not similar to past studies, which found an association between these variables and PD (e.g., 8, 12, 15). There could be multiple reasons for this finding, and since the aftermath of the pandemic is being evaluated just recently, hence there is a lack of sufficient evidence, it could be said that further research should be conducted in order to draw better conclusions about whether these factors could predict PD in hospital staff and other frontline workers.

The current study had some strengths and some limitations. A strength of this research was that it was the first to investigate coping, resilience, and spiritual well-being together as protective factors for PD development among hospital staff in Iran, and during the COVID-19 pandemic. This study also had some limitations. First, an online data collection was carried out in this study, to reduce the risk of infection among the study subjects during the pandemic.

Other studies in the future could collect data in-person among the hospital staff population. A second limitation involved using self-report scales to collect data. This was done as these measures were deemed suitable to collect data regarding the variables tested in the present study. Future studies could use other means of measurement, such as qualitative measures, to collect more in-depth data among this population. Lastly, the sample in this study were selected from hospital staff in Tehran, which necessitates the need for cross-country data collection in future research, to improve the of generalizability of the results.

To conclude, the results of the current study underscored the prominence of identifying protective factors for the development of psychological distress in frontline workers such as hospital staff, especially during the time of COVID-19 pandemic. It is necessary to conduct more research in this area in order to develop useful interventions and strategies to support this population in such a difficult situation, which puts them at a high risk for PD development. It is hoped that the findings of the current study will be used effectively to help and support hospital staff and improve their mental healthcare during and after this pandemic.

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Conflict of interest

Author declares no conflict of interest.

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