Predicting Role of Resilience and Meaning in Life in Perceived Stress of Frontline Health Care Workers during COVID-19 Outbreak

Seyedehsareh Hashemikamangar and Afrooz Afshari

Abstract—**This paper investigates the predicting role of resilience and meaning in life on perceived stress of frontline health care workers treating patients with COVID-19. To measure the variables, a set of online questionnaires including Perceived Stress Questionnaire (PSS), Meaning of Life Questionnaire (MLQ), and Resilience Questionnaire (CD_RISC) was prepared. Presence of meaning, search for meaning, notion of personal competence, tolerance and trust in intuition, acceptance and secure relationships, control, and spiritual influences were examined as predictors of perceived stress. Several frontline health care workers were included in the final study. To analyze the data, regression analysis method was used with SPSS-20 software. The results showed that: 1) the regression model of resilience and the presence of meaning in the life of health care workers on their perceived stress was significant ($F_{(6,229)}=45.14, p<0.0001$); 2) the predictive variables, in total, could explain 53% of the variance of perceived stress; 3) perceived stress correlated negatively with presence of meaning ($\beta = -0.380, p<0.05$), with acceptance and secure relationships ($\beta = -0.620, p< 0.05$), with control ($\beta = -0.609, p<0.05$), and positively correlated with spiritual influences ($\beta = 0.465, p<0.05$). Finding and maintaining meaning in life and improving acceptance, secure relationships, and sense of control would reduce perceived stress of frontline health care workers.**

Index Terms—**COVID-19, frontline health care workers, meaning in life, perceived stress, resilience.**

I. INTRODUCTION

Although significant efforts are being made to investigate the nature and treatment of Corona virus disease known as COVID-19, the psychological effects of COVID-19 pandemic outbreak on health care workers cannot be overlooked. In fact, understanding the psychological effects of COVID-19 pandemic on individuals is as important as understanding the disease itself. Factors like uncertainty about the duration of the crisis, lack of proven therapies or a vaccine, and potential shortages of health care resources trigger many psychological effects for health care workers. They are also distressed by the effects of social distancing, being far from their families, and the possibility of getting infected [1]. Understanding the factors affecting the stress of frontline health care workers can be useful in developing psychological support programs and improving the mental health of them. The previous experiences from smaller scale epidemics and current literature around COVID-19 show that considerable amount of stress that health care workers are facing with is associated with increased psychological problems [2]. It is believed that the interpretation of stressful events is more important than the events themselves, and this helps the individuals to react and cope with the stress [3]. According to Lazarus (2006), perceived stress refers to the degree to which individuals evaluate life events as unpredictable, uncontrollable, and stressful. Lazarus believes that only the stimuli that are assessed as stressful by the stressor evoke stress responses [4].

All health care workers are not subject to stress and its severity is not the same among them. This fact indicates that there must be internal and individual factors related to health care workers, regardless of external factors pertaining to the nature of this crisis, that determine the occurrence or absence of stress and its severity. Most studies on psychological problems of health care workers treating patients with COVID-19 have determined the extent of symptoms of psychological problems such as depression, anxiety, stress, insomnia, and anxiety among medical staff [5]-[7]. In some of the previous studies [8], [9], the results have been compared with the general population. However, library studies by the researcher of this study showed that not enough research has been done to investigate the predictors or factors affecting the stress among frontline health care workers treating patients with Covid-19. Identifying these factors can be helpful in planning for psychological support of health care workers and improving their health in this crisis.

According to Frankel's theory, the primary driving force of all human beings is to find meaning and purpose in life. This purpose is different in each person and is affected by the environmental conditions of individuals [10]. Meaning in life means important values and goals of life, especially spirituality [11]. A review of meaning in life shows that failure to determine meaning in life can lead to psychological problems such as depression, anxiety, addiction, aggression, despair, physical illness, and suicide. The outcome of researches in this field can assist mental health therapists to help patients deepen their understanding of themselves and determine the scope of search for the meaning of life and related beliefs. Understanding the meaning of one's life can lead to increase in happiness, satisfaction, positive effects, better coping, and better mental health [12]. A study of nurses found that having meaning in life was associated with less anxiety, fatigue, negative effects, and more positive effects. Although meaning in life cannot be injected to health care workers, policies that allow them to engage in personal, cultural, and religious activities can help them find and maintain meaning in life [13]. Also, in a critical situation like COVID-19 pandemic, It seems that not having the meaning to perform medical services and high-risk activities (i.e.,

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treatment of patients with Covid-19 and a high probability of developing the disease) can quickly predispose a person to a high level of stress.

Many people experience loss or traumatic events throughout their lives but continue to experience positive emotions and show little dysfunction. Showing resilience in loss or trauma is much more common than previously thought [14]. Masten describes resilience as adapting to stressors despite environmental challenges or threats [15]. A research on health care workers showed that improving resilience is important for the health of health care workers [16]. A research on the effect of MERS disease on the mental health of health care workers showed that if the perceived stress goes higher, the mental health and resilience becomes lower. Moreover, clinical and psychological interventions to strengthen resilience are also important during the pandemic crisis [17]. In a study on nurses, it was found that resilience is negatively correlated with perceived stress. Resilience and coping strategies also play a role in predicting perceived stress [18]. Evaluating the resilience and perceived stress of 600 health care workers in China during the outbreak of COVID-19 showed a significant negative correlation between perceived stress and resilience, and the necessity of enhancing the resilience level of the health care workers [19].

In this study, the perceived stress was accounted for a representation of the perception of health care workers about the stressful crisis of COVID-19 outbreak. Furthermore, meaning in life is considered as one of the factors that affects the occurrence or severity and weakness of stress among health care workers. During a pandemic outbreak like COVID_19, when health care workers are involved with difficult treatment conditions, deaths, uncertainty of definitive treatment, lack of vaccines, and fatigue, if the resilience is low, they will face more stress. As a result, in the present study, resilience was accounted as another predictor of perceived stress among health care workers. The contributions of this paper are: 1) investigating the relationship between meaning in life and perceived stress of frontline heath care workers during COVID-19 pandemic 2) presenting the regression model of resilience and meaning in the life on perceived stress of frontline health care workers.

II. DESIGN AND SAMPLE

This study is a descriptive-correlational survey designed to determine the predicting role of resilience and meaning in life in perceived stress of Iranian frontline health care workers treating patients with COVID-19. Using convenient sampling method and online questionnaires sent to the healthcare workers, data were recruited over the past few months. Participants were doctors, nurses, technicians and other healthcare workers in Iran who had direct contact with patients with Covid-19. Inclusion criteria were: 1) being informed about the study and willing to participate in the survey; 2) being a doctor, nurse, technician, or other health care workers treating patients with Covid-19 in Iran. Exclusion criterion was history of mental disorders and/or chronic medical illness based on participant's self-report. Elimination criteria were: 1) filling out the online questionnaire in too short a period of time and 2) not answering to more than 20% of the questions. 236 frontline

health care workers were included in the final study. *Demographic questions* included some self-report questions such as age, gender, marital status, academic degree, occupation, years of work experience, and city of workplace were asked in the first section of the questionnaire. Also, some questions were asked in the second section of the questionnaire to clarify the history of medical and psychiatric illness and medication of the participants.

III. MEASURES

In this study, to assess perceived stress among health care workers, Perceived Stress Scale (PSS) was administered to participants. PSS was designed by Cohen, Kamarck, & Mermelstein (1983). It has different forms including 4, 10, and 14 questions. In this study, the 14-questions form was used. Each item is rated based on a 5-point scale (0= Never to 4 =Always). Items are designed to measure the extent to which one's life is perceived as "unpredictable, uncontrollable, and overloading". The higher one's test score, the higher his/her stress level [20]. In present study, the reliability of this scale by means of Cronbach alpha test is 0.89.

The meaning in life questionnaire by Steger was used in this study for evaluating the meaning in life variable. This questionnaire assesses two dimensions of meaning in life using 10 items rated on a seven-point scale ("Absolutely True" to "Absolutely Untrue"). The presence of meaning subscale measures the extent to which respondents feel their lives have meaning. This subscale is positively related to well-being, intrinsic religiosity, extraversion, and agreeableness, and negatively related to anxiety and depression. The search for meaning subscale measures how engaged and motivated respondents are in efforts to find meaning or deepen their understanding of meaning in their lives. The MLQ has excellent reliability, test-retest stability, stable factor structure, and convergence among informants [21]. The reliability of this scale by means of Cronbach alpha test is 0.83 in this study.

To measure the resilience of healthcare workers in this study 25-Question Resilience Questionnaire (CD_RISC) by Connor and Davidson (2003) was used. The CD-RISC is a brief, self-rated measure of resilience that has sound psychometric properties. By using the CD-RISC, it was shown that resilience is quantifiable and influenced by health status (i.e., individuals with mental illness have lower levels of resilience than the general population); resilience is modifiable and can be improved with treatment. The greater improvement in resilience corresponds to higher levels of global improvement. The CD-RISC could have potential utility in both clinical practice and research [22]. The first subscale of CD_RISC which includes 8 items shows the notion of personal competence, high standards and tenacity. The second subscale with 7 items shows trust in one's intuition, tolerance of negative effect, and the strengthening effects of stress. The third subscale includes 5 items and shows positive acceptance of change and secure relationships. The fourth subscale with 3 items reflects control. The fifth subscale which includes 2 items shows spiritual influences [23]. In this paper, it is assumed that reliability of this scale by means of Cronbach alpha test is 0.88.

A. Statistical Analysis

This study used SPSS-20 to analyze data. This software was adopted to analyze participants' demographic characteristics, correlation between variables, regression analysis and reliability of instruments. Also, Pearson correlation was used to explore the correlation of perceived stress with resilience and meaning in life. Potential factors affecting perceived stress were analyzed using multiple linear regression method.

IV. RESULTS

Demographic characteristics of 236 valid participants are shown in Table I. Most of participants (62.7%) were females and more than half of the participants had more than 10 years of work experience.

In this paper, two subscales of meaning including the presence of meaning and search for meaning, and five subscales of resilience including notion of personal competence, tolerance and trust in intuition, acceptance and secure relationships, control, and spiritual influences were examined as predictors of perceived stress among frontline health care workers. Table II shows the mean and standard deviation of above-mentioned variables.

The Pearson correlation coefficients between perceived stress and subscales of resilience and meaning in life are presented in Table III. As it is shown in the Table, the perceived stress, presence of meaning, notion of personal competence, tolerance and trust in intuition, acceptance and secure relationships, control, and spiritual influences significantly correlated with one another ($p < 0.05$).

TABLE I: DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS (N=236)

Variable	Category	n	%
Gender	Male	88	37.3
	Female	148	62.7
Education	High school	6	2.5
	BS	101	42.8
	MS	23	9.7
	Ph.D/Practitioner	42	17.8
	Medical specialist	64	27.1
Occupation	Doctor	103	43.6
	Nurse	99	41.9
	technician	6	2.5
	other	28	11.9
Work Experience	Less than 2 years	15	6.4
	2 to 5 years	49	20.8
	6 to 10 years	38	16.1
	More than 10 years	134	56.8

TABLE II: MEAN AND STANDARD DEVIATION OF VARIABLES (N=236)

Variables	Mean	Std. Deviation
Presence of meaning	28.17	5.709
Search for meaning	27.57	5.997
Notion of personal competence	21.08	5.501
Tolerance and trust in intuition	16.93	4.514
Acceptance and secure relationships	13.64	3.085
Control	7.79	2.430
Spiritual influences	5.03	1.718
Perceived stress	25.53	7.774

However, search for meaning was not significantly correlated with perceived stress; thus, this factor is removed from the regression equation.

Table IV shows the results of regression model of resilience and meaning search on perceived stress of health care workers. According to these results, the regression model of resilience and the presence of meaning in the life on perceived stress of health care workers is significant ($F_{(6,229)} = 45.14$, $p < 0.0001$), with adjusted R^2 of 0.53. The predictive variables, in total, can explain 53% of the variance of perceived stress. The remaining 47% is due to other variables that have not been studied in the present study. It should be mentioned that the results of the Durbin Watson test indicated that there is no alignment between the predicted variables. Moreover, kurtosis and skewness check showed that the distribution of variables were normal.

Table V presents the standard coefficients of the regression equation. In this model, the perceived stress is negatively correlated with presence of meaning ($\beta = -0.380$, $p < 0.05$), with acceptance and secure relationships ($\beta = -0.620$, $p < 0.05$), and with control ($\beta = -0.609$, $p < 0.05$). However, the perceived stress is positively correlated with spiritual influences ($\beta = 0.465$, $p < 0.05$). Finally, this study shows that the tolerance and trust in intuition and notion of personal competence were not significantly associated with perceived stress.

V. CONCLUSIONS AND DISCUSSIONS

In this study, meaning in life and resilience were examined as predictors of perceived stress in frontline health care workers treating patients suffering from COVID-19. Examining the correlation between perceived stress and two subscales of meaning in life and five subscales of resilience showed that perceived stress was significantly correlated with all of these subscales, except for meaning for search. The model made with predictors of meaning in life and resilience showed that in general their roles in predicting perceived stress are significant. They can explain 53% of the variance of perceived stress among health care workers.

Considering the significance of beta coefficients in the regression equation (Table V), it was found that the greater the presence of meaning in the lives of health care workers, the less their perceived stress, which is in agreement with findings of references [12] and [13]. To understand the meaning presence in their lives, frontline health care workers can relate the difficulties of working during the Covid-19 pandemic to the meaning of their lives and consequently experience less stress. In terms of resilience, more acceptances of positive and safe emotions and secure relationships, higher sense of control and fewer spiritual influences are related to lower level of perceived stress among health care workers, which is in agreement with findings of references [18]-[20]. The ability to adapt to change, having safe emotions and secure relationships, as well as the sense of control over life and purposefulness, help health care workers to cope with the hardships and changes

caused by the Covid-19 crisis. As a result, they will be less likely to experience the perceived stress.

TABLE III: CORRELATION BETWEEN PERCEIVED STRESS AND SUBSCALES OF RESILIENCE AND MEANING IN LIFE (N=236)

		Presence of meaning	Search for meaning	Notion of personal competence	Tolerance and trust in intuition	Acceptance and secure relationships	Control	Spiritual influences	Perceived stress
perceived stress	Pearson Correlation	-0.642**	-0.043	-0.633**	-0.577**	-0.632**	-0.666**	-0.202**	1
	Sig. (2-tailed)	<0.0001	0.507	<0.0001	<0.0001	<0.0001	<0.0001	0.002	-
Correlation is significant at the 0.01 level (2-tailed).									
Correlation is significant at the 0.05 level (2-tailed).									

TABLE IV: REGRESSION MODEL OF RESILIENCE AND PRESENCE OF MEANING ON PERCEIVED STRESS

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.736	0.542	0.530	5.330	0.542	45.143	6	229	<0.0001
Predictors: Constant, presence of meaning, notion of personal competence, tolerance and trust in intuition, acceptance and secure relationships, control, and spiritual influences.								
Dependent Variable: Perceived stress.								

TABLE V: STANDARD COEFFICIENTS OF THE REGRESSION EQUATION

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	51.872	1.985	-	26.133	0.0001
Presence of meaning	-0.380	0.090	-0.279	-4.206	0.0001
Acceptance and secure relationships	-0.620	0.186	-0.246	-3.328	0.001
Control	-0.609	0.283	-0.190	-2.151	0.032
Spiritual influences	0.465	0.223	0.103	2.085	0.038

On the other hand, the regression equation showed that the lower the spiritual influences on health care workers, the less their perceived stress. This subscale of resilience is measured with two items: "Sometimes fate or God helps me" and "I believe most things happen for a reason". Most of the participants in this study have answered these two questions in such a way that they believed in fate and expediency in causing problems. However, with such a belief, health care workers may have less control over the stressful condition of COVID-19 outbreak. Considering the negative relationship between the control factor of resilience and perceived stress, as mentioned earlier, believing in fate and expediency in causing problems can increase perceived stress of health care workers by reducing their sense of control over the crisis condition.

According to the results, increasing resilience and paying attention to the presence of meaning in life is very important due to its effect on reducing the perceived stress of health care workers. Therefore, it is of paramount importance that before or during crisis such as pandemic outbreaks, educational protocols and executive policies related to increasing resilience be on the agenda of training health care workers, medical students, and nursing students. Moreover, policies that allow health care workers to engage in cultural and religious activities can help them find and maintain meaning in life. These actions would be beneficial in mitigating the perceived stress of health care workers.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

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