

Article

Psychosocial Impact and Role of Resilience on Healthcare Workers during COVID-19 Pandemic

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Abstract: Italy was the first European country to be affected by the 2019 coronavirus epidemic (COVID-19). Several studies have shown the risk of developing depression, anxiety, and post-traumatic stress disorder in medical and paramedical staff. Causes included the high contagiousness of the virus, the fear of contracting it, the lack of adequate personal protective equipment, and physical and psychological fatigue. In this context, resilience represents a protective factor against adversity and stress burden. The aim of this research was to investigate if and how the resilience and personality profile is able to influence the response to stress and anxiety on a sample of Italian healthcare workers, during the COVID-19 outbreak. The sample consisted of 152 frontline healthcare workers, physicians, and paramedical professionals. Participants completed the online questionnaire measuring the Resilience Scale for Adults, the Big Five Inventory-10 Item, the State Anxiety Inventory, and the Perceived Stress Scale. Analyses of data aimed to show differences in the stress of healthcare workers due to gender and professional role, and at finding, by means of multidimensional scaling, the relations among anxiety, stress, resilience, and traits of personality. The findings gave some suggestions for implementing strategies useful to increase the resilience in healthcare workers and support them to cope with stressful events, typical of the pandemic emergency.

Keywords: COVID-19; healthcare workers; resilience; mental health; psychosocial impact; stress; anxiety



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1. Introduction

The current health emergency caused by the coronavirus epidemic (COVID-19) pandemic has had a significant impact on the psychological health of the general population, particularly of frontline healthcare workers (HCWs). These professionals, in fact, were among the most exposed to stress and to the risk of mental health complications [1]. Even under normal conditions, healthcare workers are confronted with general difficulties and extreme working conditions. Since the outbreak of the health emergency, they were constantly exposed to the risks of both infection and emotional burden, such as insufficient personal protective equipment, very long work shifts due to the shortage of health workers, physical and psychological fatigue, and organizational precariousness. In addition, there were other stress triggers, such as having to deal with critical situations challenging the professional experience and the collaboration with other specialists [2,3].

The scientific literature has confirmed that HCWs involved in the emergency management network, in both patient and community settings (hospital health workers, emergency room personnel, operators of prevention departments, and epidemiological services,

ambulances, assisted living facilities, Resilience Scale for Adults (RSA), civil protection volunteers), are exposed to the presence of psychosocial risk factors closely related to work organization and emergency management [4]. Several studies focusing on previous pandemics showed a negative impact on the mental health of medical staff, in terms of negative emotions, stress, low psychosocial response, and worry about contracting the disease [5,6]. If not properly treated, these effects can be chronic and have devastating implications on psychological health. According to Lee and colleagues [7], one year after the Severe acute respiratory syndrome (SARS) outbreak, survivors among health and medical workers still had high levels of stress and psychological distress. Actually, COVID-19 demonstrated the same negative impact in HCWs. Indeed, according to Liang et al. [8], the concern about infection in healthcare workers is related to both the high contagiousness of the virus and the high morbidity and mortality rate. During the pandemic, HCWs have lived in a constant state of alarm and vigilance, in total isolation from their families, without adequate social support. Other studies have shown the comorbidity of psychopathological outcomes, such as post-traumatic stress symptoms (hypervigilance, irritability, agitation, flashbacks, hallucinations, intrusive thoughts, avoidance, emotional detachment, dissociation), depressive symptoms, insomnia, anxiety symptoms, psychiatric symptoms, and a high level of work-related stress in HCWs [9–11].

Studies in the literature examining adverse psychological outcomes following the COVID-19 pandemic have found significantly different elements. Nica and colleagues [12] addressed the theme on psychological resilience, and they found demoralization and fear among COVID-19 frontline medical personnel. Segers and collaborators [13] analyzed the impact of resilience, reporting significantly high levels of burnout and stress-related psychiatric disorders among healthcare professionals. Kirkman and collaborators [14] showed elevated depressive symptoms, perceived risk of infection, and emotional fatigue among COVID-19 frontline medical staff. Ducan and colleagues [15] found high post-traumatic stress disorder, and extreme anxiety and depressive symptoms in healthcare workers. Different researchers found positive correlations between gender and anxiety and depressive symptoms, showing higher levels of anxiety in females [16–19]. Finally, alternative approaches have involved telemedicine [20,21], which can swiftly leverage massive volumes of providers and furnish clinical services when emergency rooms are overcrowded, cutting down the risk of infection.

Based on this scenario, the development of the ability to adapt and overcome stress consequences is necessary. During a pandemic period, psychological resilience in particular increases in prominence. Resilience can be defined as an ability to cope with stressful events, by anticipation and preparation, and to develop positive changes and personal empowerment. Furthermore, it has been suggested that resilience is an innate trait, considered the physical and psychological characteristics possessed by individuals [22]. McKinley and colleagues [23] proposed that resilience levels in healthcare workers are influenced by personality traits, organizational or environmental factors, social support, and having overcome earlier difficulties. Several studies have highlighted how resilience is a protecting factor against the increase in secondary traumatic stress among healthcare workers [24–27].

The aim of this research was to investigate if and how psychological resilience and personality profile is able to influence the response to stress and anxiety on a sample of Italian healthcare workers on the front lines during the COVID-19 outbreak.

2. Methods and Materials

2.1. Participants

Data were collected during the first phase of the COVID-19 pandemic between March and April 2020. The inclusion criteria were as follows: (a) aged 18 years or older, (b) living in Italy, and (c) working as a Healthcare Professional. The final sample consisted of 152 frontline healthcare workers, 50 males (32%) and 102 females (68%). The participants were physicians ($n = 45$) and professionals of paramedical staff and nurses ($n = 107$).

2.2. Procedures

The self-report questionnaires were administered on the Google online survey platform, which participants accessed via a selected link. The link was spread through the main social networks, during the social distancing and lockdown period. The study was carried out in accordance with APA ethical standards. In line with the ethical standards of the 1964 Helsinki Declaration, before taking part in the study, participants voluntarily responded to the anonymous survey after being briefed on all relevant aspects of the study (e.g., methods, institutional affiliations of the researchers). They could withdraw consent to participation at any time during the study.

2.3. Measures

2.3.1. Resilience

The Resilience Scale for Adults (RSA) [28] was used to measure six protective dimensions of resilience: (1) positive perception of self, (2) active perception of future, (3) social competence, (4) structured style, (5) family cohesion and support, (6) social resources. The RSA has 33 items; the item-response ranges from 1 to 5; higher scores reflect higher levels of protective resilience factors.

2.3.2. Personality Traits

The Big Five Inventory-10 Item (BFI-10) [29] is a short version of the well-established BFI, used for research purposes; it has been validated in the United States, in Germany, and in Italy in the respective languages, and it has been found to have a good reliability in all the subscales [30]. The five factors can be briefly described as follows: extraversion refers to the predisposition to personal interactions; a high score indicates that the subject is sociable and optimistic. Agreeableness is the individual's ability to understand others and act according to their emotions and concerns. A high score in this dimension indicates a reliable and empathetic person. Conscientiousness refers to characteristics such as accuracy, reliability, responsibility, and perseverance; a high score is typical of organized, precise, and punctual people. Emotional stability is a dimension that includes a variety of emotional characteristics; low scores are related to anxiety and emotional problems such as depression, mood instability, and irritability. Openness refers to the willingness to accept new ideas, values, and feelings. A high score indicates an open-minded, creative, and original person.

2.3.3. Anxiety

The State Anxiety Inventory (STAI) [31] is the most widely used self-reported measure of current anxiety, concerning feelings of insecurity and of helplessness in the face of a perceived harm that can lead to worry or to flight and avoidance. The subject is required to respond to the items in terms of intensity (from "almost never" to "almost always"). The coefficient alpha of the scale is 0.83.

2.3.4. Stress

The Perceived Stress Scale, short version (PSS-10) [32], is a widely used psychological instrument for measuring the subjective perception of stress. It is a self-report scale composed of 10 items with a coefficient alpha of 0.69. A higher score suggests a perceived higher level of stress. With regard to thresholds, a score >14 indicates a middle-high level, while >18 is a high level of stress.

2.4. Statistical Analyses

With the aim of looking for differences related to socio-demographical variables, an ANOVA for the target variables (stress perceived, anxiety) and a series of independent sample t-tests were performed. Bonferroni's corrections for multiple comparisons were adopted. Due to the exploratory and correlational nature of the study, the relationships among variables were assessed by means of Pearson's coefficients and a multidimensional

scaling using the Guttman method [33]. SPSS software version 23, 2020, IBM (SPSS Inc., Chicago, IL, USA) was used for the analyses.

3. Results

First, analysis of variance was performed to assess the incidence of the variables Gender and Professional role (physicians vs. paramedical workers), on the dependent variables “Perceived stress” (test PSS) and Anxiety (test STAI). The results are shown in Table 1 and confirmed significantly higher levels of stress and anxiety in females, while differences were found related to neither professional role nor to the interaction of the role with the gender.

Table 1. Differences in gender and professional role in the variables “Perceived stress” (test PSS) and “Anxiety” (test STAI). Results of analysis of variance.

	Gender				Role				ANOVA _(1,148)		
	Males (n = 50)		Females (n = 102)		Physicians (n = 45)		Paramed. (n = 107)		Gender	Role	Interact.
	Mean	S.d.	Mean	S.d.	Mean	S.d.	Mean	S.d.	F	F	F
Stress	15.58	9.94	19.26	6.86	17.98	10.53	18.09	6.96	5.74 *	0.29	0.25
Anxiety	39.98	10.67	47.57	11.85	43.20	11.26	45.82	12.19	14.10 *	0.59	0.91

* $p < 0.05$.

An evaluation of the individual scores of stress, compared with the normative thresholds in the PSS test, evidenced that 65 frontline healthcare workers (42.76%) have a stress score >18 , i.e., higher than the threshold indicating a very relevant level of stress. Males are less represented within highly stressed workers (16 = 32.00%), while females are represented in a higher percentage (49 = 48.04%). These differences are significant at the binomial test at the level $p < 0.10$, confirming that women tend to be more stressed when working frontline during the COVID-19 period.

Job seniority does not appear to be relevant (correlations with stress and anxiety are, respectively, -0.14 and -0.08 ($p > 0.05$)). The marital status (cohabiting, married, divorced, single) is not significant for Stress ($F = 0.59$, $p = 0.63$) nor for anxiety ($F = 0.48$, $p = 0.69$). The numbers of sons/daughters are neither correlated with stress (0.09) nor anxiety (0.10); these low correlations are not different in the women’s subsample (respectively, 0.09 and 0.06).

Gender differences were analyzed separately for the domains of resilience (test RSA); the results are exposed in Table 2. Only the dimension of social support is statistically significant ($p = 0.04$ after Bonferroni’s correction): females are perceived to be more socially supported than males. Unlike other dimensions, self-perception and social behavior are higher (although not significantly) in males.

Table 2. Gender differences in the dimensions of resilience (scales of test RSA). The probabilities of t statistics were evaluated with Bonferroni’s correction for multiple comparisons.

Resilience (RSA):	M (n = 50)		F (n = 102)		t ₍₁₅₀₎
	Mean	SD	Mean	SD	
Social support	4.05	0.47	4.30	0.54	−2.74 *
Perception of future	3.88	0.88	3.99	0.70	−0.39
Familiar support	4.20	0.54	4.22	0.61	−0.85
Self-perception	4.03	0.63	3.92	0.69	0.37
Social behavior	3.66	0.50	3.48	0.50	2.09
Structured style	4.05	0.85	4.08	0.76	−0.22

* $p < 0.05$.

The self-reports of stress and anxiety are significantly correlated with each other ($r = 0.58$, $p < 0.01$); the correlations with the other variables considered in the study (personality factors, resilience, job seniority) are reported in Table 3. Both stress and

anxiety are inversely correlated ($p < 0.05$) with emotional stability, and—with regard to resilience—with the perception of future and self-perception, two dimensions indicating personal strength.

Table 3. Pearson’s correlations of stress and anxiety with dimensions of personality and resilience.

	Stress	Anxiety
Personality (BFQ):		
Extraversion	−0.09	−0.14
Agreeableness	−0.14	−0.19
Conscientiousness	−0.18	−0.27
Emotional stability	−0.38 *	−0.58 *
Openness	−0.11	−0.25
Resilience:		
Social support	−0.04	0.00
Perception of future	−0.32 *	−0.41 *
Familiar support	−0.25	−0.13
Self-perception	−0.32 *	−0.51 *
Social behavior	−0.09	−0.17
Structured style	−0.12	−0.05

* $p < 0.05$ after Bonferroni’s correction.

Finally, the matrix of intercorrelations among all the variables was submitted to an analysis of multidimensional scaling, whose results are reported in Figure 1.

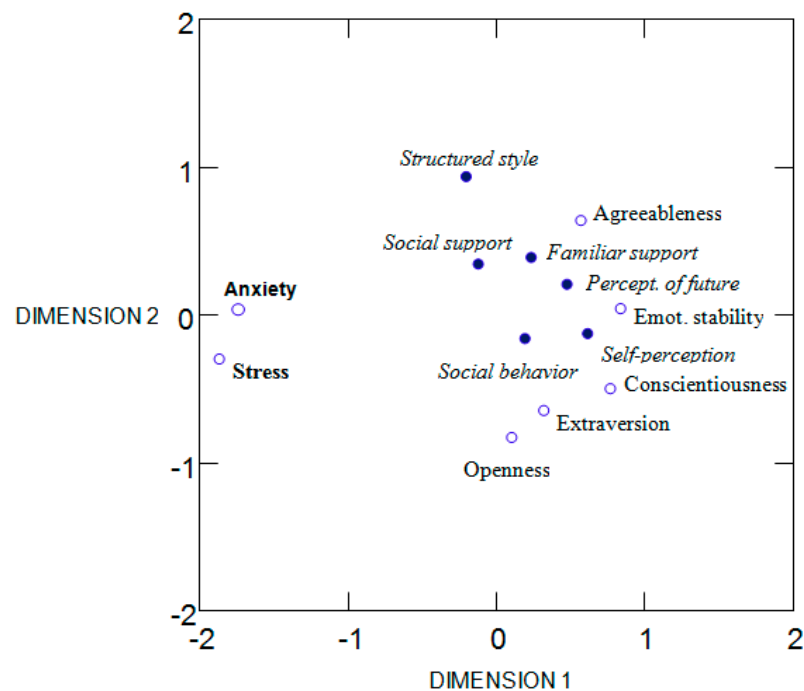


Figure 1. Multidimensional scaling of the correlation matrix among the variables. Alienation of the final configuration: 0.13; proportion of variance (RSQ): 0.96. Note: **bold**: stress and anxiety; empty dots: personality factors; full dots: dimensions of resilience.

The first dimension emerging from the multidimensional scaling confirms the opposing of stress and anxiety to both factors of personality (such as emotional stability and conscientiousness) and the dimensions of resilience affirming personal strength, as a positive perception of self and of the future. In the second dimension, the “structured style” (indicating the tendency to organize and have rules and routines) is located at the opposite pole from openness of mind and extraversion.

4. Discussion

During the COVID-19 pandemic, frontline healthcare workers were exposed to a high stress level. Over time, the negative effects of stress can lead to psychological health problems, such as depressive and anxiety disorders. Therefore, psychosocial, occupational, and personal functioning were severely compromised, negatively affecting quality of life. For this reason, the concept of the need to build resilience has gained momentum in recent times [22].

Li and colleagues [34] observed high levels of stress in Chinese healthcare workers working in wards with confirmed COVID-19 cases that compromised their quality of life. The authors concluded by stating the need for psychological intervention in order to improve resilience and coping strategies in order to reduce stress levels and improve the quality of life and mental health of healthcare professionals. Walton and collaborators [35] in their study showed that the impact of the COVID-19 pandemic was unprecedented, and this will inevitably be imprinted on every individual involved. Common stressors emerge or worsen. Many healthcare workers have experienced a psychologically negative burden. However, there are opportunities at all levels to make a difference in supporting the mental health of staff and to identify and encourage opportunities for growth and to find meaning in this situation.

The present findings are in line with the literature [36–38] reporting negative psychological consequences of pandemics for health professionals involved in COVID services. Specifically, data from our study have shown that a large percentage of frontline healthcare workers reported high levels of stress and anxiety. Rossi and colleagues [39] reported post-traumatic stress symptoms among half of the interviewed Italian healthcare workers. According to Lai and colleagues [40], a significant number of healthcare workers experienced insomnia and developed symptoms of depression, anxiety, and distress during the COVID-19 pandemic. In another study, assessing 1563 healthcare professionals, over half of them reported depression symptoms, anxiety, and insomnia [41]. Furthermore, the present findings have shown an association between female gender and increased risk for anxiety. According to the literature, women tend to be more vulnerable to experiencing stress symptoms [42], especially healthcare nurses [43]. It can be explained by the fact that nurses had more contact with COVID-19 patients; they also had to provide emotional support for patients who were unable to have contact with their family members. This may have led them to experience even greater emotional stress and physical exhaustion. Neither job seniority nor the number of sons influenced the stress. Female workers found resilience factors in social support compared to male colleagues. Social support is indispensable as a coping mechanism to reduce healthcare workers' psychological distress and encourage positive feelings.

Finally, the dimensions of multidimensional scaling confirmed that personality factors, such as emotional stability and agreeableness, join with variables of resilience. On the contrary, openness, extraversion, and structured style are opposed in a different dimension of the relationships among the protective factors of resilience and factors of personality. The present findings also showed that greater self-awareness and open-mindedness, and resilience factors, such as planning, could help to manage the anxiety and stress of HCWs, considering this category of workers as a target for preventive measures to their empowerment in dealing with the emergency. Similarly, Naeem and colleagues [44–46] reported that individuals who develop positive emotional states have higher psychological resilience.

The present study has some limitations. First, the sample mostly comprised women, thus reducing the generalizability of the findings to women. Second, the survey was applied online using self-reported measures. Third, this study had a cross-sectional nature, and consequently, it cannot be used to assume causality. Future research should use other methods (e.g., semi-structured interviews, qualitative approaches) and longitudinal follow-up, by collecting data from a higher number of healthcare professionals. Notwithstanding, our findings provided appreciated information on early psychological effects of COVID-

19 in healthcare professionals from different specialties, and how they are facing such excruciating challenges.

5. Conclusions

The pandemic has put an enormous pressure on the healthcare system. Providing mental wellbeing to healthcare workers is essential for guaranteeing the sustainability of healthcare services during the struggle with COVID-19. The present results are useful for planning interventions to support these professional frontline workers. It would be appropriate to suggest the implementation of differentiated psychoeducational interventions, such as periodic anti-stress and anxiety management meetings, both individually and in groups. It will be necessary to introduce the figure of the psychologist in the ward with the aim to provide support and training for healthcare professionals and help them to respond emotionally and psychologically to the pandemic emergency.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The dataset used and analyzed in the current study is available from the corresponding author upon reasonable request.

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Conflicts of Interest: The authors declare no conflict of interest.

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