

12-15-2022

Prevalence and Predictors of Burnout Syndrome among Italian Psychologists following the First Wave of the COVID-19 Pandemic: A Cross-sectional Study

Pietro Crescenzo

Associazione Migranti senza Frontiere

Francesco Chirico

Università Cattolica del Sacro Cuore


Giuseppe Ferrari

Society for Integrative Psychotherapy and Social Development

Lukasz Szarpak

Maria Skłodowska-Curie Medical Academy

Follow this and additional works at: https://digitalscholarship.unlv.edu/som_fac_articles

 **Giuseppina Nucera**
Part of the [Mental and Social Health Commons](#), and the [Occupational Health and Industrial Hygiene Commons](#)
Fatebenefratelli Hospital
Commons

See next page for additional authors

Repository Citation

Crescenzo, P., Chirico, F., Ferrari, G., Szarpak, L., Nucera, G., Marciano, R., Tarchi, L., Denicolo, D., Maiorino, A., Batra, K., Sharma, M. (2022). Prevalence and Predictors of Burnout Syndrome among Italian Psychologists following the First Wave of the COVID-19 Pandemic: A Cross-sectional Study. *Journal of Health and Social Sciences*, 6(4), 509-526.

<http://dx.doi.org/10.19204/2021/prv15>

This Article is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Article in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Article has been accepted for inclusion in School of Medicine Faculty Publications by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.

Authors

Pietro Crescenzo, Francesco Chirico, Giuseppe Ferrari, Lukasz Szarpak, Gabriella Nucera, Raffaella Marciano, Livio Tarchi, Diego Denicolo, Assunta Maiorino, Kavita Batra, and Manoj Sharma

Prevalence and predictors of burnout syndrome among Italian psychologists following the first wave of the COVID-19 pandemic: A cross-sectional study

Pietro CRESCENZO^{1#}, Francesco CHIRICO^{2#}, Giuseppe FERRARI³,
Lukasz SZARPAK⁴, Gabriella NUCERA⁵, Raffaella MARCIANO⁶,
Livio TARCHI⁷, Diego DENICOLO⁸, Assunta MAIORINO⁹, Kavita
BATRA¹⁰, Manoj SHARMA¹¹

Affiliations:

¹ Domus Misericordiae, Associazione Migranti senza Frontiere, Salerno, Italy. ORCID:0000-0001-5240-315X.

² Università Cattolica del Sacro Cuore, Post-Graduate Specialization, Rome, Italy. ORCID:0000-0002-8737-4368.

³ Society for Integrative Psychotherapy and Social Development, Milan, Italy. ORCID:0000-0003-1244-5931

⁴ Institute of Outcomes Research, Maria Skłodowska-Curie Medical Academy, Warsaw, Poland. Maria Skłodowska-Curie Białystok Oncology Center, Białystok, Poland. ORCID:0000-0002-0973-5455.

⁵ Department of Medicine, ASST Fatebenefratelli and Sacco. Fatebenefratelli Hospital, Emergency Unit, Milan, Italy. ORCID:0000-0003-1425-0046.

⁶ Syn-cronia Association. ORCID:0000-0001-8242-4357

⁷ Department of Health Sciences, University of Florence, Florence, FI, Italy. ORCID:0000-0002-9931-5621.

⁸ InSintonia, Naples, Italy. ORCID:0000-0003-4078-6207.

⁹ Syn-cronia Association, Cava dei Tirreni, Italy. ORCID:0000-0003-4931-4951.

¹⁰ Office of Research, Kirk Kerkorian School of Medicine, University of Nevada Las Vegas, Nevada, USA. ORCID:0000-0002-0722-0191.

¹¹ Department of Social and Behavioral Health, School of Public Health, University of Nevada Las Vegas, Nevada, USA. ORCID:0000-0002-4624-2414.

#First Co-authorship

Corresponding author:

Pietro Crescenzo, PhD, Via Brignano Inferiore, 31 - 84135 Salerno (Italy), e-mail: pietrocrescenzo84@gmail.com

Abstract

Introduction: The main objective of this study was to assess the prevalence and predictors of Burnout Syndrome (BOS) among Italian psychologists following the first wave of COVID-19 pandemic. As a secondary objective, geographical differences in the prevalence of BOS symptoms were investigated across regional macro-areas in this category of workers.

Methods: Using a non-probabilistic convenience sample, four-hundred sixty-eight participants responded to an online survey which included psychometric valid questions from the Maslach Burnout Inventory and The Big Five Inventory-10. Descriptive and inferential statistics were utilized to analyze the data.

KEY WORDS: Big Five; Burnout syndrome; COVID-19; personality; psychologists; occupational health; volunteerism.

Results: The overall prevalence of BOS in the study sample was nearly 17%, although no statistically significant differences were noted among volunteer (17.5%) and non-volunteer group (16.2%). Statistically significant differences were found in the Depersonalization (DP) levels. Prevalence of BOS varied across Italian regional macro areas. Neuroticism was positively associated with Emotional Exhaustion (EE) and DP. Agreeableness was negatively associated with EE and DP. Openness was negatively associated with DP. The only personality trait that did not reach any significance level across BOS dimensions was Conscientiousness. Telematic approach was positively associated with DP.

Discussion and Conclusions: In Italy, during the COVID-19 pandemic, psychologists who offer services in a volunteering setting are at high risk of developing BOS. Policymakers should develop guidelines for training and prevention programs to contain BOS and preserving the quality of care, through workplace health promotion and occupational health surveillance programs.

INTRODUCTION

On 30 January 2020, the World Health Organization (WHO) declared COVID-19 as a 'public health emergency of international concern'. Subsequently, on 11 March 2020, COVID-19 was officially declared as a pandemic [1]. Italy, one of the first European countries to experience a major coronavirus outbreak, has faced several healthcare related, fiscal, and social challenges [2–6]. With the quick pace of contagion transmission and associated infections, the healthcare system of Italy was strained to meet the emerging

needs of the affected population [6]. For instance, intensive care admissions spiked that a complete saturation of healthcare resources impacted the quality of care and distorted the balance between needs and resources [6]. During the first wave (from February to May 2020), COVID-19 infection and death rates were significantly higher in northern Italy (particularly in Lombardy region) as compared to other regions [7–10]. As a containment effort, the Italian government instituted strict public health measures (e.g. social distancing, domestic isolation, schools and business closure) at local and national

TAKE-HOME MESSAGE

In Italy, volunteer psychologists are at risk of burnout syndrome and personality factors may play a protective or predictive role for the development of this syndrome.

Competing interests - none declared.

Copyright © 2021 Pietro Crescenzo, Francesco Chirico et al. Edizioni FS Publishers

This is an open access article distributed under the Creative Commons Attribution (CC BY 4.0) License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. See <http://www.creativecommons.org/licenses/by/4.0/>.

Cite this article as: Crescenzo P, Chirico F, Ferrari G, Szarpak L, Nucera G, Marciano R, Tarchi L, Denicolo D, Maiorino A, Batra K, Sharma M. Prevalence and predictors of burnout syndrome among Italian psychologists following the first wave of COVID-19 pandemic: A cross-sectional study. *J Health Soc Sci.* 2021;6(4): 509-526

DOI: 10.19204/2021/prv15

Author Contributions: Conceptualization, Methodology, Project administration: PC. Data Analysis, Data Curation, Data collection, Writing, Review and Editing; PC, FC, RM, RM, LT, DD, AM. Review and editing: LS,GF,KB, MS.

Received: 15/10/2021

Accepted: 12/12/2021

Published Online: 15/12/2021

levels. While these preventive measures were useful in limiting the spread, however, lack of social cohesion, uncertainties surrounding the course of pandemic, fear of contagion to the family members emerged as potential sources of increased psychological distress among population [5, 11–16]. The psychological morbidities, such as post traumatic stress disorders (PTSD), adjustment disorder symptoms (ADS), anxiety, depression, and insomnia were the most frequent corollaries associated with the first wave of COVID-19 pandemic in Italy [17]. This psychological impact was more pronounced among Italian healthcare workers, who were strained with the increased case-load and long working shifts, which contributed to work-related psychological disorders including PTSD, anxiety, depression, burnout syndrome (BOS) and somatic symptoms [18–23].

To address these mental health issues, the National Council of the Order of Psychologists (CNOP) in Italy encouraged its members to adopt a telemedicine approach based on national and international telepsychology guidelines to treat patients under distress [24–29]. Several psychologists responded to the call by establishing virtual listening spaces, both in free-of-charge/voluntary and institutional form, as an attempt to address the need to manage the psychological distress [4, 5]. In literature, a certain number of different modalities, such as psychological listening channels via phone call or online platforms for both the general as well as [30–32] working population group were proposed [33–35]. However, some population groups, who have had limited internet accessibility, were unable to gain the tele psychological counseling during this difficult time [36]. Italian Psychologists were thus called to develop important innovations to usual practice, with aims to meet the challenge and demand of interpersonal closeness in the absence of physical proximity amidst COVID-19 [37, 38]. While the previous literature reported effectiveness of telematic systems in emergency and to provide counselling services [39], recent literature reported telepsychology as a po-

tential stressor to the practitioner, especially psychologists and psychotherapists [40, 41]. The COVID-19 epidemic was accompanied by a parallel increase in workload for health workers, with a significant exposure to a high number of stressors of occupational and emotional nature [4, 42–44]. Established literature in this field, in fact, highlights how an increase in emotional load can induce health professional to experience the Burnout Syndrome (BOS) [45–47], which may be defined as the result of an ineffective management in handling chronic occupational-related stress [48, 49]. Also, BOS is a response to prolonged exposure to stress, severely affects the quality of care [50–53]. Recent research [4, 54], including a study on a sample of psychologists [55], reported an increase in mental disorders among healthcare professionals exposed to similar conditions, regardless of setting e.g. voluntary or ordinary setting of occupation. Before the emergence of COVID-19, nearly 430,000 volunteers distributed over 11,590 non-profit associations were operating in Italy in the healthcare sector [56]. This evidence indicates that volunteering is a deeply rooted phenomenon in the Italian health system for delivering healthcare. In fact, during the critical phase of COVID-19, when healthcare sector was already strained, volunteering with the participation of about 1,500 emergency psychologists was viewed as a useful strategy [4, 5, 57, 58]. While this option was useful to meet the increasing demands of psychological counselling, healthcare workers especially psychologists experience undue work-related stress, termed as BOS [59–63].

According to the model proposed by Maslach, BOS involves a state of mental, physical and emotional exhaustion [54–68]. BOS has three dimensions: Emotional exhaustion (EE) is the first evidence of BOS and corresponds to the excessive emotional involvement in response to users' needs, with the resulting substantial reduction in subjective energy levels, permeated by the inability to experience positive emotions at work. Depersonalization (DP) is the appearance of a detached and cold attitude which the operator

assumes towards users, who become the focus of malaise and the object of cynical hostility. Personal accomplishment (RP) is markedly reduced in BOS. Its symptomatology is characterized by the reduction of job satisfaction, to the point of complete absence. The feeling that mainly characterizes this dimension is a strong sense of failure and inadequacy about one's professional performance. This leads to the collapse of self-esteem and generates reactions of hostility towards users, colleagues, and superiors [66].

Among the helping professions, first aid volunteers (FAVs) [54] and psychologists [69] are categories of workers were overlooked with respect to the risk of developing burnout. There are many factors that can influence the development of BOS, including personality factors [70, 71]. Personality, which is understood as a system of psychic characteristics and modes of behavior, is stable over time and constitutes 'the irreducible nucleus of an individual' in the multiplicity of environmental and contextual situations [70, 71]. The literature indicates a strong correlation between personality factors and the development of BOS [66–74]. The most widely used model to measure personality factors was described by Costa and McCrea [54, 55] – the Big Five – which identifies five domains of personality: Extroversion (EX), Agreeableness (AG), Conscientiousness (CO), Neuroticism (NE), and Openness (OP). Several studies have shown that personality traits play a role as predisposing or protective factors in the development of BOS. Specifically, a high level of NE was observed to be correlated to high levels of BOS, thus playing a predisposing role. High levels of CO, AG, EX and OP may or may not help in managing BOS symptoms, possibly fulfilling a protective role [75–78]. Furthermore, working from home and technology may represent a predictor of work-related stress and/or BOS [79]. Based on these factors, the main objective of this study was to assess the prevalence of BOS among psychologists immediately following the first wave of COVID-19, and the existence of differences in severity levels of BOS

by type of work (voluntary or non-voluntary psychologists) and geographical area (north, center or South Italy). The secondary aim of this work was to evaluate the predictive or protective role of personality factors as moderators in the development of BOS. In a previous work conducted by our research team [4], a higher level of BOS among volunteer psychologists than non-volunteer psychologists after the COVID-19 first wave in Italy was reported, which highlighted the predictive or protective role of coping strategies. On the basis of these premises, the following research hypotheses were formulated:

Hypothesis 1: Prevalence of BOS was higher among voluntary psychologists in the most affected regions of Italy during the first wave with higher BOS scores compared to the least affected regions.

Hypothesis 2: NE is predictive of all BOS dimensions; while AG, EX, CO and OP exert a protective role.

Hypothesis 3: Difficulties and inexperience in the use of technology (as a method of intervention in the psychological setting) are predictors of BOS in volunteer psychologists.

METHODS

Study design and procedure

In this cross-sectional and descriptive study, a convenience sample of Italian psychologists was obtained through a non-probabilistic method. The data were collected during June-July 2020, via an online questionnaire. Recruitment was performed using the public emails of Italian psychologists, as well as the adoption of an advertising campaign on the main social networks (Twitter, Facebook and LinkedIn) and local/national newspapers.

Study instruments and measures

The survey consisted of items from the psychometric valid tools and questions related to demography.

Maslach Burnout Inventory HHS

The Italian version of the Maslach Burnout Inventory-Human Services Survey (MBI

HSS) [53, 80] was used for evaluating BOS levels. Formulated in accordance with the WHO and ICD-11 classification, the original questionnaire assesses three scales consisting of 22 items: the 9-items emotional exhaustion (EE, Cronbach's Alpha = .088), which measures feelings of emotional overextension by one's work, the 5-items depersonalization (DP, Cronbach's Alpha = .070), which measures unfeeling and impersonal response towards patients, and the 8-items personal accomplishment (PA) (RP, Cronbach's Alpha = .083) measuring feelings of competence and successful achievement in one's work. The respondents were asked to evaluate how often a given event occurs, using a seven-point Likert scale (0 'Never' to 6 'Every day'). The cut-off scores for determining burnout severity levels in the Italian validation of the MBI questionnaire were the following: high (EE ≥ 24 , DP ≥ 9 , PA ≤ 29); average (EE = 15–23, DP = 4–8, PA = 30–36); and low (EE ≤ 14 , DP ≤ 3 , PA ≥ 37) [53, 80]. High scores in the EE and DP scales indicate a condition of emotional exhaustion and depersonalization respectively, while high scores on the RP scale indicate a positive consideration of one's personal accomplishment. In this study, BOS was calculated as a combination of high levels of EE and DP and low levels of PA [53, 80].

Italian version of the Big Five Inventor-10

The Big Five Inventory 10 items - BFI, consists of 10 items proposed by Rammstedt and John [81] and adapted in Italian by Guido et al [82]. BFI was designed to assess the size of the Big Five in a very short period of time. Two items have been associated with each specific dimension using opposite wordings (e.g. for the Extroversion dimension, the two elements are 'Conventional, not creative' in contrast to 'Open to new experiences, complex'). BFI items are evaluated on seven-point Likert scale - which range from 1 ('Strongly Disagree') to 7 ('Strongly agree'). The instrument evaluates five personality traits on the model proposed by Costa and McCrea [54]: Agreeableness- AG (Cronbach's Alpha item 2 = .51; item 7 = .71), Conscientiousness - CO

(Cronbach's Alpha item 3 = .56; item 8 = .65), Emotional stability - NE (Cronbach's Alpha item 4 = .67; item 9 = .72), Extroversion- EX (Cronbach's Alpha item 1 = .60; item 6 = .77), Openness - OP (Cronbach's Alpha item 5 = .56; item 10 = .57).

Instruments - Ad hoc evaluation scale of approach to telematics: 'Telematic scale ad hoc'

A scale of two items was built ad hoc in order to assess the difficulty of adopting telematic practice and the methodological distance from telematic approaches. Both items were built on a 5-point (1 representing 'not at all' . 5 representing 'very much'), as follows:

Item 1: Based on your experience how complex did you think it was to adapt to telematic tools (Video calls, telephone contact, construction and maintenance of setting, privacy, aspects related to online messaging) to provide psychological support?

Item 2: Indicate how distant you think (or feel) the telematic approach is from your classic work approach.

Ethical aspects

The authors followed the principles of Declaration of Helsinki. This study was approved by the Ethics Committee of Syn-cronia Association with protocol number a08062020 (external experts).

Data analysis

Data were first cleaned and recoded to perform descriptive and inferential statistics. Continuous variables were represented as mean and standard deviation, whereas categorical variables were presented as frequencies and percentages. MANOVA was performed in order to identify differences in burnout symptoms between type of work (volunteer vs non-volunteer) and different Italian regions (North, Centre, South). Linear regression was used in the group of psychologists who offered their support as volunteers (n = 239), in order to evaluate the role of personality traits and the adoption of telematic practice for the development of BOS. All volunteers offered their service

remotely. Linear regression was used specifically in the group of volunteer psychologists as those were more exposed to the psychological demands in comparison to the habitual occupational load. Statistical analysis was performed through SPSS V.20 [83].

RESULTS

Study participants and sampling

Initially, 516 questionnaires were collected through an online survey. Of these, 468 were valid and completed during the application of the most restrictive measures (total lockdown) in force in Italy between March and May 2020. The mean age of our participants was 40.96 ± 8.99 years (range: 26-72 years). Out of the total sample, nearly 51% ($n= 239$) offered free psychological telematic support to the Italian population. The sample was pre-

dominately females (83.5%), with males only constitutes 17% (Table 1). The participants were distributed geographically across three different geographical macro-areas: Northern (Piedmont, Valle d'Aosta, Liguria, Lombardy, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna) represented by 165 subjects (35.3%); Centre (Tuscany, Umbria, Marche, Lazio, Sardinia) represented by 66 subjects (14.1%); South (Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicily) represented by 237 subjects (50.6%, Table 1). The overall proportion of BS was 16.88%, while it was 17.57% in the volunteer group and 16.15% among non-volunteer psychologists. Gender-wise differences were also noted with 15.86% BOS in females vs. 22.08% among males. Socio-demographic characteristics and prevalence of BOS are shown in Table 1.

Table 1. Descriptive statistics of the study participants (n = 468).

		N	Percentage	Prevalence of BOS risk (Percentage)
Age	40.96 (± 8.99)	468		
Gender	Malew	77	16.45	22.08*
	Famale	391	83.55	15.86
Volunteers/ non-volunteers	Volunteers	239	51.1	17.57
	Non-volunteers	229	48.9	16.15
Work Position	Self-employed	382	81,6	15.60
	Employee	86	18,4	24.00*
Region	North*	165	35.3	22.08*
	Centre**	66	14.1	16.67
	South***	237	50.6	13.45

Note: EE= Emotion Exhaustion, DP= Depersonalization, RP= Personal Accomplishment, SD= Standard Deviation, N= Numbers of participants, * Piedmont, Valle d'Aosta, Liguria, Lombardy, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, ** Tuscany, Umbria, Marche, Lazio, Sardinia *** Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicily; Age is a continuous variable and therefore represented as Mean \pm Standard Deviation

* $P < 0.05$

The average scores were highest for EE and DP and lowest for RP in Northern Italy (Table 2). As shown in Table 3, EX was inversely correlated with DP ($r = -0.130$, $P = 0.04$) and directly correlated with RP ($r = 0.241$, $P < 0.001$). The correlation with EE ($P = 0.198$) was not statistically significant. AG

was inversely correlated with EE ($r = -0.585$, $P < 0.001$) and DP ($r = -0.601$, $P < 0.001$) and directly correlated with RP ($r = 0.521$, $P < 0.001$). CO was inversely correlated with EE ($r = -0.276$, $P < 0.001$) and DP ($r = -0.232$, $P < 0.001$) and directly correlated with RP ($r = 0.202$, $P = 0.002$). CO directly correlated with

EE ($r = 0.483, P = 0.000$) and DP ($r = 0.506, P < 0.001$) and inversely correlated with RP ($r = -.450, P < 0.001$). OP was inversely correlated with EE ($r = -0.271, P < 0.001$) and DP ($r = -0.355, P < 0.001$) and directly correlated with RP ($r = 0.438, P < 0.001$). DIST was directly correlated with EE ($r = 0.178, P = 0.01$) and DP ($r = 0.227, P < 0.001$) and inversely

correlated with RP ($r = -0.202, P = 0.002$). DIFF was directly correlated with EE ($r = 0.151, P = 0.02$) and DP ($r = 0.218, P = 0.001$) and inversely correlated with RP ($r = -0.159, P = 0.01$). MANOVA showed statistically significant differences between the group of volunteers and non-volunteers for the DP dimension only ($P = 0.01$). MANOVA applied

Table 2. Means of BS sub-scales and scores by gender, volunteerism, geographical distributions (n = 468).

	N	EE Mean (±SD)	DP Mean (±SD)	RP Mean (±SD)	
Overall	468	23.88 (±1.90)	47.09 (±7.82)	47.09 (±7.82)	
Gender	Male	77	24.09 (±11.72)	9.42 (±5.45)	45.85 (±8.21)
	Famale	391	23.84 (±10,74)	8.18 (±4.94)	47.33 (±7.73)
Volunteers/ non-volunteers	Volunteers	239	24.14 (±11.80)	8.95* (±5.88)	46.53 (±8.45)
	Non-volunteers	229	23.62 (±9,88)	7.78 (±3.89)	47.68 (±7.07)
Region	North	165	26.56* (±12.74)	9.89* (±6.54)	45.47 (±9.56)
	Centre	66	22.29 (±8.20)	7.82 (±3.65)	49.74 (±4.87)
	South	237	22.47 (±9.80)	7.48 (±3.79)	47.49 (±6.86)

Note: EE= Emotion Exhaustion, DP= Depersonalization, RP= Personal Accomplishment, SD= Standard Deviation, N= Numbers of participants.
 * $P < 0.05$

Table 3. Correlation between personality traits, difficulties to telematics approach and Burnout (n = 468).

	EE	DP	RP
EX	-0.084 (p-value 0.198)	-0.130* (p-value 0.044)	0.241* (p-value <0.001)
AD	-0.585* (p-value <0.001)	-0.601* (p-value <0.001)	0.521* (p-value <0.001)
CO	-0.276* (p-value <0.001)	-0.232* (p-value <0.001)	0.202* (p-value 0.002)
NE	0.483* (p-value <0.001)	0.506* (p-value <0.001)	-0.450* (p-value <0.001)
OP	-0.271* (p-value <0.001)	-0.355* (p-value <0.001)	0.438* (p-value <0.001)
DIST	0.178* (p-value 0.006)	0.227* (p-value <0.001)	-0.202* (p-value 0.002)
DIFF	0.151* (p-value 0.020)	0.218* (p-value 0.001)	-0.159* (p-value 0.014)

Note: EE= Emotion Exhaustion, DP= Depersonalization, RP= Personal Accomplishment, EX= Extroversion, AG = Agreeableness, CO= Conscientiousness, NE= Neuroticism, OP= OPENNESS, DIST= Distance of Telematic approach as intervention method, DIFF= Difficulties in the use of technology.

* $P < 0.05$

to geographical areas showed statistically significant differences for all burnout sizes ($P < 0.01$). Results were further reported in Table 4.

Linear regression between personality traits, ad hoc evaluations over telematic approaches and BS dimensions was performed, in order to test the research hypothesis described in the introduction section. Personality trait observed to predict EE were NE ($B = 1.19; \beta = 0.18, P = 0.007$) and AG ($B = -3.19; \beta = -0.44, P < 0.001$). NE was observed to be positively associated with EE, while AG was observed to be negatively associated. For the DP dimension, statistically significant predisposing factors were NE ($B = 0.64; \beta = 0.19, P = 0.002$), AG ($B = -1.52; \beta = -0.42, P <$

0.001), OP ($B = -0.38; \beta = 0.10, P = 0.047$). DIST was also observed to be significantly associated to DP ($B = 0.85; \beta = 0.13, P = 0.016$). NE and DIST were positively associated with the DP dimension, while AG and OP negatively. For RP, predisposing factors were EX ($B = 0.74; \beta = 2.89, P = 0.004$), AG ($B = 1.59; \beta = 4.76, P < 0.001$) and OP ($B = 1.31; \beta = 4.59, P < 0.001$), while NE ($B = -0.71; \beta = -0.15, P = 0.022$) was observed to be negatively associated to personal satisfaction.

The only personality trait that did not reach any statistical significance across BOS dimensions was CO. Difficulties in the use of technology – as measured by ad hoc evaluation – was also not significantly associated with any dimension of BOS (Table 5).

Table 4. MANOVA effects test between geographical areas for the three dimensions of BOS.

Source	DV	SS Type III	MS	F	p-value
Model	EE	1822.523	911.262	911.262	<0.001*
	DP	587.246	293.623	12.118	<0.001*
	RP	936.163	468.081	7.874	<0.001*
Intercept	EE	199974.569	199974.569	1733.585	<0.001*
	DP	24959.328	24959.328	103.091	<0.001*
	RP	800646.655	800646.655	13469.203	<0.001*
Geographic Area	EE	1822.523	911.262	7.900	<0.001*
	DP	587.246	293.623	12.118	<0.001*
	RP	936.163	468.081	7.874	<0.001*

Notes: EE = Emotional Exhaustion; DP = Depersonalization; RP = Personal Accomplishment; DV = Dependent Variable.
 SS Type III = Sum of Square Type 3
 * $P < 0.05$

Table 5. Regression Analysis between personality traits, difficulties to telematics approach and BOS among volunteer psychologists (n = 239).

Predictor	EE				DP				RP						
	B	B	T	P	95% CI	B	B	T	P	95% CI	B	B	T	P	95% CI
Cost	40.823	5.464	0.000	0.000	[26.102; 55.544]	16.358	4.595	0.000	0.000	[9.344; 23.371]	29.004	5.454	0.000	0.000	[18.526; 39.483]
EX	0.154	0.022	0.426	0.671	[-0.558; 0.866]	-0.062	-0.018	-0.363	0.717	[-0.402; 0.277]	0.745	0.150	2.898	0.004*	[0.239; 1.252]
AG	-3.198	-0.443	-6.800	0.000*	[-4.125; -2.271]	-1.524	-0.423	-6.801	0.000*	[-1.965; -1.082]	1.594	0.308	4.762	0.000*	[-0.075; 0.262]
CO	-0.645	-0.077	-1.354	0.177	[-1.583; 0.293]	-0.004	-0.001	-0.019	0.985	[-0.451; 0.443]	-0.200	-0.034	-0.590	0.556	[-0.868; 0.468]
NE	1.198	0.183	2.745	0.007*	[0.338; 2.058]	0.646	0.198	3.109	0.002*	[0.237; 1.056]	-0.719	-0.153	-2.313	0.022*	[-1.331; -0.106]
OP	-0.049	-0.007	-0.122	0.903	[-0.842; 0.744]	-0.383	-0.109	-1.999	0.047*	[-0.761; -0.006]	1.315	0.261	4.591	4.591	[0.750; 1.879]
DIFF	0.951	0.070	1.244	0.215	[-0.555; 2.457]	0.668	0.098	1.833	0.068	[-0.050; 1.385]	-0.991	-0.102	-1.822	0.070	[-2.063; 0.081]
DIST	1.200	0.092	1.623	0.106	[-0.257; 2.657]	0.857	0.131	2.434	0.016*	[0.163; 1.551]	-0.536	-0.057	-1.018	0.310	[-1.573; 0.501]

Notes: EE= Emotion Exhaustion, DP= Depersonalization, RP= Personal Accomplishment
 EX= Extroversion, AG = Agreeableness, CO= Conscientiousness, NE= Neuroticism, OP= Openness
 DIST= Distance of Telematic approach as intervention method, DIFF= Difficulties in the use of technology
 CI= Confidence Interval

DISCUSSION AND CONCLUSION
 The primary aim of the study was to study the prevalence of BOS among psychologists and whether there were differences between Emotional Exhaustion (EE), Depersonalization (DP) and Personal Accomplishment (RP) by type of work (volunteers and non-volunteers) and across geographical macro-areas identi-

fied based on the number of infections during the first wave of infection. The secondary aims of the study were to estimate the role of personality traits as predictors of BOS onset and to explore the role of telematic practice in psychological interventions during the first wave of COVID-19 in Italy. The results of the present study showed high

levels of BOS among volunteer and non-volunteer psychologists and there were no statistically significant differences between these two groups. However, voluntary psychologists from Italian regions that were most affected by COVID-19 during the first wave, presented increased levels in all dimensions of BOS, namely: emotional exhaustion, depersonalization, lower levels of personal accomplishment. The higher prevalence of BOS symptomatology in healthcare personnel from the most-impacted regions seems to confirm findings of the literature [54], as healthcare workers have been significantly exposed to a considerable burden of challenging demands during major emergency settings [84–86]. In Italy, during the first wave, volunteer psychologists working in the most affected areas were strained to adapt their work to a new clinical setting, in a new scenario by responding to an unprecedented state of upheaval and uncertainty. In support of this, hypothesis 3 was partially confirmed, as psychologists using telematic devices during their psychological interventions showed higher levels of DP.

The results of this study partially confirmed hypothesis 2, indicating that neuroticism is the only predictor personality trait of high BOS levels across the three dimensions. Furthermore, Agreeableness was observed as a protective role in the development of BOS. What emerged from the present study seems to be consistent with the previous scientific literature in the field [73, 87–91] which indicates that emotional instability may contribute to BOS development [92, 93].

Subjects with elevated levels of Neuroticism are described as prone to develop negative emotions and as characterized by low management skills, resulting in the emergence of psychosomatic symptoms and generalized anxiety symptomatology – e.g. restlessness, asthenia, fatigue, psychomotor agitation [94, 95]. High levels of Neuroticism may then be a predisposing factor for BOS, indicating a promising role as a predictive factor during screening processes.

While the present literature shows divergent

results for what concerns Agreeableness in relation to BOS [96, 97]. Agreeableness was the only observed trait to show a protective role across all dimensions of BS. In individuals with high levels of Agreeableness (described as friendliness/cordiality and a tendency to cooperation) pro-social interaction may play a protective role in the development of BOS. Sociality and a higher ability to maintain social relationships allow individuals to have more access to group resources and to reach better management in moments of difficulty, potentially recruiting more functional coping mechanisms [4].

The present study showed that subjects with high levels of Openness can develop greater satisfaction in carrying out their work, as well as experiencing a reduction in cynicism and distance from their clients. This aspect is caused by the tendency to greater flexibility in exploring what is not familiar, assuming a positive attitude and curiosity towards novelties, in accordance with literature [97]. Moreover, Openness was not observed as showing a predictive factor for emotional exhaustion in the included sample. The scientific literature on the topic shows discording results on the role of Openness, and a definite description in the development of BOS seems to be lacking [98]. The authors hypothesize that training might be a mediating factor for psychologists, which might modulate an orientation in favor of a dynamic attitude towards change and also towards better metacognitive capabilities. Therefore, psychologists may exhibit a differential experience in encountering emotional exhaustion on the occupational setting [99, 100].

Extroversion was observed to be a predictor of higher levels of PA. This result may indicate that subjects with high levels of sociability and assertiveness, as being described to be more inclined to actively seek positive emotions and to build healthy interpersonal relationships, might achieve higher satisfaction and derive more pleasure in the work setting, both of which seem to be fundamental elements in the development of a positive perception towards one's own professional iden-

tity.

The only personality trait that was not observed to be either a predisposing or a protective factor across all BOS dimensions was conscientiousness. This result seems to be in contrast to the literature, which describes in a concordant manner conscientiousness as a protective factor for the development of BOS [69, 101, 102]. In the authors' opinion, in the absence of a regulatory reference framework allowing the project to be taken over by support seekers, individuals with high levels of conscientiousness may have preferred not to participate in a novel and resource-demanding challenge to usual practice – thus inducing a negative selection in the recruited sample.

Hypothesis 3 seemed to be partially confirmed, as only the perception of detachment from telematic practice seemed to influence BOS onset, in particular its depersonalization dimension. This aspect can derive from the resistance of the adoption of telematic approaches by psychologists who perceive this instrument as threat to the psychological support relationship and a tool which hinders the development of a personalized and meaningful setting [103–105]. Furthermore, this would increase psychologists' depersonalization as a defense mechanism to cope with traumatic events of their assisted, playing a significant role in defending them from the full impact of these events [106]. The offered results, partly in line with the literature, showed that there was a significant influence of personality factors on the development of BOS symptomatology, and specifically the main predisposing factor was observed to rely on Neuroticism (Emotional Instability). In contrast, Agreeableness appeared to be the main protector against BOS development. Openness was observed to provide the dual benefit of reducing Depersonalization symptoms and increasing Personal Accomplishment respectively. Extroversion would seem to be implicated only for what concern personal accomplishment. An added value of the study was exploring the role of rapid innovation in clinical practice and the adoption of new

methodologies of psychological intervention, namely telepsychology. Analyses showed no significant role for the technical challenges on the onset of BOS, while on the contrary detachment from the telematic methodology was observed to be significantly associated with the development of Depersonalization symptoms. This result may indicate that for Italian psychologists, probably accustomed to working in presence, carrying practice remotely has mediated the development of a detached and cold attitude towards clients, who become the focus of the malaise of the operator and the object of cynical hostility. In line with the literature, the study showed that higher levels of BOS were recorded in the most-affected areas in terms of clinical contagion.

Study limitations

Our research is not without limitations. The current study, although offering solid evidence over primary and secondary aims, was cross-sectional in nature, which could not infer causality. Therefore, findings should be interpreted with caution and future studies with a more robust design can be conducted which would establish temporality. A second limitation of the study was that the distribution of the recruited sample was not representative of the Italian territory, which might have limited the external validity and thus generalizability. A residual confounding would be inevitable as some confounding factors, like differences between employed and self-employed workers were not considered.

In conclusion, this study indicates that psychologists, although offering services in a volunteering setting, were certainly not exempt from the onset of BOS. The recruited sample, in fact, recorded a substantial percentage with high levels of symptomatology across all three BOS dimensions. As a result, the authors call for a collective effort in evaluating risk-benefits ratios in the development of the guidelines for training and prevention programs, while accounting for the possibility of BOS when individual practitioners find themselves working in a novel and challenging environment. The focus of guidelines might therefore

lie also on personnel selection, with counselling over the best suited programs based on the individual operator [72, 107–109].

The authors thus also call for future research in this direction, evaluating the potential effectiveness of screening programs in parallel of targeted interventions, in order to contain and management the onset and severity of BOS on one hand, and preserving the quality of care on the other [110]. In the meanwhile, workplace health promotion programs and occupational health surveillance could support the mental well-being of psychologists

and prevent from the onset of BOS [111–114].

Acknowledgments:

The authors thank Dominique D'Ambrosi, President of Syn-cronia Association, for technical support and data collection. Ivana Ferrara, Silvestro Calabrese and Francesca Diodato for data collection; Professor Pamela Denicolo, Professor Emeritus of the University of Reading, for support and careful suggestions.

References

1. World Health Organization. WHO announces COVID-19 outbreak a pandemic. 2020 [cited 2021 Dec 08]. Available from: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>.
2. Bochicchio V, Winsler A, Pagliaro S, Pacilli MG, Dolce P, Scandurra C. Negative Affectivity, Authoritarianism, and Anxiety of Infection Explain Early Maladjusted Behavior During the COVID-19 Outbreak. *Front Psychol.* 2021;12:1–13. doi: 10.3389/fpsyg.2021.583883.
3. Bottaccioli AG, Lazzari D, Bottaccioli F. Promoting the Resilience of the Italian Population Against SARS-CoV-2. *Front Psychiatry.* 2021;11:1–11. <https://doi.org/10.3389/fpsyg.2020.560017>.
4. Crescenzo P, Marciano R, Maiorino A, Denicolo D, D'Ambrosi D, Ferrara I, et al. First COVID-19 wave in Italy: coping strategies for the prevention and prediction of burnout syndrome (BS) in voluntary psychologists employed in telesupport. *Psychol Hub.* 2021;38(1):31–38 doi: 10.13133/2724-2943/17435.
5. D'Ambrosi D, Marciano R, Paolucci A, Crescenzo P, Ferrara I, Maiorino A. The psychological impact of Covid-19 on the population: descriptive analysis of related psychological lockdown problems Project: Psychological Support #iorestoacasa. *J Psychosocial Syst.* 2020;4(2):1–14.
6. Cornazza P, Giorgio F. The effects of COVID - 19 on the Italian economy and the production system. *Topics.* 2020;16:24–55. doi: <https://doi.org/10.14276/1971-8357.2212>.
7. Chirico F, Nucera G, Szarpak L. COVID-19 mortality in Italy: The first wave was more severe and deadly, but only in Lombardy region. *J Infect.* 2021 Jul;83(1):e16. doi: 10.1016/j.jinf.2021.05.006. Epub 2021 May 14.
8. Chirico F, Sacco A, Nucera G, Magnavita N. Coronavirus disease 2019: the second wave in Italy. *J Health Res.* 2021;35(4):359–363. doi: 10.1108/JHR-10-2020-0514.
9. Magnavita N, Sacco A, Chirico F. Covid-19 pandemic in Italy: Pros and cons. *Zdrowie Publiczne i Zarządzanie.* 2020;16(4):32–35.
10. Chirico F, Sacco A, Nucera G, Ferrari G, Vinci MR, Zaffina S, et al. Lockdown measures and COVID-19 related deaths during the first and second COVID-19 waves in Italy: A descriptive study. *J Health Soc Sci.* 2021;6(3):379–390. doi: 10.19204/2021/lckd1.
11. Li Z, Ge J, Yang M, Feng J, Qiao M, Jiang R, et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain Behav and Immun.* 2020;88:916–919. doi: 10.1016/j.bbi.2020.03.007.
12. Parrello S, Sommantico M, Lacatena M, Iorio I. Adolescents' dreams under COVID-19 isolation. *Int J Dream Research.* 2021;14(1):10–20. doi: 10.11588/ijodr.2021.1.73858.
13. Iorio I, Sommantico M, Parrello S. Dreaming in the time of COVID-19: a quali-quantitative Italian stu-

- dy. *Dreaming*. 2020;30:199–215. doi: 10.1037/drm0000142.
14. Serafini G, Parmigiani B, Amerio A, Aguglia A, Sher L, Amore M. The psychological impact of COVID-19 on mental health in the general Population. *QJM*. 2020;113(8):531–537. doi: <https://doi.org/10.1093/qjmed/hcaa201>.
 15. Smith L, Jacob L, Yakkundi A, McDermott, D, Armstrong NC, Tully MA. Correlates of symptoms of anxiety and depression and mental wellbeing associated with COVID-19: A cross-sectional study of UK-based respondents. *Psychiatry Res*. 2020;291:113138.
 16. Yao H, Chen JH, Xu YF. Patients with mental health disorders in the COVID-19 epidemic. *The Lancet Psychiat*. 2020;7(4):e21.
 17. Rossi R, Socci V, Talevi D, Mensi S, Niolu C, Pacitti F, et al. COVID-19 Pandemic and Lockdown Measures Impact on Mental Health Among the General Population in Italy. *Front Psychiatry*. 2020 Aug 7;11:790. doi: 10.3389/fpsyt.2020.00790.
 18. Barelo S, Palamenghi L, Graffigna G. Burnout and somatic symptoms among frontline healthcare professionals at the peak of the Italian COVID-19 pandemic. *Psychiatry Res*. 2020 Aug;290:113129. doi: 10.1016/j.psychres.2020.113129. Epub 2020 May 27.
 19. Magnavita N, Chirico F, Sacco A. COVID-19: from hospitals to courts. *Lancet*. 2021;397(10284):1542. doi: 10.1016/s0140-6736(21)00472-4.
 20. Chirico F, Magnavita N. The Crucial Role of Occupational Health Surveillance for Health-care Workers During the COVID-19 Pandemic. *Workplace Health Saf*. 2021;69(1):5–6. doi:10.1177/2165079920950161.
 21. Chirico F, Nucera G. Tribute to healthcare operators threatened by COVID-19 pandemic. *J Health Soc Sci*. 2020;5(2):165–168. doi:10.19204/2020/trbt1.
 22. Chirico F, Magnavita N. Covid-19 infection in Italy: An occupational injury. *S Afr Med J*. 2020 May 8;110(6):12944. doi: 10.7196/SAMJ.2020.v110i6.14855.
 23. Chirico F. The assessment of psychosocial risk: only "work-related stress" or something else? *Med Lav*. 2015 Jan 9;106(1):65–66.
 24. National Council Order of Psychologists. Guidelines for remote psychological intervention for the population in the covid-19 emergency. 2020 [cited 2021 Dec 08]. Available from: <https://www.psy.it/newsletter-n-7-linee-di-indirizzo-cnop-per-lintervento-psicologico-a-distanza-a-favore-della-popolazione-nelle-mergenza-covid-19.html>
 25. Perrin PB, Pierce BS, Elliott TR. COVID-19 and telemedicine: A revolution in healthcare delivery is at hand. *Health Sci Rep*. 2020;3(2):e166. <https://doi.org/10.1002/hsr2.166>.
 26. Bentley B, O'Connor M, Williams A, Breen LJ. Dignity therapy online: Piloting an online psychosocial intervention for people with terminal illness. *Digital Health*. 2020;6:1–8. doi: 10.1177/2055207620958527.
 27. Fogler JM, Normand S, O'Dea N, Mautone JA, Featherston M, Power TJ, et al. Implementing Group Parent Training in Telepsychology: Lessons Learned During the COVID-19 Pandemic. *J Pediatrician Psychol*. 2020;45(9):983–989. doi: 10.1093/jpepsy/jsaa085.
 28. Gifford V, Niles B, Rivkin I, Koverola C, Polaha J. Continuing education training focused on the development of behavioral telehealth competencies in behavioral healthcare providers. *Rural Remote Health*. 2012;12(4):2108.
 29. Rosen CS, Glassman LH, Morland, LA. Telepsychotherapy during a pandemic: A traumatic stress perspective. *J Psychother Integr*. 2020;30:174–187. doi: 10.1037/int0000221.
 30. Zwielewski G, Oltramari G, Santos AR, Nicolazzi EM, Moura JA de, Sant'Ana VL, et al. Protocolos para tratamento psicológico em pandemias: as demandas em saúde mental produzidas pela COVID-19. *Debates Psiquiatr*. 2020;2:30–37.
 31. Jang Y, You M, Lee H, Lee M, Lee Y, Han JO, et al. Burnout and peritraumatic distress of healthcare workers in the COVID-19 pandemic. *BMC Public Health*. 2021;21(1):1–9.

32. Zhou X. Psychological crisis interventions in Sichuan Province during the 2019 novel coronavirus outbreak. *Psychiatry Res.* 2020;286:112895.
33. Chirico F, Nucera G, Magnavita N. Protecting the mental health of healthcare workers during the COVID-19 emergency. *BJ Psych Int.* 2021;18(1):E1. doi: 10.1192/bji.2020.39.
34. Chirico F, Ferrari G. Role of the workplace in implementing mental health interventions for high-risk groups among the working age population after the COVID-19 pandemic. *J Health Soc Sci.* 2021;6(2):145–150. doi: 10.19204/2021/rfft1.
35. Chirico F. Spirituality to cope with COVID-19 pandemic, climate change and future global challenges. *J Health Soc Sci.* 2021;6(2):151–158. doi:10.19204/2021/sprt2.
36. Roth CB, Papassotiropoulos A, Brühl AB, Lang UE, Huber CG. Psychiatry in the Digital Age: A Blessing or a Curse? *Int J Environ Res Public Health.* 2021 Aug 5;18(16):8302. doi: 10.3390/ijerph18168302.
37. Dikaio E, Sekhon H, Allard A, Vacaflor B, Goodman A, Dwyer E, et al. Connecting during COVID-19: a protocol of a volunteer-based telehealth program for supporting older adults' health. *Front Psychiatry.* 2020;11:598356. doi: 10.3389/fpsy.2020.598356.
38. Sharma A, Kumar Sharma S, Shi Y, Bucci E, Carafoli E, Melino G, et al. BCG vaccination policy and preventive chloroquine usage: do they have an impact on COVID-19 pandemic? *Cell Death Dis.* 2020;11:516. doi: 10.1038/s41419-020-2720-9.
39. Inchausti F, MacBeth A, Hasson-Ohayon I, Dimaggio G. Telepsychotherapy in the Age of COVID-19: A Commentary. *J Psychother Integr.* 2020;30(2):394–405. doi: 10.1037/int0000222.
40. Khedhaouri A, Cucchi A. Technostress creators, personality traits, and job burnout: A fuzzy-set configurational analysis. *J Bus Res.* 2019;101:349–361.
41. Boldrini T, Schiano Lomoriello A, Del Corno F, Lingiardi V, Salcuni S. Psychotherapy during COVID-19: How the clinical practice of Italian psychotherapists changed during the pandemic. *Front Psychol.* 2020;11:2716. doi: 10.3389/fpsyg.2020.591170.
42. Nacoti M, Ciocca A, Giupponi A, Brambillasca P, Lussana F, Pisano M. At the centre of the COVID-19 pandemic and humanitarian crises in Italy: changing perspectives on preparation and mitigation. *NEJM Catal.* 2020. doi:10.1056/CAT.20.0080.
43. Rana W, Mukhtar S, Mukhtar S. Mental health of medical workers in Pakistan during the COVID-19 outbreak. *Asian J Psychiat.* 2020;51:102080. doi: 10.1016/j.ajp.2020.102080.
44. Tarchi L, Moretti M, Osculati AMM, Politi P, Damiano S. The Hippocratic Risk: Epidemiology of Suicide in a Sample of Medical Undergraduates. *Psychiatr Q.* 2021;92:715–720. doi:10.1007/s11126-020-09844-0.
45. Fukuti P, Uchôa CLM, Mazzoco MF, Corchs F, Kamitsuji CS, Rossi L, et al. How Institutions Can Protect the Mental Health and Psychosocial Well-Being of Their Healthcare Workers in the Current COVID-19 Pandemic. *Clinics (Sao Paulo).* 2020;75:e1963. doi: 10.6061/clinics/2020/e1963.
46. Raudenská J, Steinerová V, Javůrková A, Urts I, Kaye AD, Viswanath O, et al. Occupational burnout syndrome and post-traumatic stress among healthcare professionals during the novel coronavirus disease 2019 (COVID-19) pandemic. *Best Pract Res Clin Anaesthesiol.* 2020;34(3):553–560. doi: 10.1016/j.bpa.2020.07.008.
47. Magnavita N, Chirico F, Garbarino S, Bragazzi NL, Santacroce E, Zaffina S. SARS/MERS/SARS-CoV-2 Outbreaks and Burnout Syndrome among Healthcare Workers. An umbrella Systematic Review. *Int J Environ Res Public Health.* 2021;18(8):4361. doi: 10.3390/ijerph18084361.
48. World Health Organization. International Classification of Diseases - 11th revision. Geneva: World Health Organization, 2020 [cited 2021 Dec 08]. Available from: <https://icd.who.int/dev11/l-m/en#/http://id.who.int/icd/entity/129180281>.
49. Chirico F, Taino G, Magnavita N, Giorgi I, Ferrari G, Mongiovì MC, et al. Proposal of a method for assessing the risk of burnout in teachers: the VA.RI.B.O strategy. *G Ital Med Lav Erg.* 2019;41(3):221–235.
50. Crescenzo P, Nardiello D. Lo Stress come “termometro” operativo e la sindrome del Burnout. In Caviglia

- G, Nardiello, D (Eds.), *Le competenze Psicosociali per la Sanità e le Professioni d'Aiuto: Dotazioni, Strumenti e Strategie*. Milano: FrancoAngeli; 2020, pp.87-97.
51. Embriaco N, Azoulay E, Barrau K, Kentish N, Pochard F, Loundou A, et al. High level of burnout in intensivists prevalence and associated factors. *Am J Respir Crit Care Med*. 2007; 175(11):1209–1210.
 52. Merlani P, Verdon M, Businger A, Pargger H, Ricou B. Burnout in ICU caregivers. A multicenter study of factors associated with centers. *Am J Respir Crit Care Med*. 2011;184(10):140–146. doi: 10.1164/rccm.201101-0068OC.
 53. Sirigatti S, Stefanile C. *MBI - Maslach Burnout Inventory: Manual. Adaptation and calibration for Italy*. Florence: Special Organizations; 1993.
 54. Chirico F, Crescenzo P, Sacco A, Riccò M, Ripa S, Nucera G, et al. Prevalence of burnout syndrome among Italian volunteers of the Red Cross: a cross-sectional study. *Industrial Health*. 2021;59(2):117–127. doi: 10.2486/indhealth.2020-0246.
 55. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw Open*. 2020;3(3):e203976. doi: 10.1001/jamanetworkopen.2020.3976.
 56. Istituto Nazionale di Statistica (ISTAT). *Censimento permanente delle Istituzioni non profit. Primi risultati*. Roma: Istituto Nazionale di Statistica; 2017.
 57. Civil Protection. *Emergenza Covid-19: attivo il numero verde per il supporto psicologico ai cittadini*. 2020 [cited 2021 Dec 08]. Available from: http://www.protezionecivile.gov.it/media-communication/news/detail/-/asset_publisher/default/content/emergenza-covid-19-attivo-il-numero-verde-per-il-supporto-psicologico-ai-cittadini.
 58. Iserson KV. Burnout syndrome: global medicine volunteering as a possible treatment strategy. *J Emerg Med*. 2018;54(4):516–521. doi:10.1016/j.jemermed.2017.12.062.
 59. Magnavita N, Chirico F. New and emerging risk factors in Occupational Health. *Appl Sci*. 2020;10(4):8906. doi: 10.3390/app10248906.
 60. Chirico F. Adjustment Disorder as an Occupational Disease: Our Experience in Italy. *Int J Occup Environ Med*. 2016 Jan;7(1):52–57.
 61. Chirico F. Is burnout a syndrome or an occupational disease? Instructions for occupational physicians. *Epidemiol Prev*. 2017 Sep;41(5-6):294–298. doi: 10.19191/EP17.5-6.P294.089.
 62. Chirico F. The forgotten realm of the new and emerging psychosocial risk factors. *J Occup Health*. 2017;59(5):433–435. doi: 10.1539/joh.17-0111-OP.
 63. Chirico F, Ferrari G, Nucera G, Szarpak L, Crescenzo P, Ilesanmi O. Prevalence of anxiety, depression, burnout syndrome, and mental health disorders among healthcare workers during the COVID-19 pandemic: A rapid umbrella review of systematic reviews. *J Health Soc Sci*. 2021;6(2):209–220. doi: 10.19204/2021/prv17.
 64. Magnavita N, Chirico F. Burnout Syndrome and Meta-Analyses: Need for Evidence-Based Research in Occupational Health. Comments on Prevalence of Burnout in Medical and Surgical Residents: A Meta-Analysis. *Int J Environ Res*. 2020;17(3):741. doi: 10.3390/ijerph17030741.
 65. Maslach C. *Burnout syndrome. The price of aid to others*. Assisi: Publishing Citadel; 1993.
 66. Pisanti R, Lombardo C, Lucidi F, Violani C, Lazzari D. Psychometric properties of the Maslach Burnout Inventory for Human Services among Italian nurses: A test of alternative models. *J Adv Nurs*. 2013;69(3):697–707. doi: 10.1111/j.1365-2648.2012.06114.x.
 67. Shirom A. Burnout and health: expanding our knowledge. *Stress Health*. 2009;25:281–285. doi: 10.1002/smi.1283.
 68. O'Connor K, Muller Neff D, Pitman S. Burnout in mental health professionals: A systematic review and meta-analysis of prevalence and determinants. *Eur Psychiatry*. 2018;53:74–99. doi:10.1016/j.eurpsy.2018.06.003.

69. Bakker AB, Van Der Zee KI, Lewig KA, Dollard MF. The relationship between the big five personality factors and burnout: A study among volunteer counselors. *J Soc Psychol.* 2006;146(1):31–50. doi: 10.3200/SOCP.146.1.31-50.
70. Galimberti U. *Enciclopedia di psicologia.* Milano: Garzanti; 2003.
71. Vukmirovic M, Rajovic N, Pavlovic V, Masic S, Mirkovic M, Tasic R, et al. The Burnout Syndrome in Medical Academia: Psychometric Properties of the Serbian Version of the Maslach Burnout Inventory-Educators Survey. *Int J Environ Res Public Health.* 2020;17(16):5658. doi: 10.3390/ijerph17165658.
72. De la Fuente-Solana EI, Gomez-Urquiza JL, Canadas GR, Albendin-Garcia L, Ortega-Campos E, Cañadas-De la Fuente GA. Burnout and his relationship with personality factors in oncology nurses. *Eur J Oncol Nurs.* 2017;30:91–96. doi: 10.1016/j.ejon.2017.08.004.
73. McCrae RR, Costa PT. Validation of the five-factor model of personality across instruments and observers. *J Pers Soc Psychol.* 1987;52(1):81–90. doi: 10.1037/0022-3514.52.1.81.
74. Costa PT, McCrae RR. The Revised NEO Personality Inventory (NEO-PI-R). In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE handbook of personality theory and assessment, Vol. 2. Personality measurement and testing* (pp. 179–198). Sage Publications, Inc. 2008. doi: 10.4135/9781849200479.
75. Alarcon G, Eschleman KJ, Bowling NA. Relationships between personality variables and burnout: A meta-analysis. *Work Stress.* 2009;23(3):244–263. doi: 10.1080/02678370903282600.
76. Louw GJ. Burnout, vigour, big five personality traits and social support in a sample of police officers. *SA J Ind Psychol.* 2014;40(1):1–13. doi: 10.4102/sajip.v40i1.1119.
77. Pérez-Fuentes MDC, Molero Jurado MDM, Martos Martínez Á, Gázquez Linares JJ. Burnout and Engagement: Personality Profiles in Nursing Professionals. *J Clin Med.* 2019 Feb 27;8(3):286. doi: 10.3390/jcm8030286.
78. Gardner RL, Cooper E, Haskell J, Harris DA, Poplau S, Kroth PJ, et al. Physician stress and burnout: the impact of health information technology. *J Am Med Inform Assoc.* 2019;26(2):106–114. doi: 10.1093/jamia/ocy145.
79. Shih SP, Jiang JJ, Klein G, Wang E. Job burnout of the information technology worker: Work exhaustion, depersonalization, and personal accomplishment. *Inf Manag.* 2013;50(7):582–589. doi: 10.1016/j.im.2013.08.003.
80. Maslach C, Jackson SE. *MBI: Maslach Burnout Inventory.* Palo Alto, CA: Consulting Psychologists Press; 1981.
81. Rammstedt B, John OP. Measuring Big Five in one minute or less: A 10- item short version of the Big Five Inventory in English and German. *J Res Per.* 2007;41(1):203–212. doi: 10.1016/j.jrp.2006.02.001.
82. Guido G, Peluso AM, Capestro M, Miglietta M. An Italian version of the 10-item Big Five Inventory: An application to hedonic and utilitarian shopping values. *Pers Individ.* 2015;76:135–140. doi:10.1016/j.paid.2014.11.053.
83. IBM Corporation. *IBM SPSS Statistics for Windows, Version 21.0.* IBM Corp. 2021.
84. Argentero P, Bonfiglio NS, Pasero R. Burnout in volunteer health workers. *G Ital Med Lav Ergon.* 2006;28 Suppl 2:77–82.
85. Argentero P, Setti I. Percezione del lavoro, contesti professionali e burnout negli operatori dell'emergenza. *G Ital Med Lav Ergon.* 2008;30:64–70.
86. Trumello C, Bramanti SM, Ballarotto G, Candelori C, Cerniglia L, Cimino S, et al. Psychological Adjustment of Healthcare Workers in Italy during the COVID-19 Pandemic: Differences in Stress, Anxiety, Depression, Burnout, Secondary Trauma, and Compassion Satisfaction between Frontline and Non-Frontline Professionals. *Int J Environ Res Public Health.* 2020 Nov 12;17(22):8358. doi: 10.3390/ijerph17228358.
87. Bianchi R. Burnout is more strongly linked to neuroticism than to work-contextualized factors. *Psychiatry Res.* 2018;270:901–905. doi: 10.1016/j.psychres.2018.11.015.

88. Brown PA, Slater M, Lofters A. Personality and burnout among primary care physicians: an international study. *Psychol Res Behav Manag.* 2019;12:169–177. doi: 10.2147/PRBM.S195633.
89. Magnano P, Paolillo A, Barrano C. Relationships between Personality and Burn-Out: An Empirical Study with Helping Professions' Workers. *Int J Human Soc.* 2015;1:10–19. doi: 10.6000/2371-1655.2015.01.02.
90. LePine JA, LePine MA, Jackson CL. Challenge and hindrance stress: relationships with exhaustion, motivation to learn, and learning performance. *J Appl Soc Psychol.* 2004; 89(5):883–891. doi: 10.1037/0021-9010.89.5.883.
91. Sosnowska J, De Fruyt F, Hofmans J. Relating Neuroticism to Emotional Exhaustion: A Dynamic Approach to Personality. *Front Psychol.* 2019;10:2264. doi: 10.3389/fpsyg.2019.02264.
92. Fornés-Vives J, García-Banda G, Frias-Navarro D, Pascual-Soler M. Longitudinal study predicting burnout in Spanish nurses: The role of neuroticism and emotional coping. *Pers Individ.* 2019;138:286–291. doi: 10.1016/j.paid.2018.10.014.
93. Meymandpour R, Bagheri Z. A study of personality traits, viz., extraversion and introversion on telecommuters burnout. *Telecom Bus Rev.* 2017;10:1–17.
94. Lee SA, Crunk EA. Fear and psychopathology during the COVID-19 crisis: neuroticism, hypochondriasis, reassurance-seeking, and corona phobia is fear factors. *OMEGA.* 2020; 30222820949350. doi: 10.1177/0030222820949350.
95. Zacher H, Rudolph CW, Zacher H, Rudolph CW. Big Five traits as predictors of perceived stressfulness of the COVID-19 pandemic. *Pers Individ Differ.* 2021;175:110694.
96. Divinakumar K, Bhat P, Prakash J, Srivastava K. Personality traits and its correlation to burnout in female nurses. *Ind Psychiatry J.* 2019; 28:24–28. doi: 10.4103/ipj.ipj_52_19.
97. Hildenbrand K, Sacramento CA, Binnewies C. Transformational leadership and burnout: The role of thriving and followers' openness to experience. *J Occup Health Psychol.* 2018;23(1):31–43. <https://doi.org/10.1037/ocp0000051>.
98. Hurt AA, Grist C, Malesky LR, McCord DM. Personality traits associated with occupational 'burnout' in ABA therapists. *J Appl Res Intellect Disabil.* 2013;26:299–308. doi:10.1111/jar.12043.
99. Barczyk AN. Relationship between the public's belief in recovery, level of mental illness stigma, and previous contact. *Commun Mental Health J.* 2015;51(1):38–47.
100. Corrigan PW, Gause M, Michaels PJ, Buchholz BA, Larson JE. The California assessment of stigma change: a short battery to measure improvements in the public stigma of mental illness. *Commun Mental Health J.* 2015;51(6):635–640.
101. Grigorescu S, Cazan AM, Grigorescu OD, Rogozea LM. The role of the personality traits and work characteristics in the prediction of the burnout syndrome among nurses—a new approach within predictive, preventive, and personalized medicine concept. *EPMA J.* 2018;9(4):355–365. doi: 10.1007/s13167-018-0151-9.
102. Kanios A, Bocheńska-Brandt A. Occupational burnout among workers in the long-term care sector in relation to their personality traits. *Int J Occup Med Environ Health.* 2021;34(4):491–504. doi: 10.13075/ijomeh.1896.01636.
103. de Wit M, Kleijnen M, Lissenberg-Witte B, van Uden-Kraan C, Millet K, Frambach R, et al. Understanding Drivers of Resistance Toward Implementation of Web-Based Self-Management Tools in Routine Cancer Care Among Oncology Nurses: Cross-Sectional Survey Study. *J Med Internet Res.* 2019;21(12):e14985. doi: 10.2196/14985.
104. Jordan NA, Russell L, Afousi E, Chemel T, McVicker M, Robertson J, et al. The Ethical Use of Social Media in Marriage and Family Therapy: Recommendations and Future Directions. *Fam J.* 2014; 22(1):105–112. doi:10.1177/1066480713505064.
105. Xue Y, Liang H, Mbarika V, Hauser R, Schwager P, Kassa Getahun M. Investigating the resistance to telemedicine in Ethiopia. *Int J Med Inform.* 2015;84(8):537–547. doi: 10.1016/j.ijmedinf.2015.04.005.
106. Shilony E, Grossman FK. Depersonalization as a defense mechanism in survivors of trauma. *J Traum*

Stress. 1993;6:119–128. <https://doi.org/10.1002/jts.2490060110>.

107. Vanholder R, Sükrü Sever M, Lameire N. Kidney problems in disaster situations. *Nephrol Ther.* 2021;17:S27–S36. doi: 10.1016/j.nephro.2020.02.009.
108. Stier-Jarmer M, Frisch D, Oberhauser C, Berberich G, Schuh A. The Effectiveness of a Stress Reduction and Burnout Prevention Program. *Dtsch Arztebl Int.* 2016;113(46):781–788. doi: 10.3238/arztebl.2016.0781.
109. Nardiello D, Crescenzo P, La dotazione relazionale nel bagaglio del professionista della salute. In Caviglia G, Nardiello, D (Eds.), *Le competenze Psicosociali per la Sanità e le Professioni d’Aiuto: Dotazioni, Strumenti e Strategie* (pp 46-66) Milano: Franco Angeli; 2020.
110. Busireddy KR, Miller JA, Ellison K, Ren V, Qayyum R, Panda M. Efficacy of interventions to reduce resident physician burnout: a systematic review. *J Grad Med Educ.* 2017; 9:294–301.
111. Chirico F, Magnavita N. The Spiritual Dimension of Health for More Spirituality at Workplace. *Indian J Occup Environ Med.* 2019;23(2):99. doi:10.4103/ijocem.IJOEM_209_18.
112. Chirico F, Sharma M, Zaffina S, Magnavita N. Spirituality and Prayer on Teacher Stress and Burnout in an Italian Cohort: A Pilot, Before-After Controlled Study. *Front Psychol.* 2020;10:2933. Published 2020 Jan 21. doi:10.3389/fpsyg.2019.02933.
113. Magnavita N, Heponiemi T, Chirico F. Workplace Violence Is Associated With Impaired Work Functioning in Nurses: An Italian Cross-Sectional Study. *J Nurs Scholarsh.* 2020;52(3):281–291. doi:10.1111/jnu.12549.
114. Chirico F. Religious Belief and Mental Health in Lay and Consecrated Italian Teachers. *J Relig Health.* 2017 Jun;56(3):839–851. doi: 10.1007/s10943-016-0242-7.