



# Psychological impact of COVID-19 on healthcare leaders: a cross-sectional survey in Friuli-Venezia Giulia, Italy

Enrico Scarpis <sup>1</sup>, Giulia Bravo,<sup>1</sup> Roberto Cocconi,<sup>2</sup> Laura Brunelli <sup>1,2</sup>

<sup>1</sup>Dipartimento di Area Medica, Università degli Studi di Udine, Udine, Italy

<sup>2</sup>Accreditamento e Gestione del Rischio Clinico, Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy

## Correspondence to

Dr Enrico Scarpis, Dipartimento di Area Medica, Università degli Studi di Udine, Udine, Italy; scarpis.enrico@gmail.com

Received 7 July 2021

Accepted 25 January 2022

## ABSTRACT

**Introduction** Although several studies highlighted the psychological burden of 2019 coronavirus disease (COVID-19) pandemic, no data are available regarding professionals leading healthcare organisations. This study aims to assess the psychological impact of COVID-19 on healthcare leaders (HeLs), along with the leadership skills and coping strategies needed for successful leadership.

**Methods** A cross-sectional survey was conducted in Friuli-Venezia Giulia (Italy) between October and November 2020. We assessed the presence of depressive symptoms (DS), anxiety symptoms (AS), perceived stress (PS) and insomnia using internationally validated tools. Coping strategies and skills needed to overcome the crisis were examined, along with the most challenging phases.

**Results** A total of 48 HeLs participated. The prevalence of DS and AS was 14.6% and 12.5%, respectively. Moderate and severe insomnia was found in 12.5% and 6.3% of them, respectively. Leaders showed moderate (45.8%) and high (4.2%) level of PS. The two most challenging phases were recognised in early recognition (45.2%) and peak phase (31.0%). Concerning healthcare leaders' skills required to manage with pandemic, the most reported were communication (35.1%) and decision-making (25.5%).

**Conclusion** The high level of PS, insomnia, DS and AS experienced by healthcare leaders shows the COVID-19 pandemic's psychological impact. The two most challenging phases identified enhances the importance of public health surveillance and monitoring systems, and communication appeared a critical success skill for healthcare leaders. Given the key role these professional play in addressing the current crisis in healthcare organisations, their mental health and well-being deserve greater attention.

## INTRODUCTION

Since the SARS-CoV-2 pandemic started at the beginning of 2020, the impact on health, psychological, social and economic factors have been recognised worldwide.<sup>1</sup> Among many others, mental health (MH) has been highlighted as a crucial area of concern because of its potential immediate and longer-term consequences on the whole community.<sup>2,3</sup> Indeed, psychological effects of the SARS outbreak were already identified as a public health concern,<sup>4</sup> but given the magnitude and the worldwide distribution of the current pandemic it still represents a burning issue.

Higher prevalence of symptoms of MH issues during the pandemic in the Italian general

## Key messages

### What is already known on this topic

- ▶ Several studies have highlighted the psychological burden of the COVID-19 pandemic on frontline healthcare workers.

### What this study adds

- ▶ We found that healthcare leaders also face the same threat while governing uncertainty and leading health services during the current global crisis. Fortunately, our findings suggest that these professionals are mostly implementing active coping strategies to regulate their emotional response.

### How this study might affect research, practice or policy

- ▶ Since public health system preparedness also depends on the resilience of healthcare leaders, their ability to cope with stressful situations should be strengthened.

population in comparison with the pre-SARS-CoV-2 era has been reported by Gualano *et al*, who identified 24.7% of people had symptoms of depression, 23.2% had symptoms of anxiety and 42.2% had sleep disturbances.<sup>5</sup> Healthcare worker (HCW) emerged as a higher risk profile to developing anxious conditions,<sup>5,6</sup> confirming what has already been reported by colleagues in China during the previous months.<sup>7</sup> Similar findings concerning psychological effects were reported for HCWs during recent SARS<sup>8</sup> and MERS<sup>9</sup> outbreaks. The burden of MH issues seems to be greater among frontline HCWs, probably due to highly stressful situations, such as seeing colleagues contracting the infection, getting sicker and eventually being intubated for respiratory failing, to which they are exposed.<sup>9</sup>

Nevertheless, not much attention has been paid toward mental health of HCWs acting as healthcare leaders in these stressful and challenging periods. Healthcare leaders have been playing a critical role during the four phases of the pandemic response, including crisis recognition, emergency phase, declining epidemic and long tail.<sup>10</sup> Leadership in times of health-related crisis is expected to be proactive, to clarify the governance model for the crisis itself, act quickly, communicate actively and be both realistic and optimistic.<sup>11</sup> Key leaders' required characteristics include decision-making and governance skills, high level of competence, awareness



© Author(s) (or their employer(s)) 2022. No commercial re-use. See rights and permissions. Published by BMJ.

**To cite:** Scarpis E, Bravo G, Cocconi R, *et al*. *BMJ Leader* Published Online First: [please include Day Month Year]. doi:10.1136/leader-2021-000534

of the crisis situation, data interpretation ability, comprehension and trustworthiness and effective communication skills.<sup>12</sup>

Governing the uncertainty requires the healthcare leadership to find meaning in the doubts, make critical decisions, drive the healthcare system through complexity, learn from experience and admitting fallibility.<sup>13 14</sup> Despite a distributed leadership approach, which can replace the old hierarchies under the emergency phase,<sup>10</sup> the impact of the personal and professional responsibility of such overwhelming public health issues on the single individual cannot be overlooked. Even during a year without a specific health crisis such as in 2018, burnout feelings were reported to the Medical Group Management Association by 73% of the healthcare leaders.<sup>15</sup> Moreover, stress in healthcare leaders is recognised worldwide and finds specific justifications in high-impact and far-reaching consequences of their decisions, in organisational competition and in the need to pursue continuous improvement despite restrained budget.<sup>16 17</sup> To the best of our knowledge, no studies have been conducted on the psychological impact on the healthcare leadership of health crisis nor specifically SARS-CoV-2 pandemic.

Trying to reply to the call for action on mental health science, we decided to study the psychological impact of the current COVID-19 health crisis on healthcare leadership (HELPIC study—HEalthcare Leadership-Psychological Impact of COVID-19). Moreover, we investigated the most challenging and demanding phases of the health crisis and the characteristics required for a healthcare leader to overcome these difficult times.

## METHODS

### Design and study population

A regional cross-sectional survey was conducted between October and November 2020, through an online questionnaire promoted by the Department of Medicine of the University of Udine (Italy) and sent to a convenience sample of healthcare leaders. HCWs were identified as leaders relying on the organisational chart of the respective Institutions settled in Friuli-Venezia Giulia, a Region in the Northeast of Italy. Eligible healthcare leaders included professionals acting as head of department/division, steering committee member or unit consultant and working at regional or local level, both in the hospital or the community and public health settings. The survey was sent to them through their institutional email. HCWs not having worked during the COVID-19 crisis were excluded from the study. All subjects gave their informed consent for participation before filling in the questionnaire. Participation was voluntary, anonymous and without any compensation.

### The survey questionnaire

The self-administered questionnaire was available on the EUSurvey platform. It was composed of 70 items, divided into three sections. All questions were compulsory and they had to be answered in order to complete the survey. The first section investigated the socio-demographic characteristics of the respondents: age, sex, marital status, leadership level, work setting (hospital, community and public health or regional health service), years of working experience, distance between home and work (daily commuting). The second section investigated mental health issues through using internationally validated tools: the Patient Health Questionnaire-9 (PHQ-9),<sup>18 19</sup> the Generalised Anxiety Disorder-7 (GAD-7),<sup>20</sup> the Insomnia Severity Index (ISI)<sup>21</sup> and the Perceived Stress Scale (PSS).<sup>22</sup> Coping styles were also assessed by administering the Brief COPE.<sup>23</sup> In the third section we asked

leaders their opinion about the most challenging and demanding phases of a health crisis as reported in the literature by Nyenswah *et al*: crisis early recognition, peak phase, declining epidemic, long tail phases<sup>10</sup>; and the skills required of a healthcare leader as reported in the literature: coordination and communication, data interpretation, decision-making, know-how, awareness of the current situation, empathy and trustworthiness.<sup>10 12 24</sup>

### Statistical analysis

A score of 10 or above for PHQ-9 and GAD-7 represents a higher probability of depressive and anxious status, respectively, as reported in previous similar studies.<sup>18–20 25 26</sup> Three categories were identified for PSS considering 0–13, 14–26 and 27–40 scores for low, moderate and high perceived stress.<sup>22</sup> Progressive categories representing absence or presence of mild, moderate and severe insomnia were identified also for ISI: 0–7, 8–14 and 15–21.<sup>21</sup> Concerning Brief COPE, instead, this is an instrument composed of 28 items divided into 14 scales: each scale assesses the degree to which the respondent uses a specific coping strategy. Respondents rated items on a 4-points Likert-scale. Each of the 14 scales is comprised of 2 items: total score for each scale, calculated by summing the specific items, range from the minimum of 2 and the maximum of 8. Higher scores indicate increased utilisation of that specific coping strategy. No overall total score is calculated, only total scores for each of the scale. Moreover, Brief COPE help to determine the respondent's primary coping *style* as either *Approach Coping* or *Avoidant Coping*, both characterised by the respective scales identified by the instrument scoring instructions.<sup>23</sup>

Descriptive analyses were performed for all variables. Then, the association between leadership level and scores of PHQ-9, GAD-7, PSS and ISI were evaluated using Fisher's exact test. Analyses were conducted using the statistical software package SAS V.9.4 for Windows and a two-tailed *p* value <0.05 was considered statistically significant.

## RESULTS

### Socio-demographic characteristics of the sample

The final sample was made of 48 participants out of the 150 invited healthcare leaders (response rate: 32%). A description of the sociodemographic characteristics of the sample is available in [table 1](#). The mean age of healthcare leaders was 53 years (SD ±8; min 30, max 60) and women were 56.3% of the respondents. Most of the sample reported being married or cohabitant with children (64.6%). Respondents declared to have been working in their position for a mean of 9 (SD ±9) years, with some of them being at the very beginning of their career (min 1 year) and others with much more experience (max 41 years). The mean distance from home to work was 26 km (min–max: 0–100). Eight respondents were members of the steering committee, 22 of them were head of department/division, 6 were unit consultant and 12 other professionals. Work settings were represented as follows: hospital (60%; n=29), community and public health (23%; n=11) and regional health services (17%; n=8).

### Mental health

The screening of mental health issues resulted in a total prevalence of 14.6% of depressive and 12.5% of anxiety symptoms. A moderate level of insomnia was found in 12.5% of healthcare leaders, while severe insomnia was afflicting 6.3% of them. Concerning stress, almost half of participants showed moderate (45.8%) or high (4.2%) level of stress. Prevalence of mental

**Table 1** Sociodemographic characteristics of healthcare leaders who participated to the study

Variable	N (%)	
<b>Sex</b>		
Female	27 (56.3)	
Male	21 (43.7)	
<b>Marital status</b>		
Cohabitant / married with child	31 (64.6)	
Cohabitant / married without child	9 (18.8)	
Separated / divorced / widowed	4 (8.3)	
Single	4 (8.3)	
<b>Work setting</b>		
Community and public health	11 (22.9)	
Regional level	8 (16.7)	
Hospital	29 (60.4)	
<b>Leadership category</b>		
Head of department / division	22 (45.8)	
Steering committee	8 (16.7)	
Unit consultant	6 (12.5)	
Other	12 (25.0)	
	Mean±SD	Min–max
Age (years)	53.4±7.9	30.0–65.0
Working experience (years)	9.3±9.3	1.0–41.0
Daily commuting (km)	25.7±26.0	0.0–100.0

health issues within different leadership categories are reported in detail in [table 2](#).

No clear relationship between the leadership level and the presence of depressive or anxiety symptoms, nor insomnia were identified. On the contrary, perceived stress was significantly higher only among steering committee members. Lower levels of perceived stress was associated with lower prevalence of depressive or anxious symptoms or insomnia ( $p < 0.05$ ).

Regarding the coping strategies, higher scores were achieved for planning items (eg, ‘trying to come up with a strategy about what to do’ and ‘thinking hard about what steps to take’), active coping items (eg, ‘concentrating my efforts on doing something about the situation I’m in’ and ‘taking action to try to make the situation better’) and acceptance items (eg, ‘accepting the

**Table 3** Coping strategies reported by healthcare leaders

Coping strategy	Mean	SD
Positive reframing	5.7	1.4
Self-distraction	4.8	1.4
Venting	4.4	1.2
Use informational support	5.4	1.4
Active coping	6.9	1.2
Denial	2.4	0.8
Religion	3.6	1.9
Humour	3.7	1.4
Behavioural disengagement	2.6	0.9
Emotional support	4.9	1.4
Substance use	2.2	0.9
Acceptance	6.3	1.2
Planning	7.0	1.1
Self-blame	4.9	1.5

reality of the fact that it has happened’ and ‘learning to live with it’). Conversely, lower scores were found in the subscales of substance abuse, denial and behavioural disengagement. Each coping strategy with its mean score are reported in [table 3](#).

According to the leaders interviewed, the two most challenging phases of the COVID-19 crisis were crisis early recognition (45.2% of answers) and the peak phase (31.0%). The least challenges were the declining epidemic (15.5%) and the long tail phases (8.3%). Concerning leaders’ characteristics, the most reported were coordination and communication ability (35.1%) and decision-making (25.5%), followed by know-how (20.2%), awareness of the current situation (10.6%), data interpretation (5.3%) and empathy and trustworthiness (3.2%).

## DISCUSSION

SARS-CoV-2 pandemic is the most significant public health threat of the century, a crisis that has been challenging healthcare systems all around the world causing—among the other outcomes—psychological distress to healthcare workers.<sup>5 6</sup> With this study we highlighted the critical role played by healthcare leaders during this crisis, reporting the psychological impact of the pandemic on these professionals and their opinion regarding

**Table 2** Results from the psychometric tests: General Anxiety Disorders-7 (GAD-7), Patient Health Questionnaire-9 (PHQ-9), Insomnia Severity Index (ISI) and Perceived Stress Scale (PSS)

	GAD-7			PHQ-9				
	Mean ±SD	<10 n (%)	≥10 n (%)	Mean ±SD	<10 n (%)	≥10 n (%)		
Head of department/ division	4.4±3.9	21 (95.5)	1 (4.5)	4.7±3.9	20 (90.9)	2 (9.1)		
Steering committee	5.8±3.8	7 (87.5)	1 (12.5)	5.9±3.1	7 (87.5)	1 (12.5)		
Unit consultant	4.8±5.0	4 (66.7)	2 (33.3)	4.5±4.0	5 (83.3)	1 (16.7)		
Other	6.2±3.5	10 (83.3)	2 (16.7)	6.4±3.0	9 (75.0)	3 (25.0)		
Total		42 (87.5)	6 (12.5)		41 (85.4)	7 (14.6)		
	ISI				PSS			
	Mean ±SD	0-7 n (%)	8-14 n (%)	15-21 n (%)	Mean ±SD	0-13 n (%)	14-26 n (%)	27-40 n (%)
Head of department/ division	5.2±4.6	15 (68.2)	5 (22.7)	2 (9.1)	11.1±6.6	15 (68.2)	6 (27.3)	1 (4.5)
Steering committee	4.6±2.1	8 (100)	0 (0.0)	0 (0.0)	18.4±8.3	1 (12.5)	6 (75.0)	1 (12.5)
Unit consultant	2.8±2.7	6 (100)	0 (0.0)	0 (0.0)	13.8±6.1	3 (50.0)	3 (50.0)	0 (0.0)
Other	5.4±5.0	10 (83.3)	1 (8.3)	1 (8.3)	16.6±6.3	5 (41.7)	7 (58.3)	0 (0.0)
Total		39 (81.2)	6 (12.5)	3 (6.3)		24 (50.0)	22 (45.8)	2 (4.2)

the most challenging and demanding phases of the health crisis, as well as the characteristics required for a healthcare leader to overcome a public health threat.

The prevalence of depressive and anxiety symptoms identified was higher than what was reported by the Italian National Statistical Institute in 2018, that indicated a prevalence of depressive or anxiety symptoms of 5.4% and 4.2%, respectively,<sup>27</sup> but lower than what was reported during this pandemic by other Italian authors (depressive symptoms: 24%–25% and anxiety symptoms: 20%–23%).<sup>5 28</sup> As already stressed for front-line healthcare workers, these findings suggest that healthcare leaders may be at higher risk of developing depressive and anxiety symptoms compared with the general population. At the same time moderate or severe insomnia was found in 18.8% of healthcare leaders and 50% of them reported moderate or high levels of stress, which is not far from the prevalence of burnout feelings reported for health managers in 2018.<sup>15</sup> High levels of stress inherent within leadership position is already recognised by other studies,<sup>16 17 29</sup> although could be a variation in the level of it.<sup>30</sup> Healthcare leaders should overcome stress in healthcare organisations, by achieving and maintaining a useful level of mental focus that can facilitate engaged and collaborative decisions, avoiding reduction in performance levels, through stress management practices.<sup>31</sup> The high level of perceived stress, insomnia, depressive and anxiety symptoms experienced by healthcare leaders shows another aspect of the SARS-CoV-2 pandemic's psychological impact. Considering the key role of these professionals in leading healthcare organisations over the current crisis, our results identified mental health of these professionals as a major issue, that deserves higher attention.

No relationship was found between leadership level and mental health outcomes, but the potential effect of the selection bias due to the limited number of participants cannot be ruled out. On the other hand, lower perceived stress positively correlated with lower prevalence of insomnia, depressive and anxiety symptoms ( $p < 0.05$ ), confirming the relationship between those aspects of mental health. Interestingly, perceived stress was significantly higher among steering committee members, suggesting the great impact that COVID-19 also has on high level healthcare leadership.

The higher scores achieved by our sample in *planning*, *active* and *acceptance* coping strategies suggest the prevalence of an *approach* coping style which describes what healthcare leaders do to regulate their emotional response to deal with stressful situations. Approach coping has been associated with a more helpful response to adversity, a more stable emotional response and a more effectiveness in managing anxiety.<sup>32</sup> Nevertheless, contrary to other healthcare workers' categories,<sup>12 29 33</sup> our sample of healthcare leaders did not report high scores in seeking social support, and this could be one of the reasons explaining their enduring high stress level. Moreover, differently from other literature results, our sample seems to be not at risk of substance abuse in response to work-related stress.<sup>34–37</sup>

Finally, concerning healthcare leaders' attributes needed in time of crisis, the fundamental role of communication skills seems to be confirmed,<sup>9</sup> along with decision-making.<sup>12</sup> Like the general population, healthcare workers look up to their leaders in times of crisis and expect them to minimise the impact of current adverse events.<sup>10</sup> Therefore, healthcare leaders are required to counter extreme conditions while maintaining a sense of normality needed to make prudent decisions and govern the uncertainty, leading the healthcare organisation throughout the crisis. Despite healthcare leaders benefitting from their

individual skills, specific competencies could be taught to prepare professionals to effectively face crisis.

There are some limitations to this study. First, the number of participating healthcare leaders and their regional or local role may have resulted in selection bias. Moreover, under our request, Institutions indicated these professionals as healthcare leaders, but differences in their selection method cannot be ruled out. For these reasons our results may not be representative of the situation of healthcare leaders nationally or internationally. Second, the decision to consider a specific healthcare worker as healthcare leader was partly due to the pandemic phase we were facing, and therefore a possible shift towards professions related to infectious diseases could affect the future interpretation of our results. Nevertheless, we chose to include all occupational groups involved in the decision-making process, regardless of their occupational profile, which we believe is a strength of the study. The use of validated tools to assess mental health issue and associated coping strategies also underpins the reliability of our results.

## CONCLUSIONS

The SARS-CoV-2 pandemic has affected the mental health and well-being of not only frontline HCWs, but also professionals who are leading healthcare organisation. Stress has negative impact throughout the healthcare organisations and teams and advocacy is needed to change healthcare organisations and create a healthier workplace, for both direct-patient care healthcare workers and healthcare leaders. Preparedness to manage public health crisis is based on the sum of the competencies and the abilities of all healthcare workers and their leaders. These competencies include the ability to deal with stressful situations, which could therefore be strengthened for all current and future public health workers.

**Twitter** Enrico Scarpis @EnricoScarpis

**Acknowledgements** The authors would like to thank the FVG healthcare leaders for participating in the survey.

**Contributors** ES and LB designed the study and collected data; GB performed the analyses; LB and ES drafted the manuscript; RC revised intellectual contents; all authors read and approved the final version of the manuscript. LB is the author acting as guarantor.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Not applicable.

**Ethics approval** The study was approved by the Central Ethics Committee of Friuli-Venezia Giulia Region (protocol code 0119752 and date of approval 01 October 2020). Participants gave informed consent to participate in the study before taking part.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data are available upon reasonable request.

This article is made freely available for personal use in accordance with BMJ's website terms and conditions for the duration of the covid-19 pandemic or until otherwise determined by BMJ. You may download and print the article for any lawful, non-commercial purpose (including text and data mining) provided that all copyright notices and trade marks are retained.

## ORCID iDs

Enrico Scarpis <http://orcid.org/0000-0002-1471-486X>  
Laura Brunelli <http://orcid.org/0000-0002-5475-0021>

## REFERENCES

- 1 Allain-Dupré D, Chatry I, Michalun V. *The territorial impact of COVID-19 : managing the crisis across levels of government. OECD Tackling Coronavirus*, 2020: 2–44.

- 2 Holmes EA, O'Connor RC, Perry VH, *et al.* Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *Lancet Psychiatry* 2020;7:547–60.
- 3 Mahase E. Covid-19: mental health consequences of pandemic need urgent research, paper advises. *BMJ* 2020;369:m1515.
- 4 Chua SE, Cheung V, Cheung C, *et al.* Psychological effects of the SARS outbreak in Hong Kong on high-risk health care workers. *Can J Psychiatry* 2004;49:391–3.
- 5 Gualano MR, Lo Moro G, Voglino G, *et al.* Effects of COVID-19 lockdown on mental health and sleep disturbances in Italy. *Int J Environ Res Public Health* 2020;17:1–13.
- 6 Chatzittofis A, Karanikola M, Michailidou K, *et al.* Impact of the COVID-19 pandemic on the mental health of healthcare workers. *Int J Environ Res Public Health* 2021;18:1435.
- 7 Zhu Z, Ph D, Xu S. COVID-19 in Wuhan : Immediate Psychological Impact on 5062 Health Workers. *medRxiv* 2020.
- 8 Bai Y, Lin C-C, Lin C-Y, *et al.* Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatr Serv* 2004;55:1055–7.
- 9 Khalid I, Khalid TJ, Qabajah MR, *et al.* Healthcare workers emotions, perceived stressors and coping strategies during a MERS-CoV outbreak. *Clin Med Res* 2016;14:7–14.
- 10 Nyenswah T, Engineer CY, Peters DH. Leadership in times of crisis: the example of Ebola virus disease in Liberia. *Health Syst Reform* 2016;2:194–207. doi:10.1080/23288604.2016.1222793
- 11 Persoff J, Orloff D, Little C. The role of hospital medicine in emergency preparedness: a framework for hospitalist leadership in disaster preparedness, response, and recovery. *J Hosp Med* 2018;13:713–8.
- 12 Deitchman S. Enhancing crisis leadership in public health emergencies. *Disaster Med Public Health Prep* 2013;7:534–40. doi:10.1017/dmp.2013.81
- 13 Stoller JK. Reflections on leadership in the time of COVID-19. *Leader* 2020;4:77–9. doi:10.1136/leader-2020-000244
- 14 Boin A, 't Hart P, Stern E. *The politics of crisis management*. Cambridge: Cambridge University Press, 2005. <https://www.cambridge.org/core/product/identifier/9780511490880/type/book>
- 15 MGMA. *MGMA STAT POLL shows majority of healthcare leaders feel at least somewhat burnt out at their job*, 2018.
- 16 Ganster DC. Executive job demands: suggestions from a stress and decision-making perspective. *Acad Manage Rev* 2005;30:492–502. doi:10.5465/amr.2005.17293366
- 17 Hambrick DC, Finkelstein S, Mooney AC. Executive job demands: new insights for explaining strategic decisions and leader behaviors. *Acad Manage Rev* 2005;30:472–91. doi:10.5465/amr.2005.17293355
- 18 Volker D, Zijlstra-Vlasveld MC, Brouwers EPM, *et al.* Validation of the patient health Questionnaire-9 for major depressive disorder in the occupational health setting. *J Occup Rehabil* 2016;26:237–44.
- 19 Arroll B, Goodyear-Smith F, Crengle S, *et al.* Validation of PHQ-2 and PHQ-9 to screen for major depression in the primary care population. *Ann Fam Med* 2010;8:348–53. doi:10.1370/afm.1139
- 20 Ruiz MA, Zamorano E, García-Campayo J, *et al.* Validity of the GAD-7 scale as an outcome measure of disability in patients with generalized anxiety disorders in primary care. *J Affect Disord* 2011;128:277–86.
- 21 Morin CM, Belleville G, Bélanger L, *et al.* The insomnia severity index: psychometric indicators to detect insomnia cases and evaluate treatment response. *Sleep* 2011;34:601–8.
- 22 Chan SF, La Greca AM. Perceived stress scale (PSS). *Encycl Behav Med* 2013:1454–5.
- 23 Carver CS. You want to measure coping but your protocol's too long: consider the brief cope. *Int J Behav Med* 1997;4:92–100.
- 24 Foster S. Leadership in the time of crisis. *Br J Nurs* 2020;29:449. doi:10.12968/bjon.2020.29.7.449
- 25 Levis B, Benedetti A, Thombs BD. Accuracy of patient health Questionnaire-9 (PHQ-9) for screening to detect major depression: individual participant data meta-analysis. *BMJ* 2019;64:l1476. doi:10.1136/bmj.l1476
- 26 Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 2001;16:606–13–13. doi:10.1046/j.1525-1497.2001.016009606.x
- 27 ISTAT. *La salute MENTALE NELLE VARIE FASI DELLA vita*, 2018.
- 28 Rossi R, Succi V, Pacitti F, *et al.* Mental health outcomes among frontline and second-line health care workers during the coronavirus disease 2019 (COVID-19) pandemic in Italy. *JAMA Netw Open* 2020;3:e2010185.
- 29 Udod S, Cummings GG, Care WD, *et al.* Role stressors and coping strategies among nurse managers. *Leadersh Health Serv* 2017;30:29–43.
- 30 Sherman GD, Lee JJ, Cuddy AJC, *et al.* Leadership is associated with lower levels of stress. *Proc Natl Acad Sci U S A* 2012;109:17903–7. doi:10.1073/pnas.1207042109
- 31 Hartney E. A three-step model of stress management for health leaders. *Healthc Manage Forum* 2018;31:81–6.
- 32 Eisenberg SA, Shen B-J, Schwarz ER, *et al.* Avoidant coping moderates the association between anxiety and patient-rated physical functioning in heart failure patients. *J Behav Med* 2012;35:253–61. doi:10.1007/s10865-011-9358-0
- 33 Lu D-M, Sun N, Hong S, *et al.* Occupational stress and coping strategies among emergency department nurses of China. *Arch Psychiatr Nurs* 2015;29:208–12–12. doi:10.1016/j.apnu.2014.11.006
- 34 Raistrick D, Russell D, Tober G, *et al.* A survey of substance use by health care professionals and their attitudes to substance misuse patients (NHS staff survey). *J Subst Use* 2008;13:57–69. doi:10.1080/14659890701237082
- 35 Talbert JJ. Substance abuse among nurses. *Clin J Oncol Nurs* 2009;13:17–19. doi:10.1188/09.CJON.17-19
- 36 Merlo LJ, Gold MS. Prescription opioid abuse and dependence among physicians: hypotheses and treatment. *Harv Rev Psychiatry* 2008;16:181–94. doi:10.1080/10673220802160316
- 37 Brooks SK, Chalder T, Gerada C. Doctors vulnerable to psychological distress and addictions: treatment from the practitioner health programme. *J Ment Health* 2011;20:157–64. doi:10.3109/09638237.2011.556168