

## A NEW RATING SCALE (SAVE-9) TO DEMONSTRATE THE STRESS AND ANXIETY IN THE HEALTHCARE WORKERS DURING THE COVID-19 VIRAL EPIDEMIC

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### SUMMARY

The COVID-19 epidemic has been a major global public health problem during past months in Italy and in several other Countries and on the date of publication of this article, is still a serious public health problem.

The health staff, engaged in the care of the sick and in the prevention of the spread of the infection have been subjected to a further increase in psychological difficulties and work-related stress, related to the workload for the continuous influx of sick and intense and close working shifts for the viral emergency.

The SAVE-9 (Stress and Anxiety to Viral Epidemics - 9 items) scale has been developed as a tool for assessing work anxiety and stress in response to the viral epidemic of health professionals working to prevent the spread of the virus and to treat infected people.

**Key words:** stress – anxiety – psychological - health personnel – pandemic - COVID-19 - SAVE-9

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### INTRODUCTION

In December 2019, a first case of interstitial pneumonia was reported in China, in the city of Wuhan, Hubei province, associated with a new flu-like virus, a coronavirus then called SARS-CoV-2 (COVID-19), which having a rapid epidemic spread, high virulence and great danger to human health, has sown in the population apprehension, anxiety, fear of contagion, stress, depression and unfortunately frequent death from severe respiratory failure. Such was the massive and rapid spread of the viral disease that the World Health Organization assessed that "the number of cases of COVID-19 outside China has increased by 13 times and the number of affected countries has tripled, there are more than 118,000 cases in 114 countries and 4,291 people lost their lives", and on 11 March 2020 classified it as a pandemic (WHO 2020).

Many nations, following China's effective COVID-19 prevention and control protocol, have adopted restrictive measures on social relations and quarantines, which, while necessary, have increased psychological distress and contributed to the feeling of alarm in the population. The health staff, engaged in the care of the

sick and in the prevention of the spread of the infection have been subjected to a further increase in psychological difficulties and work-related stress, related to the workload caused by the continuous influx of sick and intense and close working shifts to deal with the viral emergency, as well as concern for their health and that of family members about the contagion. In Italy, as of June 26, 2020, as reported by the Higher Institute of Health, "Epicentro", the national center for epidemiology for public health, there were 33,532 deaths which were positive to SARS-CoV-2 infection. (Epicentro, ISS, 2020). In Italy many health workers have been infected and sick and unfortunately among them there have also been many deaths, 172 only among doctors, until April 2020 (FNOMCeO 2020).

### Objectives

The purpose of our study is to provide a snapshot of the emotional impact related to anxiety and work stress in health professionals in Italy engaged in the treatment, prevention and containment of the COVID-19 pandemic and contribute to the validation of the SAVE 9 rating scale.

## METHODS

### Operating Modes and questionnaire

The SAVE-9 (Stress and Anxiety to Viral Epidemics - 9 items) scale has been developed as a tool for assessing work anxiety and stress in response to the viral epidemic of health professionals working to prevent the spread of the virus and to treat infected people.

The questionnaire, devised by a group of South Korean researchers, Department of Psychiatry, University of Ulsan College of Medicine, Asan Medical Center, Seoul (South Korea), has been translated from Korean to English and 11 other languages: Chinese, French, German, Italian, Japanese, Persian, Russian, Spanish, Thai, Turkish, Traditional Chinese and is an integral part of a future international multicentric study, to evaluate its effectiveness, validation and the level of emotional involvement of the medical staff involved in the management of the Covid 19 pandemic. The test was approved by the South Korean Ethics Committee.

The internal consistency of SAVE-9 was measured through the Cronbach alpha, and analysis of the main components with varimax rotation was used to determine the structure of its components. It was also compared with the Generalized Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire-9 scales. The most appropriate breakpoint was determined by conducting an analysis of the receiver's operational characteristics. The nine-item scale had a satisfactory internal consistency (Cronbach's 0.795). It adopted a two-factor structure: (1) anxiety for viral epidemics and (2) work-related stress associated with viral epidemics (Bartlett's spherical test,  $p < 0.001$ ; Kaiser-Meyer-Olkin is 0.85). Correlations between SAVE-9 and other scales were statistically significant. The breakpoints of SAVE-9 and its anxiety subcategory were 22 and 15, respectively, compared to a GAD-7 score of 5. The results suggest that SAVE-9 is a useful, reliable and valid tool for assessing stress and anxiety responses in healthcare professionals during viral outbreaks (Seockhoon Chung et al. 2020).

The test is anonymous, simple, with closed answers, self-administered and spread on the Web on various social networks at the web site [www.save-viralepidemic.net](http://www.save-viralepidemic.net). The 9 questions, which are indicative of the assessment of anxiety and work stress, were integrated with other socio-demographic questions. Respondents rated their agreement on each question with a five-point Likert scale ranging from 0 (never) to 4 (always).

The respondent may not have answered all the questions and in that case, if there had been a prevalence of no answers, the test was not considered in the general statistical assessment. In contrast, with the exception of the gender question, where the possibility of not answering was present in the answer, the specific responses to the items were also considered.

In Italy the evaluation period was from 27 May to 26 June 2020, during the Covid 19 emergency. The authors

of the study, associated with the Psychiatric Studies Centre (Cen.Stu.Psi.) and EDA Italia Onlus (Italian Association on Depression) worked to spread the test online and process the data. All the authors participated and shared this research.

## RESULTS

### The participants - Socio-demographic characteristics

There were 836 people who participated in the survey. Only 800 operators of the total who answered the questionnaire questions were considered for general statistical analyses, the remaining 36 were assessed only for the individual answers provided; 816 people responded: 612 women (75% of the sample), 213 men (26.10%), 1 person chose not to answer (0.12%). All respondents (no. 814) agreed that their answers could be used to improve the SAVE-9 scale for a scientific purpose; 100% of people (817) confirmed that they did the test for the first time.

816 persons answered to the question "How old are you":

From 18 to 29 years old	63 (7.72 %)
From 30 to 39 years old	182 (22.30 %)
From 40 to 49 years old	220 (26.96 %)
From 50 to 59 years old	239 (29.28 %)
Over 60 years old	104 (12.74 %)

800 persons answered to the question "Are you a Healthcare Worker?":

Yes, I'm a doctor	280 (35.00%)
Yes, I'm a nurse	222 (27.75%)
Yes, I'm a psychologist	112 (14.00%)
Yes, I'm a pharmacist	11 (1.37%)
Other Healthcare Worker	175 (21.87%)

811 persons answered to the question "Did you take care of patients infected with the Coronavirus?": Yes 59.3%, No 40.7%

812 persons answered to the question "Did you experience having been infected by the coronavirus and to have been in lockdown?": 78% answered "No" and 10.7% Yes, and 9.6% answered "Yes" for a relative or friend/colleague close to them.

The following figure (In what healthcare position do you work?) describes (790 answers) the percentage of the hospital healthcare workers (blue colour: 44.5%), private practice (red: 23.8%), university hospital (orange), long-term care (green: 7.2%), etc (Figure 1).

All Italian regions have been represented in this survey: North Italy 276 persons (103 Lombardia, 73 Veneto, 62 Trentino-Alto Adige, 20 Piemonte, 12 Emilia-Romagna, 5 Liguria e 1 Friuli-Venezia Giulia). Centrum Italy 153 persons (59 Lazio, 53 Toscana, 24 Umbria, 17 Marche). South Italy 358 (163 Puglia, 79 Campania, 61 Abruzzo, 11 Basilicata, 8 Calabria, 2 Molise, 25 Sardegna, 9 Sicilia).

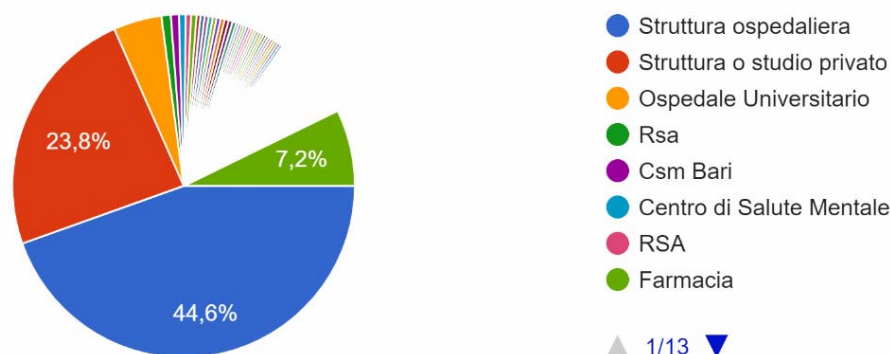
**Table 1.** Summarising table (with the main percentage per item marked in *italics*)

Items	Stress and Anxiety to Viral Epidemic - 9 items (SAVE-9) for Healthcare workers in Italy				
	Never Mai	Rarely Raramente	Sometimes Ogni tanto	Often Spesso	Always Sempre
	0	1	2	3	4
Stress e Ansia durante l'Epidemia Virale - 9 items (SAVE-9) per gli Operatori Sanitari in Italia (n° 816 answers)	10.1%	22.9%	38.9%	23.6%	4.2%
1. Are you afraid the virus outbreak will continue indefinitely? Temi che presenza del virus possa proseguire in modo indefinito?	8.0%	35.5%	40.6%	13.0%	2.9%
2. Are you afraid your health will worsen because of the virus? Temi che la tua salute possa peggiorare a causa del virus?	6.1%	27.5%	38.8%	20.6%	6.5%
3. Are you worried that you might get infected? Sei preoccupato che tu possa essere infettato?	20.7%	30.6%	25.4%	19.5%	3.5%
4. Are you more sensitive towards minor physical symptoms than usual? Sei più sensibile del solito verso sintomi fisici minori?	34.1%	26.1%	26.0%	10.2%	3.4%
5. Are you worried that others might avoid you even after the infection risk has been minimized? Sei preoccupato che gli altri possano evitarti anche dopo che il rischio di infezione sia stato ridotto al minimo?	38%	20.1%	23.6%	14.7%	3.5%
6. Do you feel skeptical about your job after going through this experience? Ti senti scettico sul tuo lavoro dopo aver vissuto questa esperienza?	64.1%	18.6%	9.9%	5.5%	1.3%
7. After this experience, do you think you will avoid treating patients with viral illnesses? Dopo questa esperienza, pensi di evitare di trattare pazienti con malattie virali?	4.4%	13.7%	26.8%	29.9%	24.6%
8. Do you worry your family or friends may become infected because of you? Ti preoccupi che la tua famiglia o i tuoi amici possano infettarsi a causa tua?	35.2%	20.2%	18.0%	17.9%	8.6%
9. Do you think that your colleagues would have more work to do due to your absence from a possible quarantine and might blame you? Pensi che i tuoi colleghi avrebbero più lavoro da fare a causa di una tua eventuale assenza da una possibile quarantena e che potrebbero criticarti?					

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 www.SAVE-viralepidemic.net / MAY-14-2020

## In quale ambito sanitario lavori?

790 risposte



**Figure 1.** In what healthcare position do you work?

## CONSIDERATIONS

Of the 800 respondents, equally distributed in Italy, 75% of the sample are female, with a predominantly 50-59 age group (29.28%). All those who responded to the assessment scale are health professionals, with a prevalence of the professional figure of the doctor (no. 280, 35%) and a good representation of nurses (no. 222, 27.75%). They work mainly in hospitals, with a percentage of 44.6% and 23.8% in the private sector; 59.3% of them treated patients who contracted coronavirus; 78% of respondents questioned whether they had contracted the infection or had been quarantined, answered “No”, only 10.7% “Yes” and 9.6% “a family member or friend”.

The results of the SAVE-9 scale were divided into two assessment factors: the “factor I” (items 1-2-3-4-5-8) and stress factors (“factor II”: items 6-7-9). Valuing the final percentages emerged from the “factor I” it is clear that among health professionals there is a significant component of anxiety for their own and their families health.

Instead, valuing the assessment of responses to related work stress (“factor II”), we can say that the health staff despite having been subjected to intense shifts of work and psychophysical stress are confident in the work done and available in continuing their worthy and heroic work to help patients cope with the health emergency, treating them with professionalism and dedication.

## CONCLUSIONS

We can conclude that in Italy, hardly hit by the Covid-19, the operators interviewed were emotionally tested by the pandemic and despite the intense psychophysical stress to which they were subjected they are confident in their work and ready to continue their professional intervention.

The assessment scale for anxiety and stress in healthcare professionals (SAVE-9) showed the following strengths, which are the simplicity and clarity of the questions, concentrated in only 9 questions, as well as positively highlighting the salient aspects of anxiety and related work stress, expressed by health professionals during the Covid-19 pandemic. Therefore it is believed that the SAVE-9 scale is a simple and valid tool for the search for anxious mental distress and stress in health professionals.

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**Conflict of interest:** None to declare.

### Contribution of individual authors:

Giuseppe Tavormina involved all the Italian co-authors described at the top: everybody contributed to diffuse this survey between dozens of professionals in their city.

Maurilio Giuseppe Maria Tavormina structured the draft of the paper after the closing of the online test and Giuseppe Tavormina reviewed and defined it as its final version.

Seockhoon Chung & Yong-Wook Shin projected the rating scale “SAVE-9” and involved Giuseppe Tavormina to translate the rating scale into Italian and apply it along the Italian Healthcare Professionals.

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