

## A Comparison of Hospital Worker Anxiety in COVID-19 Treating and Non-Treating Hospitals in the Same City during the COVID-19 Pandemic

Milgrom Y<sup>1\*</sup>, Tal Y<sup>2</sup> and Finestone A<sup>3</sup>

<sup>1</sup>The Liver Unit, Internal Medicine, Hadassah University Hospital, Jerusalem, Ein Kerem, Israel

<sup>2</sup>Occupational Health Unit, Internal Medicine, Hadassah University Hospital, Jerusalem, Israel

<sup>3</sup>Department of Orthopaedics, Shamir Medical Center, Zerifin and Faculty of Medicine, Tel Aviv University, Israel

### Abstract

**Objective:** The purpose of this study was to assess the effect on hospital worker anxiety resulting from an administrative decision of a medical organization during the COVID-19 pandemic to operate one of its two hospitals in same city as a COVID-19 treatment hospital (CTH), suspending all elective procedures and to have the second function as a non COVID-19 treating hospital (NCTH) offering general medical services.

**Method:** During the COVID-19 pandemic in Israel, while the country was under lock-down, an electronic questionnaire was sent to the CTH and to the NCTH, both part of the same medical organization in Jerusalem. The questionnaire surveys personal demographics and attitudes about COVID-19 and assesses present anxiety state using the 20-question portion of the State-Trait Anxiety Inventory for Adults (STAI-S) validated questionnaire. A STAI-S score of  $\geq 45$  was considered to represent clinical anxiety.

**Results:** Questionnaires were received from 1,570 (21%) of the hospital staffs. Among the responders, 35% of CTH workers and 29% of NCTH workers had STAI-S scores  $\geq 45$  ( $p = 0.04$ ). Multivariable regression analysis showed that being a resident doctor (odds ratio [OR] 2.13; 95% CL, 1.41-3.23;  $P = 0.0003$ ), age  $\leq 50$  (OR, 2.08; 95% CL, 1.62-2.67;  $P < 0.0001$ ), being a nurse (OR, 1.29; 95% CL, 1.01-1.64;  $P = 0.399$ ), female gender (OR, 1.63; 95% CL, 1.25-2.13;  $P = 0.0003$ ) and having risk factors for COVID-19 (OR, 1.51; 95% CL, 1.19-1.91;  $P = 0.0007$ ) were associated with the presence of clinical anxiety. Forty-three percent of the workers indicated that having good protective gear relieved their stress and 50% that concern with infecting their families increased their stress.

**Conclusions:** The creation of a CTH and a NCTH during the COVID-19 pandemic did not result in a difference between the clinical anxiety levels of the hospital workers of the two hospitals.

**Keywords:** Anxiety; COVID-19 pandemic; Questionnaire; Risk factors; Lock-down

### Introduction

The World Health Organization (WHO) declared the COVID-19 virus to be a public health emergency on January 20, 2020. Soon afterward, on March 11, the WHO re-classified the problem as a pandemic.

The WHO published an interim guidance on March 4, 2020 entitled "Health workers exposure risk assessment and management in the context of COVID-19 virus" [1]. A subsequent WHO interim guidance from March 19, 2020 [2] emphasized that the COVID-19 pandemic inevitably places health care workers at risk.

In view of the challenges of treating patients possibly infected with COVID-19 as well as those documented with the disease, exposed health care workers can be psychologically stressed [3-9]. A study from China reported depression in 50% and anxiety in 45% of nurses and physicians in the epicenter of the pandemic, the city of Wuhan, versus 7.2% in less affected regions of China [9].

COVID-19 is the second pandemic of the 21<sup>st</sup> century. The first was the influenza A/H1N1 virus infection, also known as swine flu in 2009. Hospital staff worries during that previous pandemic have been reported [10]. The most frequent concern of staff was infection of family and friends and the health consequences of the disease. Anxiety of the staff was found to be moderately high. During the SARS outbreak in 2003 in Toronto 43% of the infected people were health care workers [11,12]. Protective gear was required for health care workers and socialization in the hospital was restricted. The present COVID-19 pandemic is different in its epidemiology and in the fact that widespread population lock-downs were used in an attempt to control the pandemic.

During the COVID-19 pandemic in Israel a medical organization made an administrative decision to operate one of its hospitals in the same city as a COVID-19 treating hospital (CTH) and the other to be a non-COVID-19 treating hospital (NCTH). The NCTH continued to offer general medical services, doing elective procedures and surgery. The purpose of the present study was to compare the effect of this administrative decision on the level of worker clinical anxiety between the two hospitals. The authors hypothesized that CTH workers would have a higher percentage of clinical anxiety than NCTH workers. The anxiety levels and opinions among the staff from two hospitals were assessed using a validated anxiety questionnaire [13], coupled with a questionnaire relating specifically to the COVID-19 pandemic.

### Materials and Methods

The Hadassah Medical Organization has two hospitals in Jerusalem. One hospital is located in the western part of the city and is an 800-bed level-3 hospital. The second hospital is located in the eastern part of the city and is a 300-bed level-2 hospital. The Hadassah Medical Organization decided during the height of the COVID-19 pandemic

**\*Corresponding author:** Dr. Milgrom Y, The Liver Unit, Hadassah University Hospital, Ein Kerem, Jerusalem, 911200, Israel. Tel: + 972-505172513; E-mail: [yaelmil@hadassah.org.il](mailto:yaelmil@hadassah.org.il)

Received June 12, 2020; Accepted July 22, 2020; Published July 29, 2020

**Citation:** Milgrom Y, Tal Y, Finestone A (2020) A Comparison of Hospital Worker Anxiety in COVID-19 Treating and Non-Treating Hospitals in the Same City during the COVID-19 Pandemic. *Occup Med Health Aff* 8: 310.

**Copyright:** © 2020 Milgrom Y, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

that the level-3 hospital would suspend all elective procedures and operations and function as a COVID-19 treating hospital (CTH) Services included dedicated COVID-19 wards for mild, moderate and severe patients, a COVID-19 emergency room and COVID-19 intensive care units. The level-2 hospital was kept functioning as a non COVID-19 hospital (NCTH), providing general medical services and continued to perform elective procedures and operations. While it had a separate emergency room for screening any patient suspected of having COVID-19, all patients diagnosed with COVID-19 were transferred to the CTH.

The study received institutional review board approval (0281-20-HMO). Just prior to the study, a pilot was done to check that the electronic questionnaire was clear and that the automatic recording system worked properly. After necessary adjustments were made, a link to the electronic questionnaire was sent by hospital internal email and also to the mobile phones of each of the CTH and NCTH workers between April 27-30. Responses were accepted only until noon on May 1. Replies received afterwards were not included in the analysis because government plans to end some of the provisions of the COVID-19 lock-down were announced at that time. Responses from workers who worked in both hospitals were excluded from analysis. The questionnaire is anonymous and the details were automatically sent to an Excel spreadsheet (Microsoft Corp. Redmond, WA.) using Google Forms (Google Mountain View, CA).

The questionnaire has two parts. The first part is a survey of personal demographics and a questionnaire about specific issues related to COVID-19. The survey is presented in (Table 1).

The second part of the questionnaire is a validated Hebrew translation of the 20-question portion of the State-Trait Anxiety Inventory for Adults (STAI-S) assessing anxiety state [13]. The S-Anxiety scale requires that the participant describe how he or she feels "now, at the present moment". The scoring weight for the 10 anxiety present questions is: 1- Absolutely not; 2- A little; 3- Much; 4- Very Much. The scoring weight for the 10 anxiety absent questions is reversed. The total score varies from 20 to 80, and the higher the values,

the greater the anxiety level. The questions composing the STAI-S are presented in a supplementary file. A score of  $\geq 45$  was considered to represent clinical anxiety [14].

### Statistical analysis

Statistical analysis was performed using the Statistical Analysis System (SAS Institute Inc., Cary, North Carolina, USA, version 9.4). Normally distributed interval data were compared across the groups, using the 2-tail Student's t-test. Comparison of non parametric data was done using the Mann-Whitney U test. Nominal data were assessed with the chi-square test and Fischer's exact test. Multivariable analysis based on STAI-S was performed using generalized linear models. All of the variables measured by univariable analysis, whose  $p < 0.05$  were entered into the generalized linear model. Multivariable logistic regression was performed based on those with clinical anxiety (STAI-S scores  $\geq 45$ ) and the association between risk factors and outcomes presented as odds ratios (ORs) and 95% CIs after adjustment for confounders. Hospital, resident doctor, senior doctor, nurse, administrative staff, age  $\geq 50$ , gender, presence of risk factors for COVID-19 and parents in the household were entered into the model. Data for employees who worked at both centers was excluded for any analysis that compared the CTH with the NCTH.

### Results

Questionnaires were received from 1,570 workers (21%). The mean total STAI-S score for all of the workers was  $42.4 \pm 11.8$ . 33.5% of the workers had STAT-S scores  $\geq 45$  indicating the presence of clinical anxiety. (Table 2) presents the mean  $\pm$ SD, median and interquartile range (IQR) and the percentage of those with STAI-S scores  $\geq 45$  according to worker categories. The highest anxiety scores were among dentists and resident doctors and the lowest among senior doctors. There was no statistically difference found between the mean STAI-S scores of any of the individual worker categories between the two hospitals, but overall workers at the CTH had a higher mean score ( $43 \pm 11.7$ ) than workers at the NCTH ( $40.8 \pm 11.8$ ), [ $p = 0.005$ ]. There also

1	Gender	Male / Female / Other
2	Age	-
3	Who lives in your household?	Spouse / Parents / Children / Siblings / Flat mate / Alone / Other
4	In which hospital do you work?	Ein Kerem / Mount Scopus / Other
5	What is your position in the hospital?	Senior doctor / Resident / Nursing staff / Intern / Lab worker / Clerical staff / General services / Technician / Physical or Occupational therapist / Dietician / National service volunteer / Nurse aid / Volunteer / Social worker or Psychologist / Other
6	In what department do you work?	-
7	Are you on a COVID-19 Department team?	Yes / No / Other
8	Are you currently working?	Working in the hospital / COVID-19 home isolation / at home for other reason (Maternity leave, other illness, on work leave without pay ect.)
9	The following are risk factors for COVID-19. Do you suffer from any of them?	Diabetes / Obesity / Hypertension / Chronic heart disease / Chronic lung disease / Smoker
10	Have you been in isolation because of the COVID-19?	Yes / No
11	Have you have been tested for COVID-19?	Yes / No
12	What were the COVID-19 test result?	Positive /Negative / Results not received
13	Did you feel relieved after getting tested?	Yes / Maybe / No
14	Of all of the following, which is of the most concern?	Getting COVID-19 / Infecting family / Giving corona to patients / My children are at home when I am in hospital / Financial problems / Professional burnout / Other
15	Of the following, which would make the corona epidemic easier for you?	Better protective gear / educational solution for my children / psychological support / group support / financial help / other
16	What percentage do you estimate that you already have gotten the corona virus?	-

Table 1: The personal demographics questionnaire.

was no statistical difference found for those with STAI-S scores  $\geq 45$  when analyzed according to individual work categories between the two hospitals, but overall, 35% of CTH workers and 29% of NCTH workers had STAI-S scores  $\geq 45$  ( $p = 0.04$ ).

The mean and  $\geq 45$  State-Trait Anxiety Inventory (STAI-S) scores of the hospital workers were further analyzed using invariable analysis according to the demographic data collected from the questionnaire. (Table 3) presents these analyses according to major demographic groupings.

32.6% of the workers had risk factors for COVID-19. Nine of the 1,082 hospital workers who reported that they had taken a COVID-19 test stated that the test was positive. Administrative hospital data compiled at the time of the study showed that 38 workers had positive COVID-19 tests, 28 from the CTH and 10 from the NCTH. Workers at the CTH estimated that the likelihood of their already being infected with COVID-19 to be  $21.5 \pm 24.7\%$ . This was significantly higher than the  $15.3 \pm 19.5\%$  estimation of the NCTH workers ( $p = 0.0001$ ). 43%

(474/1,093) of the CTH workers and 46.5% (138/297) of NCTH hospital workers responded that the most important stress reliever was better protective gear ( $p = 0.3$ ). 17% (190/1093) of the CTH workers and 18% (54/297) of the NCTH workers responded that the most important stress reliever was a permanent arrangement for their children ( $p = 0.7$ ). 50% (545/1099) of the CTH workers and 51% (168/330) of the NCTH workers responded that the most important cause of their stress was a fear of infecting their families ( $p = 0.7$ ).

By multivariable analysis higher STAI-S scores were found to be associated with CTH hospital ( $p = 0.005$ ), female gender ( $p = 0.001$ ), age  $\leq 50$  ( $p = 0.001$ ), those with risk factors for COVID-19 ( $p = 0.001$ ), being a resident doctor ( $p = 0.001$ ) and being a nurse ( $p = 0.0005$ ). (Table 4): Variables found to be associated with increased anxiety as per STAI-S score by multivariable analysis

Multivariable regression analysis was performed to identify risk factors for clinical anxiety as defined by STAI-S scores  $\geq 45$ . (Table

Worker Category	No.	Mean $\pm$ SD	Median (IQR)	% STAI-S $\geq 45$
Dentists	13	47.9 $\pm$ 12.9	49 (36-52)	53.80%
Resident doctors	117	46.3 $\pm$ 12.2	47 (37-56)	48.70%
Nurses	487	44.2 $\pm$ 11.9	43 (35.5-53)	37.90%
Research staff	58	43.3 $\pm$ 11.9	45 (35-52)	37.90%
Office staff	234	42.4 $\pm$ 11.7	42 (33.5-52)	33.60%
Lab workers	93	42.4 $\pm$ 10.6	43 (34-50)	29.00%
Social workers/ psychologists	42	42.2 $\pm$ 9.7	41 (35-50)	28.50%
Others	54	42.0 $\pm$ 11.9	41 (35-50)	38.90%
Technicians	75	40.9 $\pm$ 11.3	40 (33-48)	25.30%
Non-physician clinicians	75	40.6 $\pm$ 11.0	39 (33.5-46.5)	28.00%
General service	62	40.2 $\pm$ 11.0	39 (33-49)	27.40%
Pharmacists	12	38.9 $\pm$ 7.2	41 (37-44)	8.30%
Interns	18	38.4 $\pm$ 12.0	43 (27-47)	27.70%
Physician Assist.	10	37.5 $\pm$ 12.0	37 (27-46)	30.00%
Senior doctors	220	38.0 $\pm$ 11.8	36 (28-46)	23.60%
All staff	1570	42.4 $\pm$ 11.8	42 (34-51)	33.30%

Table 2: State-Trait Anxiety Inventory ( STAI-S) scores according to major worker categories.

Group	No.	Median STAI-S (IQR)	P value	% STAI-S $\geq 45$	P value
CTH	1213	42 (34-52)	0.005	34.80%	0.04
NCTH	340	40 (31-49)		28.80%	
Males	442	38 (30-48)	0.0001	26.90%	0.0008
Females	1125	43 (35-52)		35.80%	
Medical risk factors	512	43 (34-50)	0.03	36.70%	0.006
No medical risk factors	1052	41 (33-50)		29.90%	
Tested for COVID-19	1082	42 (34-51)	0.13	34.60%	0.1
Not tested	480	41 (33-50)		30.60%	
Quarantined	201	42 (34-53)	0.55	32.30%	0.7
Not quarantined	1360	42 (34-51)		33.50%	
Age >50	485	37.5 (29-47)	0.0001	23.20%	0.0001
Age <50	1064	43 (35-53)		38.60%	
Senior doctors	220	36 (28-48)	0.0001	23.60%	0.0001
Resident doctors	120	46.5 (36-56)		48.30%	
Nurses	466	43 (35-53)	0.0002	38.00%	0.0007
Non-nurses	1088	41 (33-50)		29.50%	
Have children	929	42 (33-51)	0.3	33.10%	0.3
No children	708	43 (34-52)		30.70%	
Parent in household	162	45 (37-52)	0.02	42.00%	0.004
No parent in household	1475	42 (33-51)		30.90%	

Table 3: Mean and  $\geq 45$  STAI-S scores of workers according to major demographic variables.

Variable	Odds Ratio (95% CI)	P value
Resident doctor	2.13 (1.41-3.23)	0.0003
Age ≤ 50 years	2.08 (1.62-2.67)	<.0001
Nurse	1.29 (1.01-1.64)	0.0399
Female	1.63 (1.25-2.13)	0.0003
Having risk factors for COVID-19	1.51 (1.19-1.91)	0.0007

**Table 4:** Risk factors for hospital staff with STAI-S scores ≥45 indicating clinical anxiety identified by multivariable regression analysis.

S No.	Behaviour	Not at all	Somewhat	Moderately so	Very much so
1	I feel calm	1	2	3	4
2	I feel Insecure	1	2	3	4
3	I am Tensed	1	2	3	4
4	I feel strained	1	2	3	4
5	I feel at ease	1	2	3	4
6	I feel upset	1	2	3	4
7	I am presently working over some Possible misfortunes	1	2	3	4
8	I feel satisfied	1	2	3	4
9	I feel frightened	1	2	3	4
10	I feel comfortable	1	2	3	4
11	I feel self confident	1	2	3	4
12	I feel nervous	1	2	3	4
13	I feel Jittery	1	2	3	4
14	I feel indecisive	1	2	3	4
15	I am relaxed	1	2	3	4
16	I feel content	1	2	3	4
17	I feel worried	1	2	3	4
18	I feel confused	1	2	3	4
19	I feel steady	1	2	3	4
20	I feel continuous	1	2	3	4

**Table 5:** State-Trait Anxiety Inventory for Adults assessing state anxiety (STAI-S)

**Directions:** A number of statements which people have used to describe themselves are given below. Read each statement and then write the number in the blank at the end of statement that indicates how you feel right now, that is at this moment. There is no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

4) presents the risk factors and odds ratios of variables found to be significant by the multivariable regression analysis. Working in the COVID-19 treating hospital was not found to be a significant factor by this analysis (Table 5).

## Discussion

The hypothesis that a higher percentage of CTH workers would have clinical anxiety than NCTH workers was found not to be true in this study. While the mean STAI-S scores of the CTH workers were higher than that of the NCTH workers, this difference was not found to be significant when multivariable analysis was performed for those with clinical anxiety (STAI-S scores ≥45) [14]. When specific categories of workers were analyzed for the effect of working in the two hospitals on their mean anxiety and the percentage with clinical anxiety, no differences were found. This was also true for resident doctors and nurses who in the CTH were on the frontline of COVID-19 treatment. Determining why the hypothesis was not found to be true is beyond the scope of the study design.

There are no published specific normative STAI-S values for hospital staff. Values are available for college students (36.47±10.01 for males and 38.77±11.90 for females) [13]. [15] Consider a score above 39-40 to be suggestive of the presence of clinically significant symptoms of anxiety. [14], in their study of cardiac patients considered the cut-off value to represent clinical anxiety to be ≥ 45. When tested against other known measures for clinical anxiety they found that the STAI-S

had a sensitivity of 89% and a specificity of 56%. [14] Criteria were used in this study. [9], reported on the mental health outcomes among nurses and physicians exposed to COVID-19 in the hospitals of Wuhan China during the pandemic. The nurses and physicians in Wuhan, who were part of the [9] study, were in an environment similar to that of the hospital workers in the current study in that both were working in an environment of a COVID-19 pandemic lock-down. In their study, they found by multivariable analysis that frontline health care workers engaged in direct diagnosis, treatment and care of patients with COVID-19 had a higher risk for symptoms of anxiety, insomnia and distress. In the current study using multivariable analysis, there was no significant difference found in the percentage of workers with clinical anxiety in the CTH, which was frontline and workers in the NCTH which was not frontline. Among those on the frontlines [9], 50.4% suffered from depression, 44.6% from anxiety and 71.5 from insomnia. Similar levels of those with clinical anxiety were found in this study, with 49% of resident doctors and nurses having clinical anxiety. That the senior doctors in this study were on the opposite end of the clinical anxiety spectrum with 24% effected, may reflect their experience in confronting crises medical crises and/or less involvement in direct patient care. This study differs from the Chinese study [9] in that it was done in a country with a different governmental system and where the COVID-19 pandemic was controlled early on. At the time when this study was performed, less than 200 people had died and 16,000 had been diagnosed in a country with a population of 9.1 million.



The study of [10] of psychological distress in a single Greek hospital during the swine flu pandemic took place in a social system closer to the present study than in the study [9]. They found that the degree of anxiety and perceived risk of infection were both moderately high among health care workers. Two years after the SARS outbreak in Toronto, [16] reported that health care workers who treated SARS patients had elevated rates of signs of chronic stress than workers who did not treat SARS patients.

## Conclusion

This study identified hospital workers at risk for clinical anxiety in the COVID-19 pandemic. By multivariable analysis being a medical resident, age  $\leq 50$  years, being a nurse, female gender and workers with risk factors for COVID-19 were all found to be risk factors and odds ratios were calculated for each. This information is important because it can help focus administrative support to high risk groups among hospital workers during future waves of COVID-19 or other future pandemics.

While 69% of the hospital workers in this study had been tested for COVID-19, only nine tested positive for COVID-19. The low rate of infection (6.7/1000 workers) based on the data from the questionnaire is similar to the rate (5.4/1000 workers) calculated from the data compiled by medical organization administration. It reflects the fact that the lesson of having good protective gear available for the hospital staff was learned from the counties effected earlier in the pandemic [17]. Forty-four percent of the workers in this study indicated that having good protective gear relieved their stress.

The workers in the CTH estimated that they had a 21% chance of having already contracted COVID-19 as opposed to the 15% estimate of NCTH workers ( $p = 0.0001$ ). This is in spite of the high number of workers who had polymerase chain reaction tests. It reflects the knowledge of the hospital workers that having a single negative polymerase chain COVID-19 test does not mean conclusively that a person does not, or did not have COVID-19.

A weakness of this study is the relatively low percentage of responders to the questionnaire. This can result in study bias and possibly over estimate anxiety. It should be remembered that many of the hospital workers contacted were working long shifts and opening an electronic message and responding to a questionnaire may not have been a priority for them. They were also receiving many other electronic messages from the hospital administration at this time. Given these limitations, we believe that the study offers a snapshot assessment of the anxiety and attitudes of hospital workers during the population lock-down stage of the COVID-19 pandemic. It is the largest study cohort to date measuring hospital worker anxiety during the COVID-19 pandemic. It is the only study that compares hospital worker anxiety in COVID-19 treating and non-treating hospitals within the same medical system in the same city. It also surveys the entire hospital staff and not just nurses and doctors.

The current study was done in a COVID-19 pandemic environment, with a population lock-down present. The study hypothesis that CTH workers would have a higher percentage of clinical anxiety than NCTH workers was not found to be true. While not having the hypothesized effect, the administrative designation and operation of a hospital as a non-COVID-treating center allowed it to provide full and needed medical services. The greatest hospital worker concerns found in this study were having good protective gear and not infecting their family. In spite of having an ample supply of good protective gear and being

in a country with early and effective national management of the COVID-19 pandemic, one third of the workers in both hospitals had clinical anxiety. The risk factors for hospital worker clinical anxiety during the COVID-19 pandemic identified in this study can be used to help focus supportive efforts in the current and in future waves of the pandemic.

## Acknowledgments

The authors are grateful to Victor Novak of the Clinical Research Center, Soroka University Medical Center and to Avital Savir of the Occupational Health Unit, Hadassah University Hospital for her professional assistance.

## References

1. World Health Organization. (2020): Health workers exposure risk assessment and management in the context of COVID-19 virus: interim guidance, 4 March 2020. World Health Organization.
2. World Health Organization. (2020): Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health: interim guidance, 19 March 2020. World Health Organization.
3. Xiang YT, Jin Y, Wang Y, Zhang Q, Zhang L, et al. (2020) Tribute to health workers in China: A group of respectable population during the outbreak of the COVID-19. *Int J Biol Sci* 16: 1739-1740.
4. Shanafelt T, Ripp J, Trockel M (2020) Understanding and Addressing Sources of Anxiety Among Health Care Professionals During the COVID-19 Pandemic *JAMA* 323: 2133.
5. Silva GCL (2019) When health professionals look death in the eye: The mental health of professionals who deal daily with the 2019 coronavirus outbreak *Psychiatry Res* 288: 112972.
6. Neto MLR, Almeida HG, Esmeraldo JD, Nobre CB, Pinheiro WR, et al. (2020) When health professionals look death in the eye: the mental health of professionals who deal daily with the 2019 coronavirus outbreak. *Psychiatry Res* 288: 112972.
7. El-Hage W, Hingray C, Lemogne C, Yrondi A, Brunault P, et al. (2020) Health professionals facing the coronavirus disease 2019 (COVID-19) pandemic: What are the mental health risks? *Encephale* Apr 22.
8. Bohlken J, Schömig F, Lemke MR, Pumberger M, Riedel-Heller SG, et al. (2020) COVID-19 Pandemic: Stress Experience of Healthcare Workers - A Short Current Review]. *Psychiatr Prax* 47: 190-197.
9. Lai J, Ma S, Wang Y, Cai Z, Hu J, et al. (2020) Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease. *JAMA Netw Open* 2: 3: e203976.
10. Goulia P, Mantas C, Dimitroula D, Mantis D, Hyphantis, et al. (2010) General hospital staff worries, perceived sufficiency of information and associated psychological distress during the A/H1N1 influenza pandemic. *BMC* 9: 322.
11. Maunder RG, Lancee WJ, Rourke S, Hunter JJ, Goldbloom D, et al. (2004) Factors associated with the psychological impact of severe acute respiratory syndrome on nurses and other hospital workers in Toronto. *Psychosomatic Medicine* 66: 938-942.
12. Styra R, Hawryluck L, Robinson S, Kasapinovic S, Fones C, et al. (2008) Impact on health care workers employed in high-risk areas during the Toronto SARS outbreak. *Journal of Psychosomatic Research* 64: 177-183.
13. Spielberger CD, Gorsuch RL, Lushene R, Vagg PR, Jacobs GA. (1983) *Manual for the State-Trait Anxiety Inventory*. Consulting Psychologists Press 14.
14. Bunevicius A, Staniute M, Brozaitiene J, Pop VJ, Neverauskas J, et al. (2013) Screening for anxiety disorders in patients with coronary artery disease. *Health Qual Life Outcomes*. 11: 37.
15. Knight RG, Waal-Manning HJ, Spears GF (1983) Some norms and reliability data for the State-Trait Anxiety Inventory and the Zung Self-Rating Depression scale. *Br J Clin Psychol* 22: 245-249.
16. Maunder RG, Leszcz M, Savage D, Adam MA, Peladeau N, et al. (2008) Applying the lessons of SARS to pandemic influenza: an evidence-based approach to mitigating the stress experienced by healthcare workers. *Can J Public Health* 99: 486-488.
17. Mahase E (2020) Covid-19: hoarding and misuse of protective gear is jeopardising the response, WHO warns. *BMJ* 368: m869.