Coronavirus disease 2019 crisis in Paris: A differential psychological impact between regular intensive care unit staff members and reinforcement workers

Victor Altmayer, Nicolas Weiss, Albert Cao, Clémence Marois, Sophie Demeret, Benjamin Rohaut, Loïc Le Guennec

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Victor Altmayer, M.D., Nicolas Weiss, M.D.,Ph.D., Albert Cao, M.D., Clémence Marois M.D., Sophie Demeret M.D., Benjamin Rohaut M.D.,Ph.D. and Loïc Le Guennec M.D.,Ph.D.

On behalf of the Réa-Neuro-Pitié-Salpêtriere study group**

Sorbonne Université Paris, France

Corresponding author's contact information:
Loïc Le Guennec, M.D, Ph.D. AP-HP. Sorbonne Université, La Pitié-Salpêtrière hospital, Neurology department, Neurological Intensive Care Unit, Paris, France, 47, boulevard de l'Hôpital 75013 Paris, France Phone: +33.1.84.82.79.18 Fax: +33.1.42.16.19.89
e-mail: loic.leguennec@aphp.fr

Declarations of interest: none.
Funding : none

Author statement

V.A., N.W., A.C., C.M., S.D., B.R. and L.L.G. were responsible for the study conception and design; performed the data analysis; were responsible for drafting of the manuscript; and made critical revisions to the manuscript for important intellectual content. V.A. organised the data collection.

Keywords: Public health ; Nurse ; Post-traumatic stress disorder; Depression; COVID-19

****Footnote:**

Full author list of the Study group "Réa-Neuro-Pitié-Salpêtriere":
Victor Altmayer, M.D., Nicolas Weiss, M.D.,Ph.D., Albert Cao, M.D., Gwendoline Goudard, R.N., Mélanie Mignon, R.N., Louise Gilis-Richard, R.N., Sophie Aix, R.N, Agnès Flament, R.N.,

Julie Bourmaleau R.N., Eléonore Cadet, B.S., Clémence Marois M.D., Sophie Demeret M.D., Benjamin Rohaut M.D.,Ph.D. and Loïc Le Guennec M.D.,Ph.D.

Abstract

Background:

Intensive care unit (ICU) healthcare workers (HCWs) are at the forefront of the COVID-19 pandemic. To overcome the lack of human resources during this crisis, some ICUs had to mobilize staff from a reinforcement pool, with no or outdated ICU experience. This study aimed to investigate and to compare the psychological impact of the pandemic on ICU regular staff and reinforcement.

Material and methods:

Self-assessment questionnaire were completed by HCWs who worked from March the 1st to April the 30th 2020 in our 16 bed Neurological-ICU at La Pitié-Salpêtrière Hospital in Paris, France, which was converted to a COVID-ICU. Hospital Anxiety and Depression Scale, the Post-traumatic Stress Disorder Checklist for DSM-5, McGill Quality of Life Questionnaire-Revised, and 10-item Connor–Davidson Resilience Scale were used to assess respectively anxiety, depression, post-traumatic stress disorder (PTSD), quality of life (QoL) and resilience.

Results:

Sixty-nine ICU-HCWs completed the survey (37 from the regular staff, i.e from the public health service, and 32 from a reinforcement pool, either from non-ICU public health service, or from private health care interim employment agencies). Prevalence of anxiety, depression and PTSD symptoms were high, at 19%, 9% and 16% respectively, with limited impairment in QoL or resilience scores. Depression symptoms were more observed in the regular staff compared to welcomed reinforcement, respectively at 16% and 0%.

Conclusions:

These results revealed that during the pandemic, HCWs from the regular staff were at greater risk of developing psychological disorder compared to reinforcement, with higher levels of depressive symptoms.

Introduction

During the French COVID-19 pandemic, intensive care unit (ICU) healthcare workers (HCWs) in France have faced shortages in ICU beds, ventilators, sedative drugs and in personal protection equipment [1]. They also feared contracting SARS-CoV2 and spreading it to their

relatives. Moreover, to overcome the lack of human resources, ICUs had to mobilize HCWs from a reinforcement pool, with no or outdated ICU experience, that were welcomed and trained by the regular HCWs staff by a “learning by doing” process. Here, we analyzed the psychological status of these caregivers subjected to exceptional working conditions in a 16-bed neurological-ICU in Paris La Pitié-Salpêtrière hospital turned into a COVID-ICU during the first wave of the pandemic. As we initially expected that the reinforcement team could meet difficulties to integrate and fit in the ICU, we also aimed to compare results between the regular staff and the reinforcement workers.

Material and methods

Self-assessment questionnaires were completed online by HCWs who worked in our ICU from March the 1st to April the 30th 2020. Scales used to assess psychological status were validated French versions of: the Hospital Anxiety and Depression Scale (HADS); the Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5) ; the McGill Quality of Life Questionnaire-Revised (MQOL-R) ; and the 10-item Connor–Davidson Resilience (CD-RISC-10), to evaluate respectively anxiety, depressive and post-traumatic stress symptoms, quality of life (QoL) and resilience.

HADS [2] is a self-report evaluating anxiety and depressive symptoms in non-psychiatric patients. It scores from 0, no symptoms, to 42, severe symptoms, with two sub-scales scoring from 0 to 21 assessing anxiety and depression. Recent normative data for HADS in French population are available at [3]. PCL-5 [4] is a brief 20-item screening instrument for assessing post-traumatic stress disorder (PTSD) in the general population according to DSM-5 criteria. It scores from 0, no symptoms, to 80, severe symptoms. A total score of 31 or higher suggests a possible diagnosis of PTSD. Four subscales evaluate intrusion symptoms

(scoring from 0 to 20), avoidance (0 – 8), negative alterations in cognitions and mood (0 – 28), and alterations in arousal and reactivity (0 – 24). As an example, PTSD prevalence in HCWs exposed to November 2015 terrorist attacks' victims in Paris, has been measured at 12% [5]. The MQOL-R [6] is a questionnaire developed to measure subjective well-being of people with life-threatening illnesses, and chronic diseases[7, 8]. We chose this scale because of its ease and speed of use. It is composed of 1 item about general well-being (part A), and 14 other items (part B) divided into four subscales assessing physical, psychological, existential and social well-being. Each item is rated from 0 to 10, as is each subscale and total, representing a mean of the included items. It scores from 0, poor quality of life, to 10, good quality of life. The CD-RISC-10 [9] is a 10 item self-report scale developed to assess resilience after a situation causing distress. It comprises 10 items rated from 0 to 4 to obtain a score from 0, poor resilience, to 40, good resilience. Insomnia was assessed within the PCL-5 scale.

For statistical analyses, continuous variables were expressed as median with full range. Categorical variables were expressed as values and percentages of the group they are derived from. Between-group comparisons were analysed using the Mann–Whitney U-test for continuous variables and Fisher's exact test for categorical variables. Analyses were computed with Prism v8.0 software. $P < 0.05$ defined significance.

Ethics approval

In accordance with the ethical standards of our hospital's and current French law (loi Jardé n°2012-300), this study addresses evaluation of professional practices and does not require additional regulatory or ethic commission approval because it did not modify existing

diagnostic or therapeutic strategies, allowing its subsequent use for epidemiological work. Nonetheless, healthcare workers were informed about the anonymous data collection of this survey, and agreed to its public publication. The database was registered at the Commission Nationale l'Informatique et des Libertés (CNIL, Registration No. 2219019).

Results

Among the 98 HCWs who worked in our ICU from March the 1st to April the 30th 2020, 69 (70%) completed the survey. All of them were still working in our ICU at the time of completing the questionnaire, with a minimal working time in COVID-ICU of 5 weeks. Thirty-seven (54%) were from the regular staff (i.e from our ICU, working for the public health service) and 32 (46%) from the reinforcement pool (i.e, either non-ICU HCWs from the public health service, or ICU HCWs from private health care interim employment agencies). Prevalence of anxiety, depression and PTSD symptoms were high (19%, 9% and 16% respectively) but with limited impairment in quality of life (QoL) (Table 1) scores. Compared to HCWs welcomed as reinforcement, regular staff showed higher depression scores. This was however not associated with difference in anxiety, PTSD, QoL or resilience scores. Insomnia, was found in 74.6% of the healthcare workers, ranging from light disturbances (21.1%), moderate (18.3%), to important (21.1%), and extreme (14.1%) sleep disturbances. HCWs could freely consult a psychologist from the hospital during this period, but only six non-medical HCWs (8.6%) from the regular staff decided to use this strategy of coping with stress.

Discussion

As in many countries, ICU HCWs in France have made crucial efforts to constantly adapt their practices to face this first wave of the COVID-19 pandemic, and reinforcement workers were essential and necessary to support this effort. Our results highlight the psychological burden of ICU workers at the forefront of the COVID-19 outbreak, and are consistent with recent findings in HCWs exposed to COVID-19 [10], as well as with data from previous epidemic outbreaks [10]. Conversely, highly challenging situations can have a positive impact on individual's resilience, working as a protective factor against psychological distress [11]. This does not seem to be the case here. The findings that psychological distress symptoms were more prevalent in regular ICU were somehow unexpected, as we initially thought that the reinforcement team would have difficulties to integrate and fit in the ICU. This result could be explained by a lower sense of agency in regular staff, shown to impact motivation and organizational commitment [12]. In addition, we cannot rule out that a novelty effect occurred in younger reinforcement workers, which inevitably underwent a learning by doing process, as shown by their lower ICU experience, that might have positively influenced their survey results. Regarding the low number of HCWs choosing to consult a psychologist as a strategy to cope with stress during this period (8.6%), a potential hypothesis would be HCWs not pathologising their reactions at this early stage, believing their symptoms with settle naturally or through their own efforts..

Obviously, this crisis has put an unexpected pressure on the regular ICU staff, which had both to undergo the first wave of the pandemic, and to train the reinforcement, with the responsibility of potential errors of the welcomed reinforcement. Regular workers were also older and had longer ICU experience, with a possible negative psychological impact as they

have been facing lack of recognition for their work both at a social and salary level for decades [13].

Although we had a good response rate to our survey (70%), this study has several limitations. The first is its limited statistical power, due to the small size of our study participant, and to the monocentric nature of this single-ICU study. Second, baseline psychological assessment was not available, as a consequence of the rapid onset of a pandemic that was not anticipated, and could therefore not be compared to our findings. Third, insomnia was assessed thanks to the last item of the PCL-5 scale, which is not designed to assess sleep disorder.

Finally, we did not assess any socio-demographic variables that could have impacted HCWs' psychological status during the first wave of the pandemic, such as having children, or a frail or elderly person stand in their close circle, which could influence their responses.

To conclude, the COVID-19 pandemic highlights the challenges and impact upon French HCWs responding to the pandemic, particularly those working in the public health service. That could have a negative impact on patient's care, and consequently, health organizations and public authorities should work on this field to prevent long-term effects on HCW's mental health. But, beside psychological support, access to adequate personal protection and appropriate rest, we believe that effective interventions might suggest a reassessment of French HCWs working conditions. Daily 8pm applauds might not be enough.

Table 1. Baseline characteristics and psychological evaluation of caregivers

	All healthcare workers (N=69)	Regular ICU workers (N=37)	ICU reinforcement (N=32)	P value
Characteristic				
Age, median (Full range)- yr	33 (21–58)	37 (21–56)	30 (21–58)	**0.04**
Female sex – no. (%)	54 (78)	29 (78)	25 (83)	0.98
Profession– no. (%)				
Physicians	11 (16)	8 (22)	3 (9)	0.20
Non-medical staff	58 (84)	29 (78)	29 (91)	0.20
Nurses	40 (58)	19 (51)	21 (66)	0.38
Nursing assistants	17 (25)	10 (27)	7 (22)	0.78
Nurse administrator	1 (1)	0 (0)	1 (3)	0.47
ICU experience before COVID-19 median (Full range) -yr	4 (0 – 28)	6 (0.5 – 28)	1 (0 – 10)	**< 0.001**
Time spent in COVID-ICU median (Full range) -weeks	7 (6 – 8)	7 (6 – 8)	6 (5 – 8)	0.05
Psychological and physical evaluation				
HADS[†] total score (Range 0 – 42) - median (Full range)	11 (2–26)	13 (2–25)	9.5 (2–26)	**0.04**
Anxiety score (Range 0 – 21) - median (Full range)	6 (0–16)	7 (2–14)	6 (0–16)	0.16
Anxiety score ≥ 11 – no. (%)	13 (19)	9 (24)	4 (13)	0.23
Depression score (Range 0 – 21)- median (Full range)	4 (0–13)	5 (0–13)	3 (0–12)	**0.03**
Depression score ≥ 11 – no. (%)	6 (9)	6 (16)	0 (0)	**0.03**
PCL-5[‡] total score (Range 0 – 80) - median (Full range)	13 (0–56)	15 (0–40)	12 (0–56)	0.29
PCL-5 total score > 31 – no. (%)	11 (16)	7 (19)	4 (13)	0.52

Intrusion (Range 0 – 20) - median (Full range)	3 (0–16)	4 (0–16)	2 (0–16)	0.08
Avoidance (Range 0 – 8) - median (Full range)	1 (0 –8)	1 (0 –6)	0 (0–8)	0.32
Negative alterations in cognitions and mood (Range 0 – 28) - median (Full range)	3 (0–8)	4 (0–16)	3 (0–20)	0.57
Alterations in arousal and reactivity (Range 0 – 24) - median (Full range)	5 (0–16)	5 (0–16)	4.5 (0–16)	0.54
MQOL-R‡				
Part A: Global QoL (Range 0 – 10) - median (Full range)	7 (2–10)	7 (2–10)	7 (2–9)	0.67
Part B : Total (Range 0 – 10) - median (Full range)	6.9 (1.6-9.5)	6.9 (2 -9.5)	6.6 (1.6–8.7)	0.50
Physical (Range 0 – 10)	6 (0–10)	5.7 (0–10)	6.2 (1.3–9)	0.68
Psychological (Range 0 – 10)	7 (0.5–10)	7 (0.5–10)	7.1 (0.5–10)	0.96
Existential (Range 0 – 10)	7 (1.2–9.2)	7 (2.7–9.2)	6.9 (1.2–9.5)	0.79
Social (Range 0 – 10)	7.3 (0.6–10)	8 (3.0–10)	6.8 (0.6– 10)	0.06
CD-RISC 10* (Range 0 – 40) - median (Full range)	28 (17–40)	29 (18–40)	28 (17–40)	0.55

Results are expressed as numbers (%) or median- (Full range)
† HADS scores from 0, no symptoms, to 42, severe symptoms
∴ PCL-5 scores from 0, no symptoms, to 80, severe symptoms
‡ MQOL-R scores from 0, poor QoL, to 10 good QoL
* CD-RISC 10 scores from 0, poor resilience, to 40, good resilience
Abbreviations: ICU, Intensive Care Unit; CD-RISC 10, Connor-Davidson Resilience Scale; HADS, Hospital Anxiety and Depression Scale; MQOL-R, McGill Quality of Life Questionnaire-Revised; PCL-5, Post-Traumatic Stress Disorder Checklist for DSM-5; QoL, Quality of Life

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