Research paper

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

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ABSTRACT

Background: Intensive care unit (ICU) healthcare workers (HCWs) are at the forefront of the coronavirus disease 2019 pandemic. To overcome the lack of human resources during this crisis, some ICUs had to mobilise staff from a reinforcement pool, with no or outdated ICU experience.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 regular ICU staff members and reinforcement workers.

Material and methods: Self-assessment questionnaires were completed by HCWs who worked from March 1 to April 30, 2020, in our 16-bed neurological ICU at La Pitié-Salpêtrière Hospital in Paris, France, which was converted to a COVID ICU. The 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 anxiety, depression and post-traumatic stress disorder, quality of life, and resilience, respectively.

Results: Sixty-nine ICU HCWs completed the survey (37 from the team of regular staff members, i.e., from the public health service, and 32 from a reinforcement pool, either from non-ICU public health service or from private healthcare interim employment agencies). Prevalence of anxiety, depression, and post-traumatic stress disorder symptoms was high, at 19%, 9%, and 16%, respectively, with limited impairment in quality of life or resilience scores. Depression symptoms were observed more in regular staff members than in welcomed reinforcement workers, at 16% and 0%, respectively.

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

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1. Introduction

During the French coronavirus disease 2019 (COVID-19) pandemic, intensive care unit (ICU) healthcare workers (HCWs) in France have faced shortages in ICU beds, ventilators, sedative drugs, and personal protection equipment.[1] They also feared contracting severe acute respiratory syndrome coronavirus 2 and spreading it to their relatives. Moreover, to overcome the lack of human

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resources, ICUs had to mobilise HCWs from a reinforcement pool, with no or outdated ICU experience, who were welcomed and trained by the regular HCWs by a "learning-by-doing" process. Here, we analysed the psychological status of these caregivers subjected to exceptional working conditions in a 16-bed neurological ICU in La Pitié-Salpêtrière Hospital, Paris, which was converted 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 regular staff members and reinforcement workers.

2. Materials and methods

Self-assessment questionnaires were completed online by HCWs who worked in our ICU from March 1 to April 30, 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, and the 10-item Connor-Davidson Resilience Scale, to evaluate anxiety, depressive and post-traumatic stress symptoms, quality of life (QoL), and resilience, respectively.

The HADS[2] is a self-report questionnaire evaluating anxiety and depressive symptoms in patients without psychiatric disorders. Its score ranges from 0 (no symptoms) to 42 (severe symptoms), with two subscales scoring from 0 to 21 assessing anxiety and depression. Recent normative data for the HADS in the French population are available in the study by Bocéréan and Dupret.[3] The PCL-5[4] is a brief 20-item screening instrument for assessing post-traumatic stress disorder (PTSD) in the general population as per DSM-5 criteria. Its score ranges 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 victims of the November 2015 terrorist attacks in Paris has been measured at 12%.[5] The McGill Quality of Life Questionnaire-Revised[6] questionnaire is one developed to measure subjective wellbeing 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 one item about general wellbeing (part A) and 14 other items (part B) divided into four subscales assessing physical, psychological, existential, and social wellbeing. Each item is rated from 0 to 10, as is each subscale and total, representing a mean of the included items. Its scores range from 0 (poor QoL) to 10 (good QoL). The 10-item Connor-Davidson Resilience Scale[9] is a 10-item self-report scale developed to assess resilience after a situation causing distress. It comprises 10 items that are rated from 0 to 4, with a score of 0 representing poor resilience and 4 representing good resilience. Insomnia was assessed using 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 using Prism, version 8.0, software. $P < 0.05$ defined significance.

3. Ethics approval

In accordance with the ethical standards of our hospital 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, HCWs were informed about the anonymous data collection of this survey, and they agreed to its publication. The database was registered at the Commission Nationale l'Informatique et des Libertés (CNIL, registration no. 2219019).

4. Results

Among the 98 HCWs who worked in our ICU from March 1 to April 30, 2020, 69 (70%) completed the survey. All of them were still working in our ICU at the time of completion of the questionnaire, with a minimal working time in the COVID ICU of 5 weeks. Thirty-seven (54%) were from the team of regular staff members (i.e., from our ICU, working for the public health service), and 32 (46%) were from the reinforcement pool (i.e., either non-ICU HCWs from the public health service or ICU HCWs from private healthcare interim employment agencies).

Prevalence of anxiety, depression, and PTSD symptoms was high (19%, 9%, and 16%, respectively), but with limited impairment in QoL (Table 1) scores. Compared with HCWs welcomed as reinforcement workers, regular staff members 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 HCWs, 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 nonmedical HCWs (8.6%) from the team of regular staff members decided to use this strategy of coping with stress.

5. 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 of 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 the 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 staff members 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 members, which is shown to impact motivation and organisational commitment.[12] In addition, we cannot rule out that a novelty effect occurred in younger reinforcement workers, who inevitably underwent a learning-by-doing process, as shown by their lower ICU experience, which 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 will settle naturally or through their own efforts.

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

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), years	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
Nonmedical 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), years	4 (0−28)	6 (0.5−28)	1 (0−10)	**< 0.001**
Time spent in the COVID ICU, median (full range), weeks	7 (6−8)	7 (6−8)	6 (5−8)	0.05
Psychological and physical evaluation				
HADS[a] 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[b] 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[c]				
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 (0−10)	8 (3.0−10)	6.8 (0.6−10)	0.06
CD-RISC-10[d] (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).
ICU, intensive care unit; CD-RISC-10, 10-item 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; COVID-19, coronavirus disease 2019.
[a] HADS scores range from 0 (no symptoms) to 42 (severe symptoms).
[b] PCL-5 scores range from 0 (no symptoms) to 80 (severe symptoms).
[c] MQOL-R scores range from 0 (poor QoL) to 10 (good QoL).
[d] CD-RISC-10 scores range from 0 (poor resilience) to 40 (good resilience).

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 owing to the small sample size of our study participants 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 the study could therefore not be compared with 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 sociodemographic 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 on French HCWs responding to the pandemic, particularly those working in the public health service. That could have a negative impact on patients' care, and consequently, health organisations and public authorities should work on this field to prevent long-term effects on HCWs' mental health. But besides 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.

Funding

Conflict of Interest

None.

CRediT authorship contribution statement

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

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