

Psychological burden of the COVID-19 pandemic 6 months after the outbreak — the voice of the young doctors' generation: An international survey

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INTRODUCTION

Young doctors have made up a substantial part of the healthcare workforce during the COVID-19 pandemic [1–3]. Given their lower level of professional experience, re-deployment, frequent exposure to COVID-19 patients, and unpredictable course of the infection in this age group, young doctors seem to be particularly vulnerable to psychological disorders in this context [1–3]. Despite actual threats and potential long-term consequences on their future clinical practice, the emotional impact of COVID-19 on young doctors has not been investigated.

The main aim of the study was to assess the rate and level of anxiety, depression, and stress among young doctors working clinically during the pandemic and to define the risk factors for this psychological distress.

METHODS

This was an international, cross-sectional cohort study performed as a survey between September and November 2020. The survey was dedicated to young doctors, at or below the age of 40. For detailed information about participating countries and numbers of participants see Supplementary material,

Figure S1. The survey was structured in 5 domains. See Supplementary material, *Table S1* for the full list of questions.

Potential risk factors for psychological suffering included demographics, direct contact with COVID patients, redeployment, change in salary or work hours, work organization, prior training in protective measures, and the chance to influence the work organization (Supplementary material, *Tables S2–S3*).

Psychological distress was assessed with the Hospital Anxiety and Depression Scale (HADS) and Perceived Stress Scale 10 (PSS-10) [4, 5]. The cut-off values were >13 for HADS and >14 for PSS-10 based on the previous literature [4–7].

All data were entered into a SurveyMonkey platform, a secure data capture web-based application. Participation in the survey was voluntary. Access to questions was only granted if informed consent was completed and no sensitive information was requested. The data were anonymized at the level of the questionnaire.

Statistical analysis

Categorical variables were expressed as numbers and percentages. Continuous variables were presented as mean and standard deviations or median and interquartile range (IQR) for Gaussian and non-Gaussian distribution, respectively. Comparative analyzes between prespecified subgroups of the study population were performed with the U Mann-Whitney, Kruskal-Wallis ANOVA, and the Fisher exact tests or the χ^2 test. Logistic regression analyzes were performed to define predictors of depression/anxiety, and stress. Variables significantly associated with outcomes in univariable analyzes entered multivariable logistic models with stepwise backward elimination. The *P*-value <0.05 was considered statistically significant. Statistica 13.1 (TIBICO Software Inc., 2016) was used for analyses.

The study was approved by the National Healthcare Service Health Research Authority (NHS HRA) and Care Research Wales (HCRW) (IRAS ID 287542, REC reference:20/HRA/3845). The study was performed in accordance with the Declaration of Helsinki for research with humans.

RESULTS AND DISCUSSION

A total of 1186 young doctors from 62 countries participated in the survey (Supplementary material, *Figure S1*). The median age of these respondents was 32 (28–39) years; with 675 (44.5%) being females.

Among the respondents, 73.47% managed COVID-19 patients; however, only 59.1% of young doctors reported being provided with full personal protective equipment (PPE). Training in donning and doffing of PPE was provided to only 53.04% of young doctors and only 48.5% had daily briefings to plan work on COVID units. Importantly, 52.78% of young doctors were redeployed. Work hours increased for 61.32% of the respondents, including more night shifts. Despite the increased workload, the salaries

did not change for 71.6% and even decreased for 16% of those who managed COVID-19 patients (Supplementary material, *Table S2*).

The median level of HADS among young doctors was 20 (18–23) years, with 96% of the respondents having values above 13, indicating a high level of psychological distress (Supplementary material, *Figure S2*). The median value of the PSS-10 score was 25 (22–28), with 97% of the respondents reporting values >14 and being predominantly moderately and severely stressed (Supplementary material, *Figure S3*).

Results of comparative analysis for the level of anxiety/depression and stress among the specific subgroups of respondents are presented in Supplementary material, *Table S3*.

Multivariable logistic regression analysis proved that increased work hours and loss of pay were associated with significantly higher scores for anxiety/depression, while reduced work hours, increased salaries, good teamwork, and full PPE were associated with lower scores. In the case of stress, being more advanced in specialty training, having reduced salaries due to the pandemic, and living with a partner were significantly associated with a higher level of stress (*Table 1*).

Our study is the first worldwide analysis of COVID-19 related mental suffering among the population of young doctors. Based on our findings, high levels of anxiety, depression, and stress affected nearly all of the respondents. These numbers exceeded twofold the rate and cut-off value identified for the general and clinical population before the COVID-19 era, as well as for all healthcare workers during the pandemic [5–8]. Our results are consistent with the limited evidence in the field, which revealed that the combination of age, profession, and the range of the pandemic put more than half of young doctors in high psychological distress that substantially outweighed the levels noted during the previous outbreaks [1–3, 9–13]. Surprisingly, the enormously high frequency of relevant mental disorders was reported more than 6 months after the initial outbreak. This confirms the previous observation that high-risk healthcare workers may present not only sustained but growing levels of mental disorders that persist beyond the health care emergency [12, 13]. Similarly to our outcomes, the adverse impact of increasing work hours and reduced salaries, as well as the beneficial effect of efficient organizational support, infection control measures, and adequate training were previously identified as relevant modifying factors of psychological wellbeing among healthcare workers during the pandemic [10, 11, 14, 15]. Importantly, the recent workload of young doctors has been considerable with the working pattern of a quarter of junior doctors being associated with a doubled risk of common mental health problems and suicidal ideation [15].

In conclusion, our findings reflect the lack of support and loss of control in young doctors' personal and professional lives. Healthcare leaders should be aware of

Table 1. Risk factors for psychological disorders in the population of young doctors

Variables	HADS >13			
	Univariable analysis OR (95% CI)	P-value	Multivariable analysis OR (95% CI)	P-value
Opinion on effectiveness of COVID-19 training	0.99 (0.990–0.999)	0.016	0.99 (0.993 –1.003)	0.002
Opinion on teamwork during the pandemic	0.98 (0.983–0.994)	0.0001	0.99 (0.987–0.999)	0.003
Opinion on effectiveness of briefings to plan teamwork	0.98 (0.99–1.00)	0.03	1.00 (0.996–1.006)	0.66
Debriefings after emergencies	0.67 (0.49–0.89)	0.006	0.73 (0.52–1.01)	0.06
Increase in work hours, including night shifts	1.62 (1.14–2.3)	0.006	1.61 (1.116–2.341)	0.01
Decrease in work hours	0.71 (0.51–0.99)	0.04	0.687 (0.484–0.976)	0.03
Loss of pay during the pandemic	5.36 (1.55–18.53)	0.008	5.53 (1.575– 19.468)	0.008
Increase in salaries during the pandemic	0.56 (0.36–0.83)	0.008	0.54 (0.345 –0.846)	0.003
Full PPE ^a	0.70 (0.510–0.963)	0.02	0.81 (0.578–1.152)	0.24

Variables	PSS-10 score >14			
	Univariable analysis OR (95% CI)	P-value	Multivariable analysis OR (95% CI)	P-value
Year of training	1.078 (1.019 –1.141)	0.008	1.05 (0.992–1.117)	0.09
Loss of pay during the pandemic	1.74 (1.007–2.916)	0.04	1.54 (0.887–2.722)	0.13
Living with partner	1.536 (1.087–2.171)	0.01	1.39 (0.976 –2.002)	0.06
Living with flat mates ^a	0.50 (0.257- 0.995)	0.04	0.68 (0.435–1.034)	0.05

^aDoctors directly managing COVID-19 patients

Abbreviations: CI, confidence interval; HADS, Hospital Anxiety and Depression Scale; PPE, personal protective equipment; PSS-10, Perceived Stress Scale 10; OR, odds ratio

a potential mental health crisis amongst young doctors that might evolve as a direct result of their involvement in clinical care during the pandemic. Improvements in work organization, including safe work hours and conditions, as well as protected salaries, are essential to prevent further psychological suffering among young doctors worldwide.

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Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska

Article information

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Conflict of interest: None declared.

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