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Resilience Influence to Healthcare Professionals' Emotional State During COVID-19 Quarantine

Влияние резилиенса на эмоциональное состояние медицинских работников во время COVID-19 карантина

Abstract

Introduction. Current treatment of COVID-19 is mainly focused on somatic health, while psychological aspect is not thoroughly studied. Resilience can be one of the mechanisms that reduce the stress impact on the emotional state of healthcare professionals.
Purpose. To assess the features and associations of resilience and emotional state in healthcare professionals during the quarantine due to COVID-19 pandemic.
Materials and methods. Study design – cross-sectional. 101 healthcare professionals were assessed with Ukrainian versions of Connor – Davidson Resilience 10-item Scale, Fear of COVID-19 Scale, Patient Health Questionnaire-9, Generalized Anxiety Disorder 7-item Scale.
Results. Positive correlation ($p \leq 0.05$) was found between age and fear of COVID-19, between depression and anxiety ($p \leq 0{,}001$), between depression and fear of COVID-19 ($p \leq 0.001$), between anxiety and fear of COVID-19 ($p \leq 0.001$). Negative correlation between resilience and fear of COVID-19 ($p \leq 0.01$), anxiety ($p \leq 0{,}01$) and depression ($p \leq 0{,}001$) was found. No statistically significant association between the age of healthcare professionals and depression, anxiety or resilience was found. Statistically significant difference of COVID-19 fear depending on gender – female vs male ($p \leq 0.05$) – was found. No statistically significant difference in resilience and emotional state in healthcare professionals depending on the position, age, acquaintance with patients with COVID-19, and residence was found.
Conclusion. Anxiety and depression are highly comorbid in healthcare professionals and connected with fear of COVID-19. Older age and female gender are risk factors for more severe mental health issues. Fear of COVID-19, emotional state, and resilience are not dependent on position, acquaintance with patients with COVID-19, and residence. Resilience is associated with better emotional state in healthcare professionals during quarantine.
Keywords: COVID-19, resilience, depression, anxiety.

Резюме

Введение. В настоящее время лечение COVID-19 в основном сфокусировано на соматическом здоровье, в то время как психологический аспект недостаточно изучен. Резилиенс может быть одним из механизмов, уменьшающих влияние стресса на эмоциональное состояние медицинских работников.
Цель. Оценить особенности и взаимосвязь резилиенса и эмоционального состояния медицинских работников во время карантина вследствие пандемии COVID-19.
Материалы и методы. Дизайн исследования – кросс-секционный. Эмоциональное состояние и резилиенс 101 медицинского работника были оценены с помощью украиноязычных версий 10-балльной шкалы резилиенса Коннор – Дэвидсона (CD-RISC-10), шкалы страха перед COVID-19 (FCOV-19S), опросника здоровья пациентов (PHQ-9), опросника ГТР-7 (GAD-7).
Результаты. Положительная корреляция ($p \leq 0,05$) была обнаружена между возрастом и страхом перед COVID-19, между депрессией и тревогой ($p \leq 0,001$), между депрессией и страхом перед COVID-19 ($p \leq 0,001$), между тревогой и страхом перед COVID-19 ($p \leq 0,001$). Обнаружена отрицательная корреляция между резилиенсом и страхом перед COVID-19 ($p \leq 0,01$), тревожностью ($p \leq 0,01$) и депрессией ($p \leq 0,001$). Статистически значимой связи между возрастом медицинских работников и депрессией, тревогой или резилиенсом обнаружено не было. Было обнаружено статистически значимое различие в отношении страха перед COVID-19 в зависимости от пола (женский vs мужской пол, $p \leq 0,05$). Не обнаружено статистически значимых различий в резилиенсе и эмоциональном состоянии у медицинских работников разных должностей, возраста, места жительства, с наличием/отсутствием знакомства с пациентами, у которых был диагностирован COVID-19.
Выводы. У медицинских работников тревога и депрессия часто коморбидны и связаны со страхом перед COVID-19. Старший возраст и женский пол являются факторами риска для более серьезных проблем с психическим здоровьем. Страх перед COVID-19, эмоциональное состояние и резилиенс не зависят от должности, места проживания и наличия/отсутствия знакомства с пациентами, у которых был диагностирован COVID-19. Резилиенс связан с лучшим эмоциональным состоянием у медицинских работников во время карантина.
Ключевые слова: COVID-19, резилиенс, депрессия, тревога.

■ INTRODUCTION

Outbreak of COVID-19 highlighted the importance of psychological resilience and readiness to overcome the crisis [1]. Current treatment of COVID-19 is mainly focused on somatic health, while psychological aspect not thoroughly studied [2]. However, healthcare professionals involved in treatment of patients with COVID-19 reported about anxiety, depression and fear, while anxiety level was connected with stress levels and negatively affected self-efficacy and quality of sleep [3, 4]. Furthermore, healthcare professionals involved in treatment of patients with COVID-19 claim more mental health problems that not involved medics ($p<0.01$) [3]. Normalization of stress level are particularly important measured [5]. Psychological support is one of protective factors, reducing negative impact of stress, so interventions that reduce psychological pressure on healthcare professionals during COVID-10 pandemic are needed [3, 6]. It is important to develop and implement guidelines to prevent and treat mental health

problems in healthcare professionals during COVID-19 pandemic [7]. It is also advisable to build patient communication algorithms based on physical distance and telemedicine [8]. Hospitals need to be engaged into discussions and training for better identifying, and management of mental health issues [7]. These guidelines and psychological interventions must be implemented on national level, nations must have strategies to plan and coordinate psychological service during severe disasters for prevention of further mental health problems [9].

Studying the effect of stressful factors, stress-related impairments and disorders, resilience in Ukraine was actualized by armed conflict in Donbass [10] and get further development during the COVID-19 pandemic. Part of the specific factors that facilitating the development of stress reactions in combatants also causes stress-related impairments and disorders in healthcare professionals: low level of social capital; anger provoked by injustice or false statements about medical professionals (intentionally not using remedies, unwilling to provide help, unable to treat, etc); stable fatigue from overtime work. Anxiety and depression, including moderate and severe, in healthcare workers are higher than in the population, and comparing with other professional groups, healthcare professionals have the lowest level of sleep quality [11, 12].

Resilience is an adaptive dynamic process of returning to effective psychosocial functioning and possible posttraumatic growth after a period of maladaptive functioning due to the disorganizing effect of psychotraumatic factors, a rapid recovery after stress [13]. It can be one of the mechanisms that reduce stress impact on the emotional state of healthcare professionals. So, it is important to study the relationship of resilience with fear of coronavirus, anxiety and depression symptoms.

■ THE AIM

The aim of this study is to assess the features and associations of resilience, fear of COVID-19, depression and anxiety in healthcare professionals during the quarantine due to COVID-19 pandemic. We hypothesized that: 1) effective resilience is associated with less fear of COVID-19 and symptoms of anxiety and depression; 2) emotional state of healthcare professionals depends on age, gender, position, residence and acquaintance with patients with COVID-19.

■ MATERIALS AND METHODS

107 healthcare professionals at Kyiv City Clinical Hospital for War Veterans were anonymously surveyed on 13/04/2020. 101 fulfilled blanks were returned. To assess resilience, Ukrainian version of Connor-Davidson Resilience 10-item scale (CD-RISC-10) was used. To assess emotional state, Ukrainian versions of the Fear of COVID-19 Scale (FCOV-19S) [2], Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder 7-item scale (GAD-7) were used. Study design – cross-sectional.

Statistical analysis. Continuous variables are represented by median and quartile ranges (0.25 and 0.75), categorical values are represented by numbers (percentages). Kruskal – Wallis test followed by post-hoc tests were used to compare the differences between groups. Shapiro – Wilk test was used to check the normality of distribution. Spearman`s rank correlation

coefficient was used to estimate the correlation. EZR on R commander v1.41 [14] was used for analysis. P≤0.05 was set as statistically significant.

■ RESULTS

A total of 101 healthcare professionals were examined. The distribution of continuous variables differs from normal (p≤0.05), so continuous variables are represented by median and interquartile range (IQR) (Table 1).

The median age of healthcare professionals was 51 year (IQR 41–59), 9 professionals (8.91%) were male and 92 (91.09%) were female. 64 (63.37%) professionals were Kyiv residents, while 34 (36.63%) lived in Kyiv Oblast. Only 5 (4.95%) professionals claimed that they knew patients with COVID-19. The demographic characteristics and results of assessment are shown in Table 2.

According to PHQ-9, 46 (45.54%) professionals had minimal or none symptoms of depression (0–4 score), 35 (34.65%) professionals had symptoms of mild depression (5–9 score), 14 (13.86%) had symptoms of moderate depression (10–14 score), and 6 (5.94%) had symptoms of moderately severe depression (20–27 score). Median score and IQR are shown in Table 2.

According to GAD-7, 55 (54.46%) professionals had no symptoms of anxiety, 27 (26.73%) had symptoms of mild anxiety, 13 (12.57%) had symptoms of moderate anxiety, 6 (5.94%) had symptoms of severe anxiety. Median score and IQR are shown in Table 2.

As FCOV-19 scale and RISC-10 have no interpretation, only the Median raw scores and IQR were estimated (shown in Table 2).

Weak positive correlation (p≤0.05) was found between age and fear of COVID-19 (Fig. 1). Very strong positive correlation was found between depression and anxiety (p≤0.001, Fig. 2), quite positive correlation between

Table 1
Shapiro – Wilk test for normality of distribution results

Indicators	Age	PHQ-9	GAD-7	FCOV19S	RISC-10
W	0.94945	0.92756	0.90221	0.9503	0.95632
p-value	0.0007117*	0.00003327*	0.000001624*	0.0008107*	0.002083*

Note: * the distribution differs from normal (p≤0.05).

Table 2
The demographic characteristics and results of assessment in healthcare professionals

Variable	Total (n=101)	Physicians (n=18)	Nursing staff (n=49)	Junior nursing staff (n=29)	Non-medical staff (n=5)
Age (years)	51 (41–59)	43 (27,5–59,75)	51 (40–58)	54 (47–59)	41 (31–41)
Male (n, %)	9 (8.91%)	5 (27.78)	0 (0%)	0 (0%)	4 (80%)
City residents (n, %)	64 (63.37%)	2 (11.1%)	29 (59.18%)	14 (48.28%)	5 (100%)
Know patients with COVID-19 (n, %)	5 (4.95%)	2 (11.1%)	0 (0%)	3 (10.34%)	0 (0%)
FCOV-19S (score)	16 (15–22)	16.5 (11.75–20.5)	16 (14–22)	18(14–22)	11 (10–15)
GAD-7 (score)	4 (2–8)	4.5 (3.25–7)	4 (2–9)	4 (2–7)	7 (5–9)
PHQ-9 (score)	5 (2–9)	5 (3.25–7.75)	5 (3–9)	4 (1–7)	8 (7–10)
CD-RISC-10 (score)	30 (25–33)	28 (27–31)	30 (25–34)	30 (22–33)	30 (30–32)

Table 3
Correlation characteristics

Indicators	Age		PHQ-9		GAD-7		FCOV-19S		CD-RISC-10	
	r	p	r	p	r	p	r	p	r	p
Age	N/A	N/A	0,050	0,621	0,071	0,479	0,203	0,042*	0,156	0,119
PHQ-9	0.050	0.621	N/A	N/A	0.855	<0.001!	0.465	<0.001!	–0.333	<0.001!
GAD-7	0.071	0.479	0.855	<0.001!	N/A	N/A	0.437	<0.001!	–0.291	0.003#
FCOV-19S	0.203	0.042*	0.465	<0.001!	0.437	p<0.001!	N/A	N/A	–0.288	0.004#
CD-RISC-10	0.156	0.119	–0.333	<0.001!	–0.291	0.003#	–0.288	0.004#	N/A	N/A

Notes: * p≤0.05, # p≤0.01, ! p≤0.001.

Table 4
Comparison of emotional state and resilience in healthcare workers using Kruskal – Wallis test

Variable	Position		Patients with COVID-19 aquaintance		Gender		Residence	
	χ^2	p	χ^2	p	χ^2	p	χ^2	p
FCOV-19S	5.07	0.17	0.04	0.84	4.65	0.03*	0.00	0.97
GAD-7	2.59	0.46	0.01	0.94	0.18	0.67	2.59	0.46
PHQ-9	4.62	0.20	0.43	0.51	0.17	0.68	2.45	0.12
CD-RISC-10	1.10	0.78	0.51	0.48	0.00	0.97	0.85	0.36

Note: * Female vs Male, p≤0.05.

depression and fear of COVID-19 (p≤0.001, Fig. 3), quite positive correlation between anxiety and fear of COVID-19 (p≤0.001, Fig. 4), was found. A quite negative correlation between resilience on the one hand, and fear of COVID-19 (p≤0.01, Fig. 5), anxiety (p≤0.01, Fig. 6) and depression (p≤0.001) on the other hand was found. No statistically significant association between age of healthcare professionals and depression, anxiety or resilience was found. Characteristics of correlation are shown in Table 3.

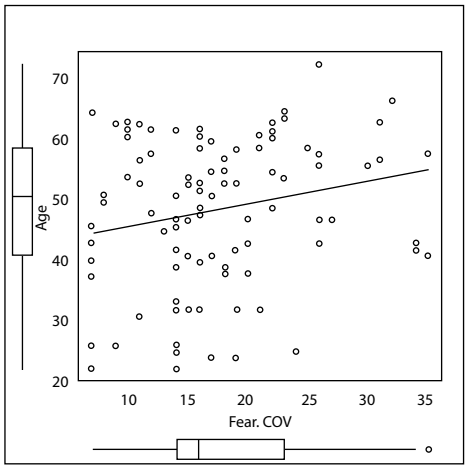

Fig. 1. Age-fear of COVID-19 correlation

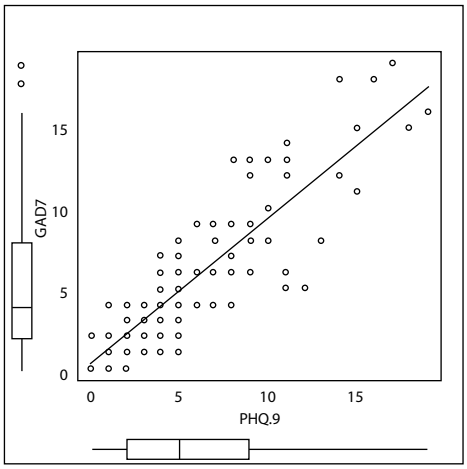

Fig. 2. Anxiety-depression correlation

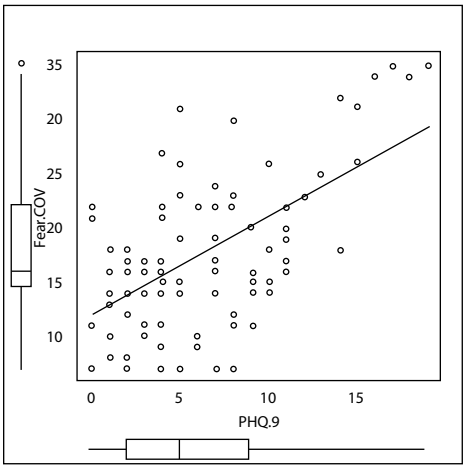

Fig. 3. Fear of COVID-19-depression correlation

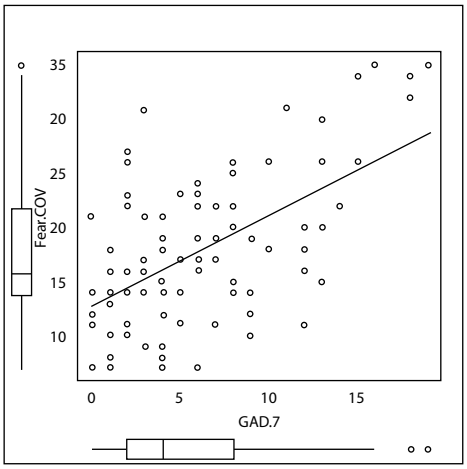

Fig. 4. Fear of COVID-19-anxiety correlation

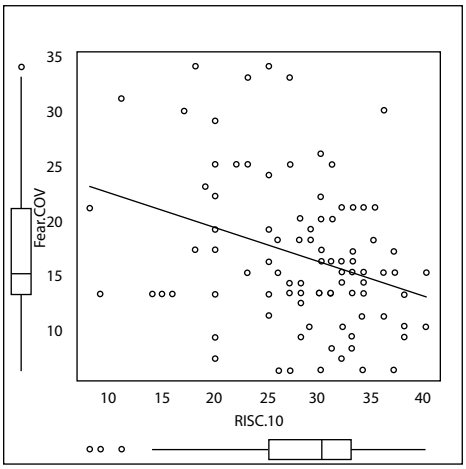

Fig. 5. Fear of COVID-19-resilience correlation

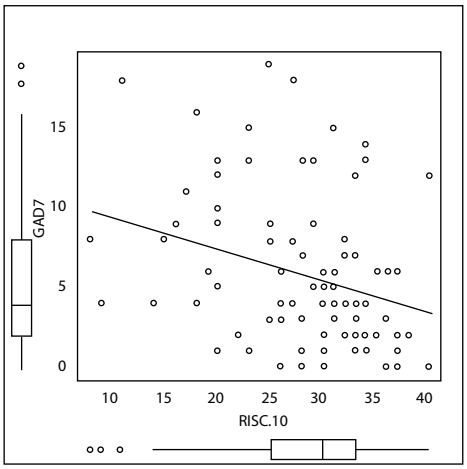

Fig. 6. Anxiety-resilience correlation

Statistically significant difference depending on gender was found – female professionals have significantly higher scores on FCOV-19S than male ($p \leq 0.05$). The analysis revealed no statistically significant difference in resilience and emotional state in healthcare professionals depending on the position, age, acquaintance with patients with COVID-19 and residence (Table 4).

■ DISCUSSION

Anxiety and depression of healthcare professionals during COVID-19 pandemic were of different severity. Inspiring that the majority had no or mild symptoms, while much less percent had moderate to severe anxiety and/or depression. In most cases, where anxiety occurred, there

was depression as well, making these states highly comorbid. Anxiety and depression are connected with fear of COVID-19. We have found that the fear associated with a COVID-19 pandemic is not dependent on the position or residence of the healthcare professionals, which means that any professional from doctor to nurse or non-medical staff can be involved into anxiety pandemic. Gender and age dependence have been found, so women and elder may be at risk of worsening mental health problems due to COVID-19 pandemic. Therefore, our hypothesis that emotional state depends on healthcare professionals` age, gender, position, residence and acquaintance with patients with COVID-19 was partially proved.

As it can be seen from results, our hypothesis that resilience is associated with less fear of COVID-19 and symptoms of anxiety and depression in healthcare professionals during quarantine, was proved. It shows the role of resilience in overcoming the negative impact of stressful and traumatic events, including possible disasters like COVID-19 pandemy. Thus, conducting resilience-oriented interventions can be effective in reducing negative emotional states in healthcare workers during quarantine or other stressful events that greatly exert stress overcoming mechanisms. Existing interventions for medical staff have a weak evidence base [15], that encourages further research in this field. Unlike stress-resistance, which prevents from desadaptation after adversity, resilience is an adaptive dynamic process of returning to effective functioning and possible further posttraumatic growth after the period of desadaptation [16, 17]. We are confident that no one can be resistant to any possible adversities and COVID-19 pandemic shows it very well. Thus, resilience studies are extremely important for developing rapid recovery skills and further growth on individual and community level. At the same time, if we consider resilience as an adaptive process, single measure gives knowledge only about connection between resilience and emotional state during disaster, but not about its stages or properties, which requires further research.

■ CONCLUSIONS

Anxiety and depression are highly comorbid states and connected with fear of COVID-19 in healthcare professionals during quarantine due to pandemic. Fear of COVID-19, emotional state and resilience are not dependent on position, acquaintance with patients with COVID-19 and residence. Elder age and female gender are risk factors for more severe issues. Resilience is associated with less fear of COVID-19, less severity of anxiety and depression symptoms in healthcare professionals during quarantine and can be a mechanism that reduces negative impact of stress and high pressure on mental health during disasters.

■ PERSPECTIVES

A promising area of research is to study the resilience and psycho-emotional state of different groups of health care professionals – physicians involved in treatment of patients with COVID-19, family doctors, doctors not involved in the treatment of patients with COVID-19 and further comparison of the groups. Longitudinal studies aimed at exploring the process of resilience in dynamics will help better understanding of its nature and

stages for the further development of evidence-based resilience-oriented interventions. Development of short-term resilience-oriented interventions can accelerate overcoming the effects of the stress negative impact on healthcare professionals` mental health.

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The authors declare no conflict of interest.

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