ORIGINAL ARTICLE

EMOTIONAL IMPACT OF THE COVID-19 PANDEMIC ON HEALTHCARE WORKERS IN UKRAINE

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ABSTRACT

The aim: To study the emotional impact of the COVID-19 pandemic on healthcare workers in Ukraine.

Materials and methods: 1087 healthcare workers across all regions of Ukraine completed an online questionnaire. Respondents were divided into two groups: A – 863 (79.4%), B – 224 (20.6%), according to whether or not they experienced anxiety/fear related to COVID-19.

Results: Such factors as risk of contracting COVID-19, news of new cases, insufficient staff in healthcare facilities, risk of transmission of COVID-19 to family or friends, risk of death from COVID-19, the threat of the spread of the COVID-19 pandemic were associated with high level of anxiety/fear among healthcare workers. Factors that facilitate coping with stress included absence of Covid-19 cases among staff, recovering patients, availability of gear and protective equipment and absence of COVID-19 infected among loved ones, relieving stress (relaxation, going info sports and so on), communication with family and friends to relieve stress and get support, avoidance of COVID-19 media reports in particular on deaths connected cases, getting information about the spread of Covid-19 only from legitimate sources.

Conclusions: The data obtained in this study indicate an urgent need for the development and implementation of preventive and rehabilitation measures aimed at stabilizing the psycho-emotional state of health workers and improving the quality of care in the special conditions of the COVID-19 pandemic. Achieving these goals will be facilitated by taking into account the specifics of the response to COVID-19 and measures to reduce the effects of stress while enhancing the effects of stressors among health care workers.

KEY WORDS: COVID-19 pandemic, healthcare workers, stress, fear, anxiety

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INTRODUCTION

Existing research shows that COVID-19 pandemic has caused a huge mental health burden on the population, especially on healthcare workers who are facing high risks and increased workload. The perceived stress has a negative impact upon both the mental and physical health of the healthcare workers [1]. Stress symptoms in healthcare workers were significantly more pronounced during versus before COVID-19. For example, for hypervigilance, there was 12-fold odds during versus before COVID-19 [2]. Healthcare workers showed more anxiety and depression symptoms compared with the general population [3-5]. Medical workers experienced high prevalence of stress, anxiety, depression, insomnia, COVID-related traumatic experiences, somatization, and obsessive-compulsive symptoms [6-10]. Some research shows that healthcare professionals working on the frontline had significantly higher levels of PTSD symptoms and depression compared to those working indirectly [8, 9]. But others state no significant link between direct contact with patients with COVID-19 at work and anxiety, depression, or stress [10]. Risk factors for stress-related symptoms included living in rural areas, being female, being a nurse, being younger age, being directly engaged with COVID-19, having pre-existing psychological problems, working all night for >3 days, concerns about infection at work, fear at work, perceive troubles at work, having a colleague deceased, hospitalized or in quarantine, negative metacognitions, burnout, health anxiety and lack of emotional support, uncertainty about when the epidemic will be under control [6-9, 11, 12].

A lot of European countries conducted cross-sectional surveys [10], but there is no data from Ukraine.

THE AIM

The aim of the present study was to analyze the emotional status among the health care workers in Ukraine while they were facing with Covid-19 depending on their sociodemographic characteristics and different stress–related factors.

MATERIALS AND METHODS

1087 healthcare workers across all regions of Ukraine completed an online questionnaire. The questionnaire

Table I. Comparative characteristics of respondents in groups A and B by sociodemographic parameters

Sociodemographic parameters	Groups of respondents		Number of answers	Statistical significance		
	A[a] n (%)	B[b] n (%)	N	χ^2 [c]	df[d]	p[e]
Gender						
Female	682 (78.8)	183 (21.2)	865	0.68	1	0. 408
Male	175 (81.4)	40 (18.7)	215			
Age						
Under 30 years	139 (78.1)	39 (21.9)	178	11.57	4	0.020
31-40 years	203 (77.5)	59 (22.5)	262			
41-50 years	235 (83.9)	45 (16.1)	280			
51-60 years	200 (81.3)	46 (18.7)	246			
Over 60 years	80 (69.6)	35 (30.4)	115			
Marital status						
unmarried	151 (81.2)	35 (18.8)	186	0.93	3	0.818
married	575 (78.7)	156 (21.3)	731			
divorced	102 (81)	24 (19.1)	126			
widow/ widower	30 (76.9)	9 (23.1)	39			
Presence of minor children						
present	529 (79.2)	139 (20.8)	668	0.01	1	0.912
absent	329 (79.5)	85 (20.5)	414			
Live						
with husband/wife	552 (79.2)	145 (20.8)	697	2.98	3	0.393
with parents	75 (74.3)	26 (25.7)	101			
alone	171 (80.7)	41 (19.3)	212			
other	60 (84.5)	11 (15.5)	71			
Health care institution						
Centers for primary health care	152 (77.2)	45 (22.8)	197	5.89	5	0.317
Family medicine clinics	115 (80.4)	28 (19.6)	143			
City multidisciplinary hospitals	103 (76.3)	32 (23.7)	135			
Central district hospitals	102 (75)	34 (25)	136			
Regional hospitals	113 (84.3)	21 (15.7)	134			
Others	275 (81.4)	63 (18.6)	338			
Occupation						
Chief of the clinic	24 (77.4)	7 (22.6)	31	4.28	5	0.509
Chief of department	131 (83.4)	26 (16.6)	157			
Doctor	496 (79)	132 (21)	628			
Nurse	109 (76.2)	34 (23.8)	143			
Psychologist	14 (70)	6 (30)	20			
Others	85 (82.5)	18 (17.5)	103			

Specialty						
Family medicine	177 (77.6)	51 (22.4)	228	11.33	12	0.500
Therapist	92 (81.4)	21 (18.6)	113			
Pediatrics	59 (84.3)	11 (15.7)	70			
Infectious diseases	18 (78.3)	5 (21.7)	23			
Surgery	23 (85.2)	4 (14.8)	27			
Psychiatry	144 (84.2)	27 (15.8)	171			
Addiction	9 (81.8)	2 (18.2)	11			
Cardiology	32 (74.4)	11 (25.6)	43			
Intensive Care Medicine	17 (65.4)	9 (34.6)	26			
Obstetrics and gynecology	14 (82.4)	3 (17.7)	17			
Other	221 (77.3)	65 (22.7)	286			
Department						
Outpatient clinic	154 (76.2)	48 (23.8)	202	10.88	9	0.283
Intensive care unit	32 (69.6)	14 (30.4)	46			
Therapeutic	101 (78.9)	27 (21.1)	128			
Psychiatry clinic	116 (85.3)	20 (14.7)	136			
Infectious	25 (89.3)	3 (10.7)	28			
Surgical	26 (83.9)	5 (16.1)	31			
Pediatrics	45 (79)	12 (21.1)	57			
Emergency medical care	14 (66.7)	7 (33.3)	21			
Administrative	45 (79)	12 (21.1)	57			
Other	282 (79.4)	73 (20.6)	355			

Notes: [a] – group of respondents experiencing anxiety/fear, [b] – group of respondents who are not experiencing anxiety/fear, [c] – Pearson's Chi-Square test, [d] – degrees of freedom, [e] – p-value of significance.

was created taking into consideration the experience and results of the survey conducted during the SARS epidemic in 2003 [13, 14]. The questionnaire included three groups of questions: 1) types of response to the COVID-19 related situation; 2) factors that affect the occurrence of stress; 3) factors that help to overcome stress. Socio-demographic characteristics of health care workers were analyzed. However, not all respondents provided complete answers to all the groups of questions, thus the values for individual categories of questions ranged from 1039 to 1087.

Descriptive statistics were used to illustrate socio-demographic indicators and to distribute estimates of answers to questions. Pearson's criterion $\chi 2$ was applied to compare group differences in categorical variables (socio-demographic characteristics). The nonparametric Mann-Whitney U-test was used to compare the severity of each stress factor in groups of respondents. A $p<0.05$ value was considered statistically significant. The results of the study were processed using the statistical package of the licensed program TIBCO Statistica 13.4 [15, 16].

All participants gave informed consent to participate and the study was approved by the Institutional Ethics Committee.

RESULTS

Psycho-emotional response in the form of pronounced anxiety / fear caused by the COVID-19 pandemic was detected in every fourth of five medical workers - 863 (79.4%), while 224 (20.6%) respondents said they had no or weak severity of such manifestations. Respondents were divided into two groups: group A - those who experienced severe anxiety/fear in connection with COVID-19, group B - all other medical workers.

The relationship between feelings of anxiety/ fear related to COVID-19 with certain socio-demographic parameters in healthcare workers was assessed. The age of the specialists influenced their feelings of anxiety and fear associated with COVID-19 ($p=0.02$). Specialists under the age of 40 declared no difference in the assessment of their fear and

Table II. Differences between groups A and B in the perception of stress-factors (Mann-Whitney U-test)

Factors	Rank Sum		U[c]	p[d]
	Group A[a]	Group B[b]		
The risk to get COVID-19	381524	167104	38318	0.000
The possibility to transmit COVID-19 to relatives, friends	391472	146732	52396	0.000
Absence of information about the exact time the outbreak will be under control	332492	130712	39497	0.000
Constant news about new COVID-19 cases in television / social networks	376634	149192	42481	0.000
Conflict between duty and personal safety	380910	152119	46757	0.000
Physical exhaustion / fatigue	386441	138360	56363	0.000
Irritability due to increased workload	419788	125703	75753	0.000
Complex challenge associated with treatment of COVID-19	371211	142381	49208	0.000
Seeing patients with COVID-19 dying	356346	122385	56421	0.000
Observing colleagues being stressed	379156	144620	48265	0.000
Absence / insufficiency of personal protective equipment	378805	133774	57604	0.000
The need to wear protective equipment on a daily basis	404240	123638	66809	0.000
Lack of staff in your health care institution	368691	129810	53870	0.000
Difficulty getting to work	396606	124104	65715	0.000

Notes: [a] – group respondents experiencing anxiety/fear, [b] – group respondents who is not experiencing anxiety/fear, [c] – Mann–Whitney U statistic, [d] – p-value of significance.

Table III. Differences between groups A and B in perception of COVID-19 related situation (Mann-Whitney U-test)

Factors	Rank Sum		U[c]	p[d]
	Group A[a]	Group B[b]		
Attempts to reduce contact with Covid-19 patients	428028	119553	81500	0.032
Thoughts about quitting the job	408264	136182	65058	0.000
Thoughts about getting a sick leave	406545	130621	68292	0.000
Thoughts about quitting the job if one of your colleagues gets COVID-19	412185	128096	71460	0.000
Thoughts about quitting the job if one of your colleagues dies from COVID-19	410257	133147	67879	0.000
The feeling that employees who did not work with COVID-19 were avoiding you	412609	123522	72709	0.000
The feeling that others were avoiding you because you might have had contact with coronavirus	416085	130451	72050	0.000

Notes: [a] – group respondents experiencing anxiety/fear, [b] – group respondents who is not experiencing anxiety/fear, [c] – Mann–Whitney U statistic, [d] – p-value of significance.

anxiety level related to the pandemic. Specialists between the ages of 41 and 50 demonstrated low level fear/ anxiety, simultaneously specialists over the age of 60 had high levels of fear/ anxiety. No difference was found between other socio-demographic indicators and level of anxiety/ fear related to COVID-19 ($p>0.05$) (Table I).

Factors that demonstrated the most pronounced association with COVID-19 anxiety / fear were the threat of illness or death of the specialist or his / her relatives or colleagues. In particular, such factors included "high probability to get coronavirus", "the possibility to transmit COVID-19 to relatives, friends" ($p = 0.0001$). A strong association with anxiety/fear related toCOVID-19 was indicated by the group of factors connected with objective and subjective shortcomings and inconveniences of the organizational process in providing care to patients. In particular, such factors included "absence / insufficiency of personal protective equipment", "the need to wear protective equipment

Table IV. Differences between groups A and B of perceived factors that facilitate coping with stress (Mann-Whitney U-test)

Factors	Rank Sum		U[c]	p[d]
	Group A[a]	Group B[b]		
A supportive atmosphere in the department	404782	82796	62896	0.0001
Absence of Covid-19 cases among staff	373675	79001	60086	0.0001
Recovering patients with COVID-19	410698	87804	67098	0.0001
Availability of gear and protective equipment	394530	88123	68023	0.002
Absence of COVID-19 infected among loved ones	407611	92890	72184	0.007
The likelihood to receive additional compensation for working with Covid-19 patients	301737	72808	56698	0.091
Relieving stress (relaxation, going info sports and so on)	375493	73386	55050	0.0001
Communication with family and friends to relieve stress and get support	400898	82739	62839	0.0001
Avoidance of COVID-19 media reports in particular on death connected cases	344816	78845	59342	0.0001
Ability to letting out one's emotions	296272	80875	62730	0.552
Getting information about the spread of Covid-19 only from legitimate sources	356996	80585	61279	0.0001

Notes: [a] – group respondents experiencing anxiety/fear, [b] – group respondents who is not experiencing anxiety/fear, [c] – Mann–Whitney U statistic, [d] – p-value of significance.

on a daily basis", "lack of staff in health care institutions", "difficulty getting to work" (p = 0.0001). Another large group of factors can be classified as those associated with physical and emotional exhaustion while providing care in special conditions. They comprised "irritability due to increased workload", "conflict between duty and personal safety", "physical exhaustion or fatigue", "complex challenge associated with treatment of Covid-19", "seeing patients with Covid-19 dying" and "observing colleagues being stressed" (p = 0.0001). The following factors associated with anxiety/ fear in connection with COVID-19 can be defined as informative: "absence of information about the exact time the outbreak will be under control" and "constant news about new COVID-19 cases in television/social networks" (p = 0.0001) (Table II).

Other factors that were strongly associated with anxiety/ fear related to COVID-19 could be potentially combined according to protective emotional reaction of the healthcare workers in attempts to avoid doing their professional duties using different pretexts. Such factors included "intentions to reduce contact with patients", "thoughts about quitting the job" and "thoughts about getting a sick leave" (p=0.0001). This group also included the following factors: "thoughts about quitting a job if one of colleagues gets COVID-19" and "thoughts about quitting a job if one of colleagues dies from COVID-19". One more group of factors that demonstrated a significant influence on anxiety/ fear related to COVID-19 was connected with discrimination of subjects who provided care to the patients with COVID-19. Such factors concerned "the feeling that employees who did not work with COVID-19 were avoiding you" and "the feeling that others were avoiding you because you might have had contact with coronavirus" (Table III).

The next group of factors is factors that facilitate coping with stress. These included "supportive atmosphere in the department" (p = 0.0001), "absence of Covid-19 cases among staff" (p = 0.0001), "recovering patients with Covid-19" (p = 0.0001), "availability of gear and protective equipment" (p = 0.002) and "absence of COVID-19 infected among loved ones" (p = 0.007), "relieving stress (relaxation, going info sports and so on)" (p<0.0001), "communication with family and friends to relieve stress and get support" (p<0.0001), "avoidance of COVID-19 media reports in particular on deaths connected cases" (p<0.0001), "getting information about the spread of Covid-19 only from legitimate sources" (p<0,0001). At the same time, the following factors such as "the likelihood to receive additional compensation for working with Covid-19 patients" (p = 0.091) and ability to letting out one's emotions (p=0.552) did not influence the ability of respondents to cope with stress (Table IV).

DISCUSSION

Most of the respondents had anxiety/fear related to COVID-19, that was associated with age. Among the factors that significantly influenced the feeling of anxiety/ fear related to COVID -19 in healthcare workers were stress due to the risk of COVID infection constant news about new cases of COVID-19, lack of staff in health care institutions, risk of transmitting COVID-19 to family or friends, perception of the risk of death from COVID-19 as high, perception of the threat of the COVID-19 pandemic spread as serious one. Results of our study partially coincide with results obtained by Tengilimoğlu D. et al. [17] who mentioned long working hours and lack of protective

equipment as the most important problems of the healthcare employees in relation with their work environment, healthcare workers feared to catch the virus and feared to contaminate COVID-19 virus to their family/parents. In the research, conducted in Tongji Hospital in China, less than 60% of participants had moderate or severe stress. From the higher five items that were moderate or severe stressors, fear of being infected, worrying about transmitting COVID-19 to their relatives and friends were mentioned [18], which corresponds with our research. Moreover, in our study, participants in group A had a median of 3 (which is the most severe score on this item), related to these stressors. A study by Elbay R.Y. et al. showed that female participants of the younger age had a higher level of stress [19]. However, our study found no significant gender-based differences, despite age. Also, a study conducted by Elbay R.Y. et al. revealed that those living with their spouse and children had lower scale scores related to stress, groups in our study did not differ significantly by the form of living.

CONCLUSIONS

The COVID-19 pandemic has had a significant impact on the psycho-emotional state of medical workers in Ukraine. The study found that the following factors cause a high level of anxiety / fear in them: the risk of contracting COVID-19, constant news of new cases of the disease, insufficient staff in medical facilities, the risk of transmitting COVID-19 to family or friends, a high risk of death from COVID-19, the threat of the spread of the COVID-19 pandemic. The data obtained in this study indicate an urgent need for the development and implementation of preventive and rehabilitation measures aimed at stabilizing the psycho-emotional state of health workers and improving the quality of care in the special conditions of the COVID-19 pandemic. Achieving these goals will be facilitated by taking into account the specifics of the response to COVID-19 and measures to reduce the effects of stress while enhancing the effects of stressors among health care workers.

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Conflict of interest:
The Authors declare no conflict of interest.

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