

## ASSESSING THE RESILIENCE OF HEALTHCARE PROFESSIONALS IN A ROMANIAN EMERGENCY UNIT DURING THE COVID-19 PANDEMIC

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ASSESSING THE RESILIENCE OF HEALTHCARE PROFESSIONALS IN A ROMANIAN EMERGENCY UNIT DURING THE COVID-19 PANDEMIC (Abstract): Worldwide, during COVID-19 pandemic, the healthcare professionals have been exposed to professional and existential stress. The **aims** of this study were to evaluate of the emotional impact, the degree of resilience of medical staff, immediately after exposure to the risk of COVID-19. **Material and methods:** e enrolled 64 participants (30 doctors and 34 nurses), from the Emergency Department of the “Sf. Spiridon” County Clinical Emergency Hospital from Iasi. Each participant completed a self-report 63 items questionnaire. Self-perceived stress, depression symptoms, anxiety symptoms were measured in our research. *SPSS 27.0* software was used for data analysis. **Results:** We have identified statistically significant difference between medical doctors and nursed regarding the possibility of managing the critical situation at the workplace and the difficulty understanding the situation at workplace. Sleep quality, positive emotions and life satisfaction need to be improved to increase the psychological resilience of healthcare professionals working during the COVID-19 pandemic. **Conclusions:** Doctors constitute the group with the lowest levels of psychological resilience among health care workers. This study confirms the need to improve positive emotions and weaken negative emotions of healthcare professionals. **Keywords:** RESILIENCE, EMOTIONAL WELL-BEING, SARS-CoV-2, PANDEMIC.

COVID-9 pandemic has spread worldwide and is an important global public health issue as on 3<sup>rd</sup> of February 2023, there have been 754,018,841 confirmed cases of COVID-19 in the world, including 6,817,478 deaths, reported to WHO. In Romania there have been 3,325,006 confirmed cases of COVID-19 with 67,576

deaths, reported to WHO. As of 21<sup>st</sup> of January 2023, a total of 16,102,916 vaccine doses have been administered (1).

The coronavirus SARS-CoV-2, the etiologic agent of COVID-19, is studied by many research groups, worldwide. One of the most recent papers published in Nature journal is referring to guanosine-specific

pocket in the essential NiRAN domain that could be optimized as a therapeutic target to treat new coronaviral borne diseases (2). A multidisciplinary team confirmed the short-term effectiveness of actual vaccines (the mRNA or inactivated vaccine in preventing SARS-CoV-2 Omicron BA.2 infection), and at the same time the authors underlined the need of updated studies according to fast viral evolution, to develop new vaccination strategies (3).

Medical staff, both physicians and nurses from emergency medicine have been deeply involved in the COVID-9 pandemic, in diagnosis, therapy, follow-up, and vaccination campaigns. A recent paper identified some challenges and opportunities for medical staff, recommending that learning should be used by health care professionals to promote and restore health and to improve the lives and wellbeing of individuals, families, and communities, and at the same time, the authors recommended to successfully live their own lives, to balance work and other activities, and to preserve a sense of purpose, service, and mental vitality. Maintaining the values of health-care professions is a crucial goal for health educators and for optimal management of a pandemic (4).

Using the keywords *resilience among medical staff*, we identified 161 papers published in the last year, which underlines that this topic is of high importance in medical field, from which we have selected the most representative studies. In a very recent cross-sectional study (March 2023) which involved 602 medical staff from Beijing, it was identified that resilience and self-esteem was a mediator between depression and burnout (Hao *et al.*, 2023). A 2-year observational study during COVID-19 pandemic realized in Taiwan, identified

poor sleep, lack of exercise, long working hours, and being nursing staff as risk factors regarding an increase in personal burnout, and depression among health care professionals Chu *et al.*, 2023). A descriptive phenomenological study published in Lancet, performed on an important number of public health workers, university staff, and hospital administrators from Philippines, identified stress and mental health exhaustion, fear of infection during service provision after the initial wave of the COVID-19 pandemic (Maravilla *et al.*, 2022). Russell *et al.* conducted a study in Australia which referred to key pandemic-generated modifications to safety, clinical, workflow and practice management routines, as procedures to reduce infectious disease transmission (e.g., *staff-to-staff contact reduced greatly*), procedures for conducting consultations via phone or video, rather than face to face (e.g., *most GPs provided telehealth from the practice, but some worked from home when isolating or unwell*). The authors considered that their study was a natural experiment of the resilience of primary care in Australia (Russell *et al.*, 2023).

Starting from definition of Mallak *et al.*, which stated in 1998 that resilience is *the human capacity to adapt in the face of difficulty and ongoing significant life stressors* (Mallak *et al.*, 1998), authors from Germany aimed to explore to what extent can critical care staff use their spirituality by themselves to reduce moral distress and strengthen their resilience. After a comprehensive analysis of 13 studies (e.g., spirituality as moral distress, spirituality as strategy, spiritual resources support, and influence of spirituality on resilience), the authors concluded that spirituality is not sufficient to develop the confi-

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dence to cope with ethically critical situations, and more important is that critical care staff to be supported by their institution to reflect on their work, and to find meaning in their care. Researchers from Netherland conducted a study in an elite university hospital, analyzing how the infection prevention staff managed the scarcities emerging at the onset of the COVID-19 pandemic. The authors identified that defining safety, anticipating scarcity, and tinkering with quality could be a modality to enable a resilient response to infection prevention. Also important for these authors is updating Infection prevention guidelines for managing the emerging crisis (Bal *et al.*, 2022). Similar studies have been performed in other region of the world as in Tunisia (in which the authors identified that self-reported resilience, work engagement, and burnout were the predictors of compassion satisfaction, in cross-sectional study among health care givers caring for confirmed and suspected COVID-19 patients, through a self-administrated questionnaire) or in Saudi Arabia (in which the authors aimed to evaluate the relationship between the resilience and emotional intelligence of nurses during the COVID-19 pandemic, and they identified nationality, ward assignment, years of experience as having significant relationships with emotional intelligence). These studies concluded that there is a need for more resilience promoting interventions to be implemented for achieving psychological well-being needs of the nurses. Also, there is a need for improving emotional-intelligence skills of assisting nurses during pandemic outbreaks, and therefore emotional intelligence should be integrated into decision-making (Omri *et al.*, 2022, Aljarboa *et al.*, 2022). Researchers from

New York evaluated mental health among Emergency Department healthcare workers in one cross-sectional study, which involved 247 health care workers. The authors found significant difference between clinical vs. non-clinical health care workers for psychological distress symptom burden, depression, and perceived stress. The authors considered that is necessary to maintain mental well-being of nurses and medical doctors, this being crucial for optimally functioning healthcare systems (Gustafson *et al.*, 2022).

As the well-being and emotional resilience of health care professionals are essential components of continued health care services during the COVID-19 pandemic, health professionals have been observed during pandemic to have serious psychological problems, having the risk of being exposed to problems in terms of mental health (15). The well-being and emotional resilience of healthcare workers were critical components of continuing healthcare services during the COVID-19 pandemic. Thus, it is essential to anticipate the stress related to this process and to provide adequate medical assistance. Important follow-up and assessment of health workers' well-being is in terms of ensuring their successful reintegration with their colleagues.

**Aims of this study** were to evaluate of the emotional impact, the degree of stress of the medical staff from an Emergency Department (ED), of both doctors and medical nurses, exposed to the risk of getting infected with COVID-19, through emergency diagnosis and treatment of suspected and confirmed positive patients during 2020.

### MATERIAL AND METHODS

In the period 15.11-30.11.2020, we have applied in the ED of the "Sf. Spiri-

don” County Clinical Emergency Hospital Iasi, one questionnaire based on 2 scales present in the specialized literature, described in details below:

a. *Brief Resilience Scale (BRS)*. The scale was developed by B. Smith *et al.* (5) to measure individual psychological resilience. It consists of six items (three reversed questions) measured on a 5-point scale (1 Never appropriate and 5 Completely appropriate). The total range of scores was between 6 and 30. Higher scores on the scale indicate a higher level of psychological resilience. The Turkish version of the scale was adapted by Dogan (2015). The adapted scale was highly sufficient in terms of CFA values ( $\chi^2/df$  (12.86 / 7)  $\leq$  1.83, NFI  $\geq$  0.99, CFI  $\geq$  0.99, GFI  $\geq$  0.99, SRMR  $\leq$  0.03, RMSEA  $\leq$  0.05) and internal consistency coefficient ( $\geq$  .88).

b. *Scale related to life satisfaction (SMV)*. The SMV consists of five items measured on a 7-point Likert scale (1: Strongly disagree, 7: Strongly agree). It was developed by Diener *et al.* (1985) and adapted by de Koker (6). Higher scores on the scale indicate higher levels of life satisfaction. We have used the Romanian translated versions of above described scales in our 63 items self-questionnaires.

**The questionnaire** included 63 items and we observed that in addition to the 2 scales consecrated in the literature, the applied questionnaire also contains other relevant items for the emotional impact among the personnel in the study. The number of distributed questionnaires was 70, of which 64 were validated to be interpreted, the latter were statistically processed in this study. The survey was based on the questionnaire that was physically distributed to the staff from the emergency reception service (doctors and nurses).

Participants were informed about the aims of the study and the research procedures. No reward was offered for participation. No personally identifiable information was requested.

This study had received the ethical approval of the host-hospital and the study participants have been informed and they signed the ethical consent prepared by the PI of this study.

**Statistical analysis.** Data processing was performed using *SPSS 27.0* package software. The method used was the *Spearman rank correlation coefficient  $\rho$*  (rho), which is a coefficient based on ranks, it is not influenced by the representativeness of the average, and it is generally used when the research group is small, or when at least one of the variables does not meet the administration conditions of the parametric tests. This indicator is frequently used in social and human sciences.

## RESULTS

The questionnaire was applied to 64 persons, 30 doctors (M:F ratio 0.50) and 34 nurses (M:F ratio 0.4782). The age distribution was on average 38.13 years for doctors (66.67% women) and 36.47 years for nurses (67.64% women), and the average age for the whole group is 37.25 years. Out of a total of 64 people, 32.81% were infected with COVID-19, 56.25% were not infected, and 10.93% did not know if they had the virus. These data were obtained from the first 6 items of the questionnaire.

The items 7-15 were referring to a list of statements regarding concerns regarding COVID-19. The *degree of concern about COVID-19*: we note that from the category of doctors 50% are very concerned and 33.33% are concerned, and from the nurses group the results were 44.11% / 26.47% for

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very concerned / concerned. Only a percentage of 3.12% is very little concerned about COVID-19. Item 10 was referring at the *virus capacity of spreading*: 50% of persons believed that the COVID-19 virus spreads a lot and only 1.56% think that it spreads very little. Item 11 asked the opinion of medical staff regarding *the access to information about the COVID-19 virus*: 56.25% consider that they have access to a lot of information, 26.6% consider that they have high access and 17.2% consider that they have medium access to information. Item 12 - *worry about contacting the virus* - 45.3% were very worried, 26.6% were worried, 14.1% average and a percentage of 6.3% were very little worried. Here we observed differences between the two categories: doctors are much more worried, as no doctor showed very little concern, while 11.8% of nurses think they are not worried about the COVID-19 virus. Item 13 – *threat*: 29.7% believed that the threat of COVID-19 influences them to be around people and 15.6% do not feel threatened. We observe differences between the two categories: doctors feel less threatened 20.6%, among doctors they consider themselves very little threatened compared to nurses, only 10% consider themselves very little threatened. 56.25% of study participants considered themselves very much threatened regarding travel plans, while only 7.81% consider themselves very little threatened. There are small differences between the two categories, 60% of doctors consider themselves threatened and 52.6% of nurses. *The influence of the threat of safety measures* was considered by 60% of the medical subjects, which believed that the infection with COVID-19 greatly influenced them in the use of safety measures, while the nurses

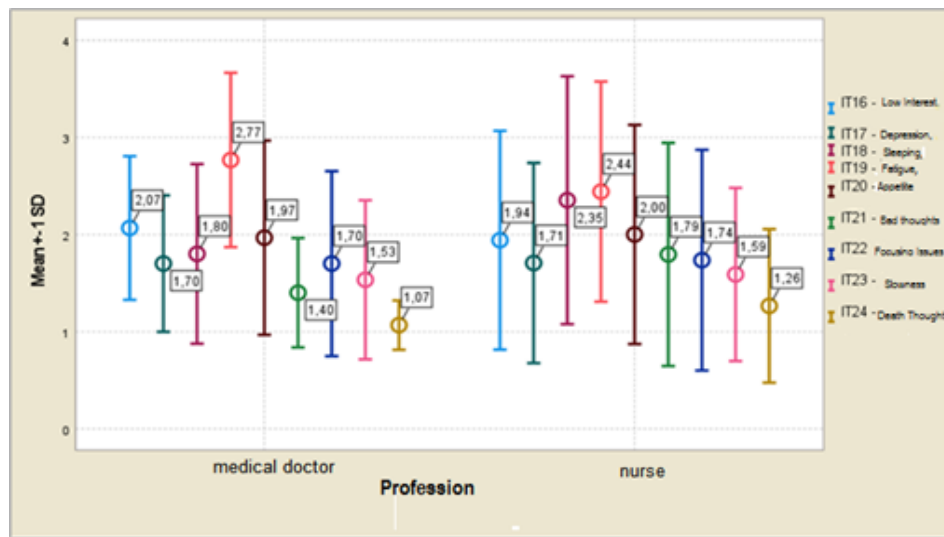
subjects in percentage of 56.3%.

From item 16 to item 24 we applied a set of questions regarding how often the subjects were disturbed in the last 2 weeks in carrying out activities: *low interest in certain things, feeling depressed, sleep problems, feeling tired, appetite, fear of failure, concentration problems, slowness in activities or restlessness, thoughts of death or injury*. 56.66% of the doctors stated that they had low interest in carrying out the activities for only a few days *versus* the nurses which answered in percentage of 26.47%. Depression was recognized by 53.33% of the doctors, which felt depressed for a few days, and 29.41% of the nurses. We observed differences between the two categories of subjects, regarding sleeping problems: 20.58% of nurses complained of sleep problems almost every day, while 6.67% of doctors. 20.31% of all the subjects complained of feeling fatigue almost every day. 63.33% of the responding doctors do not accuse slowness or restlessness at all, 23.33% accuse a few days a week, 10% more than half of the days of the week and 3.33% almost every day. Among nurses respondents, the percentages are 61.76% not at all, 23.52% a few days, 8.82% more than half of the days of the week and 5.88% almost every day. The total percentage is 62.50% for not at all, 23.43% a few days, 9.37% more than half of the days of the week and 4.68% almost every day. When asked about the presence of thoughts related to death or injury, 90.62% of the respondents declared that they did not have such thoughts at all, and only 2.94% and 5.88% of the nurses declared that they had such thoughts in more than half of the days or almost daily. The percentage among doctors was 0% for this item.

The average response to *the fear of in-*

fection was 6.07 among doctors and 5.32 among nurses. Regarding *the stressful work environment*, the answers were approxi-

mately identical in the two categories, with an average of 6.17 for doctors and 6.06 for nurses.



**Fig. 1.** Comparison between physicians and nurses regarding *low interest, depression, sleeping, fatigue, appetite, focusing issues and death thoughts*.

For the *presence of problems at the workplace*, the respondents declared the following related to involuntary thoughts about the workplace: 34.37% not at all, 50% moderately and only 15.63% or thinking about them extremely much. Regarding *the persistence or the feeling of being followed by problems at work*, a significant difference can be observed between doctors and nurses, 33.33% of doctors do not feel followed at all, and only 23.52% of nurses claims this thing. For the answer given to the item referring to *other things that triggered thoughts related to work*, 35.93% do not blame this fact, 50% a little and 14.06% blame this very much, the percentages are close. Feelings related to the workplace were described as extremely present by 12.50% of respondents, moderately present by 50%, with notable differences between

doctors 60% and nurses 41.17% and not at all present by 37.50% of respondents. 70% of doctors and 52.94% of nurses moderately described *the need to think about problems after leaving the workplace*, 31.25% not at all and 7.81% of respondents do not think to problems at the workplace extremely much, without significant differences among the two categories of personnel. 10.93% of the respondents accused *concentration problems* extremely, 40.62% moderately, with large differences between doctors 53.33% and nurses 29.41% and not at all 48.4%, also with significant differences between doctors 36.67% and nurses 58.82%.

For the question *I totally agree with the possibility of managing the situation at work*, only 20% of the doctors answered affirmatively, unlike 44.11% of the nurses. Here a direct, statistically significant corre-

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lation was also identified ( $p=0.047$ ) between the professional degree and the agreement with the statement in the analyzed item. The *difficulty of understanding the situation at the workplace* reveals significant differences between the two professional categories, doctors considering the situation at the workplace more difficult to understand compared to nurses (6.7%+30% compared to 11.8%+5.9%). A statistically significant correlation ( $p = 0.008$ ) was identified between occupational level and agreement with this statement in the item. Most respondents consider the *workplace structured*, respectively 26.56%, and the majority also consider the current workplace easy to influence, in a percentage of 20.31%. Many of the respondents, 17.18% mentioned total agreement and 17.18% strong agreement, consider the *work environment controllable*. Most respondents, 25%, consider *the current job attractive from a financial point of view*, and they are neutral regarding the predictability of the current job, respectively 20.3%+21.9%+12.5%. The majority of respondents, in percentage of 57.81%, believe that they *can adapt extremely easily to the changes occurring at the workplace* and that they can quickly overcome unforeseen situations occurring at the workplace. The respondents, in an overwhelming percentage, *try to see a happy side in the event of problems*, to overcome them successfully, the percentage being 36.67%. Most respondents believe that *exposure to stress makes them stronger*, 34.37% agreeing with this statement. 43.75% of the respondents say that they recover quickly after the illness. The majority of respondents, in percentage of 53.12%, believe that they can easily overcome the obstacles in order to achieve the

objectives at the workplace. Most of the surveyed staff (75%) declared *that under pressure they can stay focused and think clearly*, without identifying major differences between doctors and nurses (76.67% vs. 73.52%). In proportion to 75% of the medical personnel declared that it is not easy to be discouraged in the face of a failure (73.34% doctors vs. 76.47% nurses). Regarding the *perception of one's own person in terms of the ability to face challenges and life's difficulties*, more than half of the surveyed staff (56.3%) believe that it is a valid statement in all situations, there being no differences between doctors and nurses (56.7% vs. 55.9%). *Unpleasant or painful feelings such as sadness, fear and anger are easy to manage* for 84.4% of the medical staff, with a slightly higher proportion in the case of doctors (90%) compared to nurses (79.4%), the difference which is not but statistically significant. In the proportion of 59.4%, *medical personnel consider themselves less susceptible to colds, flu, and other infectious diseases*, with no differences between doctors and nurses. However, only 48.43% consider that it is unlikely that they will catch a cold, flu or other diseases when they manifest themselves in people around them (43.33% of doctor's vs. 52.94% of nurses, without being a statistically significant difference was identified). In accordance with the previously identified data, 75% of the surveyed staff believe that the risk of developing an infectious disease that exists in the people around them is low (80% doctors vs. 70.58% nurses, without identifying a statistically significant difference between them). 65.62% partially agree with the fact that they have an immune system that can protect them from most diseases that those around them have, without differences

between doctors and nurses, agreeing with the following statement regarding the possibility of doing an infectious disease to those around them (68.75% disagree). 51.56% partially agree with the fact that considering past experiences, the chances of getting sick are low even when friends are sick, without identifying differences between doctors and nurses, results found in agreement with the following statement when 46.87% declare that they do not agree at all that they have a history of susceptibility to infectious diseases.

Regarding the ways in which the surveyed medical staff believe that infections can be transmitted, the situations in which those around sneeze without covering their mouths (totally agree 71.87%), the use of used clothing (totally agree 51.56%), touching money (totally agree 40.62%), staying around sick people (totally agree 31.25%) and less use of public telephones (totally agree 21.87%), using another person's pen (total agree 18.75%), or sharing a bottle of water with a friend (fully agree 15.62%).

## DISCUSSION

This study analyzed the emotional impact, the degree of stress of the medical staff of both doctors and medical nurses, exposed to the risk of getting infected with COVID-19. In our study we have identified statistically significant difference between medical doctors and nurses for items referring to the possibility of managing the situation at the workplace ( $p=0.047$ ) and to difficulty understanding the situation at workplace ( $p=0.008$ ). Using the Spearman correlation coefficient, we identified that most of the correlations are positive, or directly proportional. We marked the statistically significant correlations in the first

table, and we have used color codes for their intensity: yellow – weak correlations, below 0.3, orange – moderate correlations, between 0.3 – 0.5 and red – strong correlations, between 0.5 – 1.00. Item 25A (*fear of infection*) is moderately to strongly and statistically significantly correlated with the following questionnaire items: IT 13 (*threat*) –  $\rho = 0.487$ , IT18 (*sleeping*) –  $\rho = 0.406$ , IT 26 (*thinking*) –  $\rho = 0.464$ , IT 28 (*other things*) –  $\rho = 0.410$ , IT30 (*not thinking*) –  $\rho = 0.422$  and IT31 (*concentration problems*) –  $\rho = 0.494$ .

The correlations recorded are directly proportional or positive, which means that the fear of infection is the greater, as the subjects indicated higher scores on the mentioned items.

Correlations were also statistically significant, directly proportional, moderate, but weaker in intensity and with items 7, 14, 19, 20, 22 and 34; the correlation with item number 43 (*I recover quickly after illness*) also belongs to the same category of intensity, but in this case the correlation changes its meaning, being inversely proportional – the subject's fear of infection is all the more pronounced the more they appreciate that the time of their recovery after an episode of illness is longer. Also, we observed statistically significant correlations, but weaker in intensity and still directly proportional, of item 25A with items 8, 16, 23, 29, 32, 57 and 58.

Item 25B (*stressful work*) is in turn statistically significantly, directly proportionally and moderately to strongly correlated with IT18 (*sleep*) –  $\rho = 0.421$ , IT19 (*fatigue*) –  $\rho = 0.445$ , IT20 (*appetite*) –  $\rho = 0.418$ , IT26 (*thinking*) –  $\rho = 0.441$  and IT31 (*concentration problems*) –  $\rho = 0.410$  – which means that the subjects note a higher level of stress as they indicated



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higher scores on the mentioned questions. There is also a moderate to strong, but inversely proportional, correlation of the stress level with question IT43 (*I recover quickly after illness*) – rho = - 0.480, respectively with high scores on this question. It can thus be stated that, when the subjects consider that it is difficult to recover from the illness, they are moderately afraid of infection, but have a higher level of stress in carrying out their professional activity. Also, the stress level of the subjects is correlated statistically significantly and directly proportionally, but moderately, with items 13 (to a lesser extent, therefore, than in the case of fear of infection), 16, 23, 32, 34 (stronger than in the case of fear of infection), 22 (similar in intensity to the case of fear of infection), and in addition

with items 17, 24 and 49. We also observed a moderate correlation, statistically significant but inversely proportional, with item 42 (*stress makes me stronger*) – rho = - 0.314 – so the study subjects perceive a high level of stress at work, but do not consider the stress to make them stronger, and therefore do not motivate them positively. Some positive correlations were also observed, statistically significant but weak in intensity, with items 8, 9, 51, 55 (new correlations), 28, 30 (*much weaker than in the case of fear of infection*) and 57, 58 (*correlations similar in intensity to those in the case of the fear of infection*). In addition, the level of stress is weakly correlated, statistically significant but inversely proportional to item 41 (*I try to see humor*) – rho = -0.262.

**TABLE I**  
**Correlations between fear of infection and stressful work (items 07-63)**

	ITEM 25A – Fear of infection				ITEM 25B – Stressful work			
	Spearman's correlation coefficient rho	P	C.I. 95% of rho		Spearman's correlation coefficient rho	P	C.I. 95% of rho	
			Inf. Lim.	Sup. Lim.			Inf. Lim.	Sup. Lim.
ITEM 07	.	.012	.063	.523	.204	.106	-.052	.434
ITEM 08	.261*	.038	.008	.482	.248*	.048	-.005	.471
ITEM 09	.206	.102	-.049	.436	.292*	.019	.042	.507
ITEM 10	.162	.200	-.094	.399	.150	.237	-.107	.388
ITEM 11	.130	.305	-.127	.371	.186	.141	-.070	.419
ITEM 12	.187	.140	-.069	.420	-.035	.782	-.286	.219
ITEM 13	.487**	.000	.267	.659	.375**	.002	.135	.573
ITEM 14	.321**	.010	.075	.531	.232	.065	-.022	.458
ITEM 15	.146	.251	-.111	.384	.122	.337	-.135	.364
ITEM 16	.285*	.022	.035	.502	.361**	.003	.120	.563
ITEM 17	.227	.071	-.027	.454	.374**	.002	.134	.572
ITEM 18	.406**	.001	.171	.598	.421**	.001	.188	.609
ITEM 19	.371**	.003	.130	.570	.445**	.000	.217	.627
ITEM 20	.365**	.003	.124	.566	.418**	.001	.185	.607
ITEM 21	.161	.204	-.096	.397	.200	.114	-.056	.431
ITEM 22	.365**	.003	.123	.565	.396**	.001	.159	.589
ITEM 23	.267*	.033	.015	.487	.341**	.006	.097	.547

	ITEM 25A – Fear of infection				ITEM 25B – Stressful work			
	Spearman's correlation coefficient rho	P	C.I. 95% of rho		Spearman's correlation coefficient rho	P	C.I. 95% of rho	
			Inf. Lim.	Sup. Lim.			Inf. Lim.	Sup. Lim.
ITEM 24	.151	.235	-.106	.389	.338**	.006	.093	.544
ITEM 26	.464**	.000	.240	.642	.441**	.000	.212	.624
ITEM 27	.167	.188	-.090	.402	.177	.161	-.079	.411
ITEM 28	.410**	.001	.175	.601	.269*	.031	.018	.489
ITEM 29	.281*	.024	.031	.499	.228	.070	-.027	.454
ITEM 30	.422**	.001	.189	.610	.253*	.044	.000	.475
ITEM 31	.494**	.000	.276	.664	.410**	.001	.176	.601
ITEM 32	.283*	.024	.032	.500	.371**	.003	.130	.570
ITEM 33	-.011	.932	-.263	.243	.059	.641	-.196	.308
ITEM 34	.318**	.010	.071	.528	.362**	.003	.121	.563
ITEM 35	-.074	.563	-.320	.183	-.111	.383	-.354	.146
ITEM 36	.147	.246	-.110	.385	.226	.072	-.028	.453
ITEM 37	-.065	.609	-.313	.191	-.191	.131	-.423	.065
ITEM 38	.056	.659	-.199	.305	.039	.761	-.216	.289
ITEM 39	-.059	.643	-.307	.197	-.055	.668	-.303	.201
ITEM 40	.059	.642	-.196	.307	.069	.590	-.187	.316
ITEM 41	-.145	.255	-.383	.112	-.262*	.037	-.483	-.010
ITEM 42	-.231	.066	-.457	.023	-.314*	.011	-.525	-.067
ITEM 43	-.316**	.011	-.527	-.069	-.480**	.000	-.654	-.259
ITEM 44	-.063	.622	-.311	.193	-.225	.074	-.452	.029
ITEM 45	-.122	.338	-.363	.135	-.142	.261	-.381	.114
ITEM 46	-.083	.515	-.329	.173	-.139	.273	-.379	.118
ITEM 47	-.112	.378	-.355	.145	-.174	.170	-.408	.083
ITEM 48	-.032	.804	-.282	.223	-.186	.142	-.419	.070
ITEM 49	.170	.180	-.087	.405	.337**	.007	.092	.543
ITEM 50	-.001	.994	-.254	.252	.126	.322	-.131	.367
ITEM 51	.161	.202	-.095	.398	.296*	.018	.047	.510
ITEM 52	.082	.519	-.174	.328	.040	.755	-.215	.290
ITEM 53	.029	.818	-.225	.280	.118	.352	-.139	.360
ITEM 54	-.127	.318	-.368	.130	-.167	.186	-.403	.089
ITEM 55	.154	.224	-.103	.392	.288*	.021	.038	.504
ITEM 56	-.032	.805	-.282	.223	.057	.656	-.199	.305
ITEM 57	.273*	.029	.021	.491	.253*	.044	.000	.475
ITEM 58	.296*	.018	.046	.510	.289*	.020	.040	.505
ITEM 59	.140	.269	-.117	.380	.144	.257	-.113	.383
ITEM 60	.065	.607	-.190	.313	.113	.375	-.144	.355
ITEM 61	.054	.673	-.202	.303	.030	.811	-.224	.281
ITEM 62	-.025	.843	-.276	.229	-.187	.139	-.420	.069
ITEM 63	-.032	.801	-.283	.222	.069	.586	-.187	.317

## Assessing the resilience of healthcare professionals in a Romanian emergency unit during the COVID-19 pandemic

The findings of this study showed that in order to increase the psychological resilience of healthcare professionals working during the COVID-19 pandemic, there is a need to improve their sleep quality, positive emotions and life satisfaction. Levels of psychological resilience of healthcare workers in recent years have been found to be higher. Still, doctors constitute the group with the lowest levels of psychological resilience among health workers. We consider that the current study could bring some contribution to the specialized literature in this regard. Primary needs such as sleep, which are the determinants of quality of life, life satisfaction and psychological resilience should be met.

The resilience and well-being of medical staff is a subject of interest for researchers from all continents: USA (Ross *et al.*, 2023), Korea (Lee *et al.*, 2022), Italy (Giusti *et al.*, 2022), Australia (Unjai *et al.*, 2022). In these studies, the most frequent answers of medical staff were for high stress, were afraid, different levels of anxiety or depression, work overload, depressive symptoms (7–10). Researchers from Oxford, United Kingdom recognized that resilience-building programs can provide support for staff who endure highly stressful environments and can optimize resilience. In their pilot study, the authors have seen that the study participants – nurses accepted the idea of implementing web-based resilience programs, for optimizing resilience, psychological health, and communication at workplace (Henshall *et al.*, 2023).

Haugland *et al.* is sustaining our findings, regarding the need for improving resilience in nurse's category and this should be an ongoing effort (Haugland *et al.*, 2023).

**The strength** of our study is that, for our knowledge, it is one of the first studies in our country which is assessing the resili-

ence and satisfaction with life among medical staff (doctors and nurses).

**The limitation** of the study is the relatively small number of participants which provided data. Another limitation is that the study participants belong from a single-based unit hospital research and the results cannot be generalized for doctors/nurses working in emergency unit in general. Also, this was a single cross-sectional study with only self-reported measurements of the participants, and improper pre-set demographic variables.

Future studies may reveal more extensive results by collecting data from a larger number of healthcare professionals. Given that the current study is an example of cross-sectional research, there is a need to conduct longitudinal studies that examine the long-term effects of the pandemic. Positive and negative emotions were found to play a significant role in the model as variables that predict the psychological resilience of health workers after the analysis. Therefore, further studies can have a better understanding of the issue by investigating the determinants of positive and negative emotions of healthcare workers during the COVID-19 pandemic. We intend that following this study, to extend the research to a larger number of personnel from the emergency services (and in other EDs in the country), as well as to the people from the ISU services, involved in emergency interventions, in order to obtain much more conclusive data regarding the stress, the behavior in general of the workers from the UPU and ISU emergency services during the COVID-19 pandemic.

### CONCLUSIONS

The results of our study showed that to increase the psychological resilience of healthcare professionals working during the

COVID-19 pandemic, their sleep quality, positive emotions and life satisfaction need to be improved. Levels of psychological resilience in healthcare workers in recent years have been higher. On the other hand, higher levels of negative emotions lower the level of psychological resilience. Doctors constitute the group with the lowest levels of psychological resilience among health workers. The research results revealed a significant part of the variables that impact on the psychological resilience of healthcare workers, so that they can provide better services during COVID-19 and similar pandemics. The result of the

current study showed that one of the main needs such as: sleep quality, life satisfaction and positive-negative things are part of an important prediction for the psychological resilience of medical professionals.

#### **CONFLICT OF INTEREST AND FUNDING**

The authors declare that there is no conflict of interest, and they received no specific funding regarding this scientific research.

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