

# Stress, anxiety and uncertainty in EMS provider during COVID-19 - an exploratory study

Sporer C<sup>1</sup>, Resko J<sup>1</sup>

<sup>1</sup>Department of Social Sciences, Queensborough Community College – CUNY, 222-05 56th Avenue, Bayside, NY 11364

## Corresponding author:

Celia Sporer PhD  
Assistant Professor,  
Department of Social Science,  
Queensborough Community  
College  
City University of New York,  
New York, USA  
E-mail: csporer@qcc.cuny.edu  
ORCID ID: <https://orcid.org/0000-0002-3242-4866>

Date of submission: 19.01.2024  
Date of acceptance: 16.08.2024  
Date of publication: 01.01.2025  
DOI:  
<https://doi.org/10.3126/ijosh.v15i1.61993>

Conflicts of interest: None  
Supporting agencies: None



**Copyright:** This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/)

## ABSTRACT

**Introduction:** Emergency Medical Services (EMS) providers played a crucial role in the frontline response to the COVID-19 pandemic. Facing challenges and despite their critical role, EMS providers are not given the attention they deserve in research and practical applications. This study examined the early psychological impact of the pandemic on EMS providers, exploring relationships between workplace stressors, COVID-19 specific variables, and psychological distress. Findings inform strategies for supporting EMS providers' mental health.

**Methods:** Data collection, during the early pandemic, involved online recruitment and surveys that included psychological scales, demographics, and COVID-19-specific variables.

**Results:** 34 EMS providers from the New York Metro area, mostly working full-time in private agencies, noted significant impacts of COVID-19 on both providers and their workspaces. Although perceived risk and inadequacy of personal protective equipment were noted, the primary COVID-19-specific variable affecting psychological outcomes was moderate. Psychological measures showed low to moderate distress, mild anxiety (higher in women), and low to moderate perceived stress. Stress correlated with work-related stressors and lower workplace satisfaction. Moderate uncertainty linked to specific work challenges, while low Posttraumatic Stress Disorder (PTSD) scores associated with poor work culture satisfaction, lack of flexibility, and negative work attitudes.

**Conclusion:** This study challenges assumptions of high stress, anxiety, and PTSD in EMS providers during the early COVID-19 response. Workplace variables, not COVID-19-specific factors, are more linked to negative psychological symptoms. Recognizing and addressing EMS providers' mental health needs during high-stress events is crucial, emphasizing the role of general workspace issues.

**Keywords:** Anxiety, COVID-19, EMS, Mental Health, Occupational Health, Stress

## Introduction

The heroes of the COVID-19 response, frontline workers, included EMS providers. They were among the first to encounter large numbers of extremely ill patients with little guidance on appropriate treatments and ways to ensure their safety and well-being.<sup>1</sup> They faced unprecedented challenges including a lack of personal protective equipment (PPE), staffing shortages, and were

even excluded from the first round of vaccines.<sup>2</sup>

EMS providers have long straddled the line between healthcare workers and first responders without fully belonging to either.<sup>3</sup> Early studies examining the psychological impact of COVID-19 found moderate to high anxiety,<sup>4-11</sup> and high self-reported stress among healthcare workers.<sup>6,9</sup> Increased Posttraumatic Stress Disorder (PTSD)

was also found with high levels maintained at 90-day follow-up.<sup>4,5,8,11</sup> Direct contact with COVID-19 positive patients was positively correlated with increased levels of PTSD.<sup>8</sup> Occupational factors (i.e., concerns about personal protective equipment, personnel shortages) also contributed to psychological distress.<sup>12</sup> Studies of police officers found that work-related variables (i.e., workload, time away from family) contributed to psychological distress and anxiety.<sup>13-16</sup> However, these studies failed to differentiate among the various healthcare providers, assuming that EMS providers would respond similarly. Couaraze et al.,<sup>17</sup> also found that healthcare workers experienced elevated stress during the early days of the pandemic. However, their sample included only a small number of EMS providers (748 out of 10,000 participants). Prior research suggests the existence of a “rescuer’s personality” that typifies

## Methods

Over 5,000 members fully vetted EMS providers comprised group membership. Two posts requesting participation in this study were posted in the group 4 weeks apart in May and June 2020. Study participants were recruited using a private Facebook group created by a group of New York City EMS providers at the start of the pandemic designed to provide a forum to share observations, insights, and information when little was known about COVID-19 and clear operational guidance was lacking. The group was also designed to assist mutual aid and task force members deployed to New York City and surrounding areas navigate the geographic area, and the complex area healthcare system, and provide assistance and support in day-to-day activities that were slow to be put in place for these responders.

The Facebook group recruitment post linked respondents to a screening tool asking for verification of EMS status and affiliation with COVID-19 response. The intake forms included 24 items related to screening criteria and demographic variables and included name, gender, year born, education, EMS certification level, state providing EMS certification, EMS employer, employment status, and the role played in the COVID-19 response as well as other relevant variables. Once eligibility was confirmed participants were sent three links that

EMS providers.<sup>18</sup> Since EMS providers’ daily work environment includes stress and unpredictability, they may be able to operate successfully in these environments.<sup>10</sup> These conditions may have better prepared them for COVID-19, resulting less psychological stress than other healthcare workers. The unique skill set among EMS providers reinforces the need to study this population apart from other healthcare workers and first responders.

The purpose of this study was to assess the psychological impact of COVID-19 on EMS providers, exploring relationships between workplace stressors, COVID-19 specific variables, and psychological distress. Findings from this study can help inform strategies for supporting EMS providers’ mental health.

corresponded to the three parts of the survey (organizational issue, physical health, and psychological health).

Participants could opt to participate in any or all of the parts independently. Surveys were completed using [surveymonkey.com](https://www.surveymonkey.com). Participants completed the surveys using their own devices at a time and place of their convenience. Average response times were around 15 minutes per part. In addition to general demographic variables, EMS work variables, and COVID-19 response-specific items, this study collected data on aspects of psychological distress using the Perceived Stress Scale (PSS),<sup>19</sup> Posttraumatic Stress Disorder (PTSD) Check List (PCL),<sup>11</sup> Generalized Anxiety Disorder 7(GAD7),<sup>20</sup> and Intolerance of Uncertainty Scale-12 (IUS-12).<sup>21</sup>

The PSS (Cohen et al, 1983) is a 10-item 5 point Likert item assessment used to how individuals perceive stress defined and feeling and thought about stress levels at a given time and allows for the incorporation of aspects of uncountability, unpredictably, hassles, and confidence in the ability to handle stressors in the context of the individual’s perceptions. Developed for use in the primary care and general medical setting the PCL,<sup>11,22</sup> a 17-item Likert scale assessment has been adapted to assess levels of PTSD as defined

by the DSM in a variety of settings. Anxiety was measured using the GAD 7, which is designed to assess the severity of anxiety in general settings under DMS diagnostic criteria. An individual's inclination to react negatively to uncertainty was measured using the IUS-12,<sup>21</sup> a 12-item self-report questionnaire. This measure was included because intolerance of the unknown is connected to an underlying fear of the unknown, which was undeniably present in the early days of the pandemic, and which can be associated with higher levels of stress and anxiety.

Participants were compensated \$10 to \$35 depending on the degree of participation. Funding for compensation was provided directly by researchers without any additional or outside sources of funding.

## Results

A total of 34 participants were included in this analysis with EMTs and paramedics equally represented. The sample overwhelmingly identified as Caucasian (n=29, 87.9%), and male participants (n=20, 58.8%) slightly outnumbered females (n=14, 41.2%) as did those with children (n=16, 53.3%). Most of the sample lived in the New York Metro area (n=24, 70.6%) and possessed New York State certifications (n=20, 58.8%), working full time (n=27, 79.4) and working for private EMS agencies (n=23, 69.7%). The largest group reported having some college (n=16, 47.1%) with an average of 14.72 years on the job (SD= 10.99). The average participant believed they were unlikely to leave EMS (n=28,  $\bar{x}$ =1.50) or their current EMS employer (n=28,  $\bar{x}$ =2.32) in the next 6 months.

At the time of data collection, COVID-19 was reported by participants to have a large effect on their organizations, work unit, and participants personally with most participants reporting that they had direct contact with the virus slightly more than often (n=28,  $\bar{x}$ +SD=3.29+1.049). On

This study was approved by the college Institutional Review Board (IRB) and Human Subject Research Protection Program (HRPP) Coordinator. Participants were afforded a degree of confidentiality consistent with ethical policies and procedures with numeric identifiers being used but because compensation was based on the level of participation anonymity was not possible. Each participant was assigned a randomly generated identification code to use when completing other parts of the survey. The paperwork connecting these identification numbers with the participant's personal identifying information was encrypted and stored separately from the rest of the data to ensure their privacy and was accessed for compensation only.

average providers at the time perceived COVID-19 to be a serious risk to self (n= 28,  $\bar{x}$  + SD=4.18 +1.362) but slightly less of a risk to their family (n=28,  $\bar{x}$  + SD =3.81+1.611), patients (n=28,  $\bar{x}$  + SD=3.75 +1.936) and colleagues (n=28,  $\bar{x}$  + SD=3.89 +1.474). There were no gender differences in these perceptions, although paramedics perceived the risk to colleagues to be slightly higher than EMTs, 3.29 versus 4.50 (t(26) = -2.356, p = .026). Among the sample, 26 rate the adequacy of the COVID-19 response with the means of most of the items around somewhat adequate (represented by a score of 3). This included PPE ( $\bar{x}$  + SD= 3.18 + 1.056), treatment equipment (  $\bar{x}$  + SD=3.50 +.962), support staff availability ( $\bar{x}$  + SD= 2.75 +1.067), support staff competence ( $\bar{x}$  + SD=2.89 +1.166) and information from management ( $\bar{x}$  + SD =4.18 +1.096). Employment status, EMS work variables were assessed by asking EMS providers to identify the level of stress associated with each of the 40 statements, with lower numbers reflecting lower levels of associated stress (Table 1 and Table 2).

**Table 1:** Means and Standards Deviations for Work Variables

Work Variable	Mean (n=27)	Std Dev (n=27)
Work related activities on day off	1.26	1.483
Traumatic events	1.78	1.502
Working alone at night	1.89	2.063
Upholding a “higher image” to public	1.89	2.063
Friend/family feel the effect of the job	1.93	1.859
Making friends outside the job	2.04	2.227
Limitation to social life	2.04	2.066
Managing social life outside work	2.11	1.826
Shift work	2.22	1.783
Over-time demands	2.30	1.772
Paperwork	2.30	2.127
Feeling as if you are always on the job	2.37	2.066
Negative comments from public	2.48	2.064
Eating healthy at work	2.59	2.117
Not enough time for friends/family	2.70	2.109
Lack of understanding from friends/family	2.81	2.450
Occupation related injury	3.00	2.353
Fatigue	3.22	2.342
Finding time to stay in good physical condition	3.33	2.148
Risk of being on the job	3.23	2.178
Level of stress scale of 0 (No Stress)-6 (A Lot of Stress)		

**Table 2:** Means and Standards Deviations for Work Variables

Work Variable	Mean (n=26)	Std Dev (n=26)
Perceived pressure to volunteer free time	1.92	1.998
Dealing with court/legal system	1.96	2.236
Internal investigations	2.50	2.083
Looked down upon because sick or injured	2.62	2.137
Too much computer work	2.77	1.945
Lack of training on new equipment	2.88	2.215
Need to be accountable for doing job	2.96	2.553
Dealing with supervisors	3.00	2.400
Feelings of always having to prove yourself to organization	3.12	2.471
Over-emphasis of negative by leadership	3.35	2.525
Dealing with co-workers	3.50	1.940
Inadequate equipment	4.04	2.236
Unequal sharing of work responsibilities	4.04	2.236
Bureaucratic red tape	4.19	1.939
Feeling that different rules apply to different people	4.23	1.632
Constant change in policy	4.23	1.904
Inconsistent leadership style	4.35	4.620
Lack of resources	4.62	1.878
Staff shortage	4.81	1.550
Excessive administrative duties	3.38	2.334
Level of stress scale of 0 (No Stress)-6 (A Lot of Stress)		

On average these items were identified as not stressful at all, slightly more than moderately stressful. No items on average were considered very stressful by the sample. Physical concerns, leadership/administration, and work resources were considered the most stressful.

The four primary psychological measures examined in this study, PSS, GAD, PCL, and IUS although measure different psychological constructs are all strongly correlated (Table 3) however work and COVID-19-specific variables vary in correlation significance and strength suggesting that the measures are correlated in there are slightly different factors that contribute to perceived stress, anxiety, PTSD and intolerance

of the unknown.

The mean anxiety score for the sample used the GAD 7 was 8.25 (n=28, SD=6.421) reflecting mild anxiety using normative cutoff scores and well below the accepted cutoff score of 10 which is reflective of severe distress.<sup>20</sup> An independent samples t-test was performed to compare the means for males and females on GAD scores. There was a significant difference in anxiety scores for gender, with women ( $\bar{x} + SD=11.82 + 6.56$ ) showing significantly higher levels than men ( $\bar{x} + SD = 5.94 + 5.32$ );  $t(26)=-2.607$ ,  $p = .015$ . GAD scores in the sample were correlated with several of the COVID-19 and work-related variables (Table 3).

**Table 3:** Correlations of COVID-19 and Work Variables with Psychological Measures

Variable	GAD		PCL		PSS		IUS	
	N	r	N	r	N	r	N	R
Looking forward to going to work	25	-.455*	25	-.466*	23	-.599**	27	-.612***
Relationship with supervisor	-	-	28	-.406*	23	-.478*	27	-.500**
Relationship with coworkers	-	-	-	-	23	-.469*		
Excited for work	25	-.431*	28	-.437*	23	-.611**	27	-.596**
Work Culture	25	-.650***	25	-.628***	23	-.702***	27	-.669***
Work flexibility	25	-.421*	-	-	23	-.467*	27	-.492**
Meaningfulness of work	-	-	28	-.477**	23	-.470*		
Lack of training on new equipment	-	-	26	.398*	-	-	25	.558**
Always having to prove oneself	-	-	-	-	21	.672**	-	-
Dealing with supervisor	-	-	-	-	-	-	25	.443*
Shift work	-	-	27	.433*	22	.445*	-	-
Working alone at night	-	-	27	.493**	-	-	-	-
Too much computer work	-	-	-	-	21	.470*	-	-
Work Related activities on day off	24	.451*	-	-	22	.479*	26	.512**
Traumatic work events	24	.522**	27	.507**	22	.619**	-	-
Managing social life outside work	24	.431*	-	-	22	.517**	-	-
Limited time with friends/family	24	.574**	27	.604***	22	.450*	26	.551**
Eating healthy at work	24	.440*	-	-	22	.537**	-	-
Fatigue	24	.450*	27	.457**	-	-	-	-
Occupation Related health issues	24	.493*	27	.523**	-	-	26	.498**
Lack of understanding - friends/family	-	-	27	.560**	-	-	-	-
Making friends outside of work	24	.746**	27	.692**	22	.655**	26	.500**
Upholding a higher image in public	24	.523**	27	.589**	-	-	26	.388*
Limitation to social life	24	.608**	27	.566**	22	.635**	-	-

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

The appraised stress for the sample was 26.44 ( $n=25$ ,  $SD=8.33$ ) out of a total possible score of 40. While no cutoff or interpretation scores are provided, higher scores represent higher levels of appraised stress. Based on other data this score represents a low to medium amount of perceived stress. A Pearson correlation coefficient was computed to assess the relationship between occupational variables and perceived stress scores. Higher scores on the PSS were associated with feelings of a greater need to prove oneself, concerns related to shift work, too much computer work, work intruding into days off including managing a social life, various non-work social relationships/interactions, and traumatic work events (Table 3). High PSS scores were also correlated with poorer relationships with coworkers and supervisors, and lack of satisfaction with work culture and flexibility. Lower reported scores of looking forward to going to work, excitement for work, and the meaningfulness of work were also associated with higher PSS scores.

Overall, the sample scored relatively low on the IUS-12, 26.42 ( $n=33$ ,  $SD=8.59$ ). While no normative cutoff score exists for this measure the sample means scores are in the lower middle range of possible scores (12-60) suggesting that the sample holds average beliefs about uncertainty and its implications. Furthermore, the sample score suggests a moderate amount of fear of the unknown. A Pearson correlation coefficient was computed to assess the relationship between occupational variables and uncertainty scores. The analysis revealed that expressing greater anticipation and excitement for work was correlated with lower IUS-12 scores as were better relationships with supervisors and co-workers, satisfaction with work flexibility, and workplace culture. Reports of higher levels of stress associated with lack of training, dealing with supervisors, bleeding of work into person time, limited time with friends/family, occupational

health issues, and socialization challenges were associated with higher scores not eh IUS-12. Satisfaction with PPE was the only COVID-19-specific variable negatively correlated with IUS-12 scores (Table 3).

The sample mean score of 40.59 ( $n=32$ ,  $SD=19.64$ ) was just under the PTSD positive score of 44 for the civilian population and notably below the cutoff score of 50 for military populations. Higher PCL scores were associated with less satisfaction with work culture and flexibility as well as poor relationships with supervisors (Table 2). A Pearson correlation coefficient was computed to assess the relationship between occupational variables and PTSD scores. There was a strong correlation between high PCL scores and those who reported less excitement and desire to go to work. Higher concerns and stress concerning lack of training in new equipment, shift work, working alone at night and traumatic work events were also correlated with higher PCL scores. Similarly, significant correlations were found between higher PCL scores and higher levels of concerns/stress related to insufficient time with friends/family, fatigue, occupational health issues, lack of understanding from friends and family, socialization outside of work, and public perception of EMS. Similar to the other psychological measures, the COVID-19-specific measure significantly correlated with the PCL was satisfaction with PPE, with those expressing great levels of satisfaction scoring lower on the PCL (Table 3).

Several regressions were undertaken to determine which variable might be most useful in predicting high scores on the psychological measures, however, none of the models proved to be significant. The variables assessed for this study may have failed to tap significant contributors to psychological distress and/or the small sample size may have limited the ability to identify this higher level of prediction.

## Discussion

This paper begins to shed light on the role of EMS providers in the early days of the COVID-19 pandemic. These dedicated professionals, who straddle the realms of healthcare and first responders, faced unprecedented challenges in dealing with the initial wave of patients. They encountered symptoms that defied traditional medical thinking, grappled with a lack of personal protective equipment, and suffered from staffing shortages<sup>23</sup>. Despite being on the frontlines, they were relegated to second-class status, exemplified by their exclusion from the first wave of vaccine eligibility<sup>3</sup>. Yet despite these challenges, overall, the sample of EMS providers presented with limited symptoms of anxiety, PTSD, and stress which suggests a generally psychologically healthy sample. Not surprisingly higher levels of stress associated with work/personal life spillover, health, and social interaction were significantly correlated with higher GAD scores. Greater satisfaction with workplace culture and flexibility were associated with lower GAD scores as were positive reports of looking forward to going to work. Similarly, those who reported higher adequacy of COVID-19 PPE had lower anxiety scores. A Pearson correlation coefficient was computed to assess the relationship between COVID-19 variables and anxiety scores. Adequacy of PPE was the only COVID-19-specific variable significantly correlated with anxiety  $r(25) = -.433, p = .030$ .

They also showed relatively average levels of fear of uncertainty which in turn can impact the lower level of other psychological symptoms present. This runs counter to many of the published works of groups of healthcare workers during the active pandemic period suggesting that there might be something unique about EMS providers and their approach and response to COVID-19. Furthermore, the findings of this study suggest that many of the variables that impacted the manifestation of higher levels of psychological symptoms in EMS providers were not COVID-19-specific but likely had more to do with general EMS occupational issues.

Many of the items identified by the sample as

moderately stressful were not significantly correlated with the psychological measures suggesting that although appraised as stressful, they do not directly impact the overall broader psychological health of these providers. It is possible that although appraised as stressful EMS providers in this sample have developed and effectively implemented ways in which to minimize the impact of the appraised stress and there may be a specific aspect of resilience found in this occupational group.

The data analyzed for this study does not make it possible to suggest why the sample scored low to moderate on concern about uncertainty. It might suggest that individuals who work in EMS possess personality characteristics that predispose them to this approach or the experience with the normative unpredictability of EMS has resulted in providers learning skills and approaches to increase their tolerance of uncertainty<sup>24</sup>. Therefore, when faced with extreme uncertainty that manifested during the early days of COVID-19, EMS providers had less negative psychological impact than other healthcare workers who are used to working in more stable, controlled, and predictive circumstances<sup>25, 26</sup>.

This study is unique in its focus on EMS providers and provides critical data that distinguishes their experiences from other healthcare workers and first responders. Although the sample showed relatively low psychological symptoms in the initial days of the pandemic when this data was collected, the impact of the pandemic on their mental well-being should not be underestimated.

The findings of this study offer a foundation for future education, training, and practical strategies to ensure the mental health and well-being of EMS providers during critical times. It highlights the need for greater recognition of their contributions and the importance of adequately supporting and equipping them to navigate unprecedented challenges. As we move forward, the lessons learned from this research can be applied not only to future healthcare crises but also to various situations, including those encountered as part of

daily work activities, that demand the utmost resilience and dedication from EMS providers. The commitment and sacrifices of these

## Conclusions

The purpose of this study was to assess the psychological impact of COVID-19 on EMS providers, exploring relationships between workplace stressors, COVID-19-specific variables, and psychological distress. To this end, this revealed the challenges, resilience, and unique response of EMS to the COVID-19 crisis. Although the participants reported significant obstacles related to insufficient personal protective equipment and delayed vaccine eligibility, the sample of EMS providers also reported limited symptoms of anxiety, PTSD, and stress. This

## Acknowledgments

This research is fully supported by PSC-CUNY, 64017-00 52. The authors fully acknowledge The City University of New York for the approved

individuals should never be taken for granted, and their mental health and well-being should always be a top priority.

finding suggests overall psychological well-being among the participants. This study also found that factors contributing to higher psychological symptoms were associated with general EMS occupational issues rather than COVID-19-specific variables. These findings suggest the potential existence of specific resilience within this group, as identified stressors showed no significant correlation with overall psychological health. Notably, EMS providers exhibited lower concern about uncertainty. This research provides crucial insights into the experiences of EMS providers, an under-studied population.

fund which makes this important research viable and effective.

## References

1. Cabanas, JG, Williams, JG, Gallagher, JM & Brice, JH. COVID-19 pandemic: The role of EMS physicians in a community response effort. *Prehospital Emergency Care*. 2021;25(1):8-15. Available from: <https://doi.org/10.1080/10903127.2020.1838676>
2. Gregory, M, Powell, JR, MacEwan, SR, Kurth, JD, et al. COVID-19 vaccinations in EMS professionals: Prevalence and predictors. *Prehospital Emergency Care*. 2022;26(5):632-40. Available from: <https://doi.org/10.1080/10903127.2021.1993391>
3. Donnelly, EA, Siebert, D & Siebert, C. Development of the Emergency Medical Services Role Identity Scale (EMS-RIS). *Social Work in Health Care*. 2015;54(3):212-33. Available from: <https://doi.org/10.1080/00981389.2014.999979>
4. Amsalem D, Lazarov A, Markowitz JC, Naiman A, Smith TE, Dixon LB, et al. Psychiatric symptoms and moral injury among US healthcare workers in the COVID-19 era. *BMC Psychiatry*. 2021;21(1):1-8. Available from: <https://doi.org/10.1186/s12888-021-03565-9>
5. Cheng P, Xu LZ, Zheng WH, Ng RMK, Zhang L, Li LJ, et al. Psychometric property study of the posttraumatic stress disorder checklist for DSM-5 (PCL-5) in Chinese healthcare workers during the outbreak of corona virus disease 2019. *Journal of Affective Disorders*. 2020;277:368-74. Available from: <https://doi.org/10.1016/j.jad.2020.08.038>
6. ElGindi H, Shalaby R, Gusnowski A, Vuong W, Surood S, Hrabok M, et al. Mental health impact of COVID-19 pandemic among physicians, nurses, and other healthcare providers, in the province of Alberta (Preprint). *JMIR Formative Research*. 2021;6(3):e27469. Available from: <https://doi.org/10.2196/27469>
7. Htay MNN, Marzo RR, AlRifai A, Kamberi F, El-Abasiri RA, Nyamache JM, et al. Immediate impact of COVID-19 on mental health and its associated factors among healthcare workers: A global perspective across 31 countries. *Journal of Global Health [Internet]*. 2020;10(2). Available from: <https://www.nepjol.info/index.php/IJOSH>

- Available from: <https://doi.org/10.1007/s11896-021-09469-4>.
8. Johnson SU, Ebrahimi OV, Hoffart A. PTSD symptoms among health workers and public service providers during the COVID-19 outbreak. Vickers K, editor. PLOS ONE [Internet]. 2020 Oct 21;15(10):e0241032. Available from: [http://jogh.org/documents/issue202002/jogh-10-020381.pdf](https://jogh.org/documents/issue202002/jogh-10-020381.pdf)
9. Mosolova E, Chung S, Sosin D, Mosolov S. Stress and Anxiety Among Healthcare Workers Associated with COVID-19-19 Pandemic in Russia. SSRN Electronic Journal. 2020;32(3-4):549-56. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0241032>
10. Styra R, Hawryluck L, Mc Geer A, Dimas M, Sheen J, Giacobbe P, et al. Surviving SARS and living through COVID-19: Healthcare worker mental health outcomes and insights for coping. Menezes RG, editor. PLOS ONE. 2021;16(11). Available from: <https://doi.org/10.2139/ssrn.3638304>
11. Weathers FW, Litz BT, Herman DS, Huska JA, Keane TM. The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility. In annual convention of the international society for traumatic stress studies, San Antonio, TX. 1993;462. Available from: [https://www.researchgate.net/publication/313709159\\_PTSD\\_Checklist\\_Reliability\\_validity\\_and\\_diagnostic\\_utility](https://doi.org/10.1371/journal.pone.0258893)
12. Quang LN, Kien NT, Anh PN, Anh DTV, Nghi TDB, Lan PP, et al. The Level of Expression of Anxiety and Depression in Clinical Health Care Workers during the COVID-19 Outbreak in 2 Hospitals in Hanoi, Vietnam. Health Services Insights. 2021;14:117863292110332. Available from: [https://doi.org/10.1177/11786329211033245](https://doi.org/10.1080/19371918.2021.1915910)
13. Edwards AM, Kotera Y. Policing in a Pandemic: a Commentary on Officer Well-being During COVID-19. Journal of Police and Criminal Psychology. 2021;36(3):360-4. Available from: <https://doi.org/10.1080/19371918.2021.1915910>
14. Freeston MH, Rhéaume J, Letarte H, Dugas MJ, Ladouceur R. Why do people worry? Personality and Individual Differences. 1994;(6):791–802. Available from: [https://doi.org/10.1016/0191-8869\(94\)90048-5](https://doi.org/10.1016/0191-8869(94)90048-5).
15. Rajbhandari B, Tiwari B, Gurung M, Poudel L, Adhikari A, Shilpakar O, et al. COVID-19 stress among Nepal police officers. Journal of Nepal Health Research Council. 2021;19(2):390–5. Available from: <https://doi.org/10.33314/jnhrc.v19i2.3672>.
16. Sener H, Arikan I, Gündüz N, Güleki Y. Detecting the Relationship between the Stress Levels and Perceived Burnout in Law-enforcement Officers during the COVID-19 Outbreak: A Cross-sectional Study. Social Work in Public Health. 2021;36(4):486–95. Available from: <https://doi.org/10.1080/19371918.2021.1915910>.
17. Couarraze S, Delamarre L, Marhar F, Quach B, Jiao J, Avilés Dorlhiac R, et al. The major worldwide stress of healthcare professionals during the first wave of the COVID-19 pandemic – the international COVISTRESS survey. Gesser-Edelsburg A, editor. PLOS ONE. 2021;16(10). Available from: <https://doi.org/10.1371/journal.pone.0257840>
18. Mitchell JT, Bray GP. Emergency services stress: guidelines for preserving the health and careers of emergency services personnel. Englewood Cliffs, N.J.: Prentice Hall. 1990. Available from: <https://www.scirp.org/reference/referencespapers?referenceid=714512>
19. Cohen S, Kamarck T, Mermelstein R. A Global Measure of Perceived Stress. Journal of Health and Social Behavior. 1983;(4):385–96. Available from: <https://doi.org/10.2307/2136404>
20. Spitzer, RL, Kroenke K, Williams JBW, Löwe B. A Brief Measure for Assessing Generalized Anxiety Disorder. Archives of Internal Medicine [Internet]. 2006;166(10):1092–7. Available from: <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/410326>

21. Carleton RN. Fear of the unknown: One Fear to Rule Them all? *Journal of Anxiety Disorders* [Internet]. 2016;(41):5–21. Available from: <https://www.sciencedirect.com/science/article/pii/S0887618516300469>
20. Bovin MJ, Marx BP, Weathers FW, Gallagher MW, Rodriguez P, Schnurr PP, et al. Psychometric properties of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition (PCL-5) in veterans. *Psychological Assessment*. 2016;(11):1379–91. Available from: <https://doi.org/10.1037/pas0000254>.
21. Mohammadi F, Tehranineshat B, Bijani M, Khaleghi AA. Management of COVID-19-19-related challenges faced by EMS personnel: A qualitative study. *BMC Emergency Medicine*. 2021;21:95. Available from: <https://doi.org/10.1186/s12873-021-00489-1>.
22. Mirhaghi A, Mirhaghi M, Oshio A, Sarabian S. Systematic review of the personality profile of paramedics: Bringing evidence into emergency medical personnel recruitment policy. *Eurasian Journal of Emergency Medicine*. 2016;15(3):144-9. Available from: <http://doi.org/10.5152/eajem.2016.80299>
23. Ziarko M, Jasielska A, Stanisławska-Kubiak M, Daroszewski P, Samborski W, Mojs E. Mental Health Outcomes Associated with COVID-19-19 Pandemic in a Group of Health Care Professionals. *The Journal of Behavioral Health Services & Research*. 2021;49(1):22–31. Available from: <https://doi.org/10.1007/s11414-021-09761-5>.
24. Shihata S, McEvoy PM, Mullan BA, Carleton RN. Intolerance of uncertainty in emotional disorders: What uncertainties remain? *Journal of Anxiety Disorders*. 2016;41:115–24. Available from: <https://doi.org/10.1016/j.janxdis.2016.05.001>.