

# The Impact of the COVID-19 Pandemic on Police Officers' Mental Health:

## Preliminary results of a Portuguese sample

**Teresa Cristina Silva do Rosário**

Department of Humanities and Social Sciences & Risk and Crisis  
Research Center, Mid Sweden University, Sundvall<sup>1</sup>



**Hans Olof Löfgren**

Police Education Unit, Umeå University<sup>2</sup>

### Abstract

This study had a twofold objective. First, we aimed to measure the levels of stress symptoms and burnout on the police officers who volunteered for the study. Second, we proposed to examine the effect of COVID-19 exposure and exposure to traumatic experiences in the context of the COVID-19 pandemic on the officers' mental health. The National Directorate of the *Policia de Segurança Pública* (Portuguese Public Security Police) approved this study and was responsible for distributing information about the study and the link to an online questionnaire among their officers. As expected, the levels of burnout, psychological distress, and posttraumatic stress (PTS) were higher than similar professional populations in non-pandemic conditions. Officers with fewer than 11 years of work experience showed fewer symptoms of PTS compared to those with longer work experience, but at the same time, they reported higher levels of burnout. Women revealed higher scores of burnout-disengagement, but no other differences compared to their male colleagues. Officers who were married or living in a partner relationship obtained lower levels of posttraumatic stress than officers who reported being single, divorced, or widowed. The responsibility of caring for an elderly relative increased psychological distress and PTS levels. In general, exposure to COVID-19 or being at risk of infection had less impact on the officers' mental health than exposure to traumatic experiences. In conclusion, as expected, the pandemic is having a stressful effect on police officers, but it is not homogeneous among different groups. Implications for intervention policies are discussed.

**Keywords:** Burnout, posttraumatic stress, psychological distress, mental health, COVID-19

<sup>1</sup> [teresa.silva@miun.se](mailto:teresa.silva@miun.se)

<sup>2</sup> [hans.lofgren@umu.se](mailto:hans.lofgren@umu.se)

## Introduction

Among professional groups, law enforcement has been identified as one of the most hazardous and stressful occupations due to the complexity of roles and responsibilities it entails (Deschamps et al., 2003; Liberman et al., 2002; Tuckey, Winwood & Dollard, 2012). In addition to specialised knowledge and technical competence (e.g., use of weapons), the officers need to develop social skills (e.g., interrogating suspected criminals) and certain psychological abilities (e.g., mediating tense situations) to appropriately intervene when required. A UK study involving a large sample of law enforcement agents found that under normal circumstances (i.e., in the absence of natural or human-caused catastrophes), the prevalence of mental health problems was noticeably higher than in the general population (Houdmont & Elliott-Davies, 2016). Job-related demands are the primary causes of stress and burnout symptoms, and in law enforcement, the job demands are especially high (Backteman-Erlanson, Padyab & Brulin, 2013). The extent to which the wellbeing of officers is affected is directly related to their experiences at the operational and organisational levels (Deschamps et al., 2003). Operational policing entails cumulative exposure to different potentially traumatic situations (Tuckey et al., 2012). Traumatic situations do not necessarily imply aggression, violence, or life-threatening events; the impact of incidents such as encountering a recently deceased person, a tragic road traffic accident or attending to a severely injured child, for instance, also contribute to the high prevalence of burnout and mental health problems among this professional group (Carlier & Gersons, 1994; Chopko, Palmieri & Adams, 2015; Weiss et al., 2010). When mental wellbeing is affected, it impacts many different aspects of life functioning (Agolla, 2009). Under normal conditions, job-related stressors in law enforcement are the leading cause of sickness absence (University of Cambridge, 2018) and illness-related retirement (Summerfield, 2011). A UK study in 2017 found that 47% of the officers had taken sick leave for mental health issues within the past five years of the time of the study (Police Firearms Officer Association, 2017).

The prevalence of mental disorders in law enforcement has been widely debated in the scientific literature. Houdmont and Elliott-Davies (2016) found that 39% of the participants in their study, among English and Welsh police officers, required mental health care. A nationwide survey conducted with a large sample of

police officers in Norway found that 8.2% suffered from severe depression and 11.2% severe anxiety symptoms (Berg et al., 2006). In Australia, Harman (2019) showed that the prevalence of mental disorders was higher among police and emergency services than any other professional group. Similar findings have been reported in many other countries.

Occasionally, operational policing exposes officers to potentially extreme traumatic events. Police officers are among the first responders to natural catastrophes and to disasters either accidentally or intentionally caused by humans. Earthquakes, tsunamis, wildfires, aviation accidents, explosions, riots, and terror attacks expose emergency responders to exceptionally dangerous and traumatic situations. These situations are, in general, characterised by a significant loss of life under a short timespan. The urgency when searching for potential survivors and the life-threatening conditions when rescuing people and recovering dead bodies from the rubble are work-related stressors that add to the sense of being responsible for the security of the public and furthermore the safety and wellbeing of colleagues and other frontline responders. Under such circumstances, the prevalence of posttraumatic stress (PTS) and other anxiety spectrum disorders increases sharply (e.g., Neria, DiGrande & Adams, 2011; Razik, Ehring & Emmelkamp, 2013). The effect of PTS is devastating – it reduces the quality of life, contributes to poor physical health, and boosts self-harming behaviours (Berget et al., 2007; Maia et al., 2007).

In this regard, the COVID-19 pandemic is of greater cataclysmic proportions than any previous event in the last 75 years, although it is occurring over a longer timespan. The known number of people infected, severely sickened, and killed by COVID-19 is very high in many countries, and healthcare systems worldwide have been overwhelmed and close to collapse. A lack of sufficient personal protective equipment has been a complaint of many frontline professionals in many nations during the beginning of the pandemic.

There has been a widespread high risk of contagion, and considering that the level of subjective threat has a higher psychological impact than a real threat (Razik et al., 2013), it is reasonable to hypothesise that the perceived level of exposure to the virus could be traumatic in itself. Furthermore, among frontline responders, a feeling of being unable to protect the health of close relatives and friends, and an occasionally hostile social

environment might increase their risk of developing mental disorders.

Securing the psychological wellbeing of law enforcement agents should be a priority for mental health services because, besides protecting the public from criminal activity, these agents are responsible for enforcing measures (i.e., restrictions, curfews, and lockdowns) that protect public health. Identifying the early signs of mental health problems establishes a base for applying evidence-based policies that can help prevent associated co-morbidity and disability in such a valuable professional group. We established the objectives of the study with this framework in mind. First, we aimed to measure the level of burnout, psychological distress, and PTS in officers who volunteered for the study. Second, we proposed to analyse the effect of COVID-19 exposure, risk of infection, and traumatic experiences on the police officers' mental health in the context of the pandemic.

## Method

### Study design and recruitment

This study had a cross-sectional design with data collection occurring at a single moment in time. The study was approved by the National Directorate of the *Polícia de Segurança Pública* (NDPSP), one of five law enforcement bodies operating in Portugal with around 21,000 police officers. The NDPSP distributed the information about the study and the to the web-based questionnaire among the officers, indicating that participation was voluntary. Data collection took place between late July and late December 2020. Since we, the researchers, had no control over the recruitment process, it was not possible to ensure that all the officers were contacted, and, therefore, we could not calculate the response ratio. In total, 1,639 officers responded to the questionnaire, with 97.4% ( $n = 1597$ ) accomplishing the only inclusion criterion of being in active service at any time since January 1<sup>st</sup>, 2020.

### Questionnaire

The questionnaire included:

a) sociodemographic questions (i.e., gender, marital status, school-age children, and caring for an elderly relative), b) one question about exposure to COVID-19 in the line of duty, and c) standardised tools to measure burnout, psychological distress and posttraumatic stress.

### Oldenburg Burnout Inventory

The Oldenburg Burnout Inventory (OLBI) is a self-report instrument with responses on a five-point Likert scale (1 = *Strongly disagree* to 5 = *Strongly agree*). The instrument assesses two dimensions – disengagement and exhaustion (Demerouti et al., 2001) – with eight items per dimension. Demerouti and colleagues (2003) offered initial construct validity evidence for this instrument. The OLBI demonstrated acceptable reliability (i.e., test-retest reliability and internal consistency) as well as factorial, convergent, and discriminant validity (Halbesleben & Demerouti, 2005). In the current study, Cronbach's alpha are .840 for disengagement and .873 for exhaustion. For each dimension, we calculated the total score (sum of items' scores) and the mean item score to compare with other studies in the scientific literature.

### General Health Questionnaire – 12 items

The 12-item version of the General Health Questionnaire (GHQ-12) (Goldberg & Williams, 1988) is frequently used to measure common mental disorders in public health surveys. This instrument is used to screen for general (i.e., non-psychotic) psychiatric morbidity (Goldberg & Williams, 1988). The GHQ-12 uses a four-point Likert scale (0 = *Better than usual* to 3 = *Much less than usual*). We calculated the total score as the sum of the items' scores. To compare with other studies, we recoded the variable, as proposed by Goldberg and Williams (1988), in which categories *Better than usual* and *Same as usual* scored 0 and categories *Less than usual* and *Much less than usual* scored 1. In this case, the possible range is 0 to 12, with higher scores indicating a higher level of psychological distress. This instrument has been widely used and extensively validated in general and clinical populations worldwide (e.g., Hystad & Johnsen, 2020; Lundin et al., 2016; Tait, French & Hulse, 2003). The Cronbach's alpha in this study was .907.

### Posttraumatic Stress Checklist for DSM-5

The Posttraumatic Stress Checklist for DSM-5 (PCL-5) is a 20-item self-report measure that assesses the *DSM-5* symptoms of PTS (Weathers et al., 2013), and it is one of the most widely applied screening measures to evaluate posttraumatic stress disorder (PTSD) in clinical and research settings. We adapted the scale's four initial questions to the context of the COVID-19 pandemic, asking whether the respondents had endured or witnessed one or more stressful experiences that involved death, threatened death, or actual or threatened serious injury. In these initial questions, we also asked if

the respondents had learned about an event where a close relative or friend experienced premature or unexpected death. If the respondent answered *Yes* to any of these questions, the questionnaire would unlock 20 items about posttraumatic symptoms. These items were rated on a five-point Likert-type scale, with scores ranging from 0 = *Not at all* to 4 = *Extremely*, resulting in a symptom severity score. A cut-off score of 31–33 has been recommended (Bovin et al., 2016) to consider the presence of a disorder. This instrument has been validated in multiple samples (e.g., Blanchard et al., 1996; Forbes, Creamer & Biddle, 2001; Ruggiero et al., 2003). The Cronbach's alpha in our study was .967.

### Ethical concerns

Besides the information of the study distributed by the NDPSP, the first screen of the online questionnaire presented the researchers' affiliations and contact information, the objectives of the study, and informed about the conditions of data protection. Furthermore, and since we considered the questionnaire entailed a risk for psychological discomfort, we advised that if that were the case, the participant might consider closing their browser and seeking help from support resources available at their place of employment. We also offered a telephone-based emotional support line with a registered clinical psychologist who collaborated on the study. To access the questionnaire, the participants had to express their consent to participate in the study. The study received ethical approval by the XXXX Swedish National Ethical Review Committee.

### Results

From the total number of respondents, 88.4% (n = 1412) were men, while 11.2% were women (n = 179). The majority of officers (n = 951, 59.7%) had worked in law enforcement for more than 20 years, while 25% (n = 398) had been in the profession between 11 to 20 years, and 15.3% (n = 244) had 10 years or fewer of service. We found no statistically significant differences between officers who worked 11 to 20 years and those who worked for more than 20 years in the profession regarding the three scales' scores. Therefore, we clustered these two groups for the analyses. The greatest percentage (82.5%, n = 1318) were married or living with an intimate partner, while 17.3% (n = 276) were single, divorced, or widowed. The larger part (66.4%, n = 1058) reported having school-age children even if they were not living with them. Almost a quarter of the sample (22.3%, n = 356) had been responsible for the care of an elderly relative at some time since January 1<sup>st</sup>, 2020. When asked if they were exposed to COVID-19 in the line of duty, 65.2% (n = 1042) answered *Yes*, 9.3% (n = 148) answered *No*, and 25.5% (n = 407) were not sure. We found no statistically significant differences between those officers who answered *No* and those who answered *Not sure* in the scales' scores. Thus, we clustered both groups for the analyses. A significant number of officers (n = 995, 62.3%) answered *Yes* to at least one of the four initial questions of the PCL-5, and from them, 95.6% (n = 950) reported having at least one symptom of PTSD. Considering a cutoff score of 33, we obtained a prevalence of probable PTSD of 26.1%. In Table 1, we present the descriptive statistics of the scales.

**Table 1.** Descriptive statistics of burnout, psychological distress, and posttraumatic stress

	OLBI-D	OLBI-E	GHQ-12	PCL-5
Valid cases	1586	1577	1594	994
Scale rank	[8-32]	[8-32]	[0-36]	[0-80]
Sample rank	[8-32]	[8-32]	[1-36]	[0-80]
Mean (total score, Likert) (SD)	20.3 (4.1)	20.2 (4.1)	12.5 (5.7)	21.6 (17.9)
Mean (total score, 0-0-1-1) (SD)			2.7 (3.3)	
Mean (mean item score) (SD)	2.54 (0.51)	2.52 (0.51)		
P <sub>25</sub> , P <sub>50</sub> , P <sub>75</sub> (total score, Likert)	18-21-23	17-20-23	8-11-15	6-18-34

Note: OLBI-D = Disengagement scale of the Oldenburg Burnout Inventory; OLBI-E = Exhaustion scale of the Oldenburg Burnout Inventory; GHQ-12 = General Health Questionnaire, 12-item version; PCL-5 = Posttraumatic Stress Checklist for DSM-5.

We compared the mean value of each of the scales for the different groups. Since we performed 27 comparisons, we applied the Bonferroni adjustment for multiple comparisons testing (e.g., Chen, Feng & Yi, 2017), and considered any result  $<.002$  statistically significant. While police officers newer to the profession (i.e., 10 years of experience or less) obtained higher scores on average for both the disengagement ( $t(1580) = 3.939, p <.001$ ) and exhaustion scales ( $t(1571) = 4.291, p <.001$ ), more experienced officers obtained higher scores on average for psychological distress ( $t(1588) = -4.631, p <.001$ ), and PTS ( $t(989) = -2.536, p = .011$ ). Officers who were responsible for the care of an elderly relative during the pandemic, obtained higher scores on average for psychological distress ( $t(499,951) = -3.944, p <.001$ ), and PTS ( $t(402,231) = -3.858, p <.001$ ). Officers who reported they had been exposed to COVID-19 in the line of duty, obtained higher scores on average for disengagement ( $t(1225.053) = 5.663, p <.001$ ), exhaustion ( $t(1203.678) = 7.905, p <.001$ ), and psychological distress ( $t(1358.946) = -6.760, p <.001$ ). Likewise, officers who had been exposed to stressful experiences in the context of the pandemic obtained higher scores on average for disengagement ( $t(1347.505) = -10.796, p <.001$ ), exhaustion ( $t(1348.888) = 12.464, p <.001$ ), and psychological distress ( $t(1523.664) = -12.582, p <.001$ ).

We tested a hierarchical linear regression model using each of the total score of the scales as a dependent variable. In the first step of the regression, we introduced the predictors *gender* (men are the reference group), *years in law enforcement* (10 years or less is the reference group), *living situation* (married or living with an intimate partner is the reference group) and *responsible for the care of an elderly relative*. In the second step, we introduced the predictors *exposed to covid-19 in the line of duty* and *exposed to stressful experiences in the context of the pandemic*. The coefficients of the regression analysis are displayed in Table 2. What best explained disengagement was being a woman, newer to the profession, and unexposed to stressful experiences. What best explained exhaustion was being newer to the profession, unexposed to COVID-19, and unexposed to stressful experiences. Psychological distress was higher among those with more experience in the profession, those responsible for the care of an elderly relative, those exposed to COVID-19, and those exposed to stressful experiences. Finally, having more experience in the profession, being single, divorced, or widowed, being responsible for the care of an elderly relative, and being exposed to COVID-19 were predictors of PTS.

**Table 2.** Coefficients of the hierarchical linear regressions' second step

Predictors	OLBI-D		OLBI-E		GHQ-12		PCL-5	
	$\beta$	Sig.	$\beta$	Sig.	$\beta$	Sig.	$\beta$	Sig.
Gender	.051	.041	-.002	.944	-.003	.915	-.010	.762
Years in LE	-.104	<.001	-.115	<.001	.117	<.001	.075	.020
Living situation	-.005	.843	-.015	.555	.024	.330	.074	.022
Care of elderly	.020	.418	-.023	.351	.063	.009	.116	<.001
Exposed to COVID-19	-.049	.063	-.092	<.001	.052	.043	.066	.038
Exposed to SE	-.238	<.001	-.259	<.001	.258	<.001	--	--
Adjusted R <sup>2</sup>	.077		.103		.097		.026	
ANOVA	22.785	<.001	31.067	<.001	29.423	<.001	6.255	<.001

Note: OLBI-D = Disengagement scale of the Oldenburg Burnout Inventory; OLBI-E = Exhaustion scale of the Oldenburg Burnout Inventory; GHQ-12 = General Health Questionnaire 12-item version; PCL-5 = Posttraumatic Stress Checklist for DSM-5, LE = Law Enforcement; SE = Stressful Experiences.

## Discussion

The objective of this study was to evaluate the impact of the COVID-19 pandemic on police officers' mental health because they are among the frontline workers with the specific role of enforcing pandemic management strategies, especially restrictions, curfews, and lockdowns. We hypothesised that there might be additional factors to the job-related demands that are the primary cause of burnout and psychological distress (Backteman-Erlanson et al., 2013) in the law enforcement profession. Furthermore, the pandemic might have facilitated exposure to stressful experiences, and exposure to COVID-19 and the risk of contagion might represent a stressful factor in itself. While the results confirmed our hypotheses to a certain degree, we do not seem to be on the verge of a major mental health crisis in the law enforcement profession due to the COVID-19 pandemic. On average, we found levels of burnout and psychological distress only slightly higher than those reported for police officers during normal conditions (i.e., in the absence of natural or human-caused catastrophes) (e.g., Basinska & Dåderman, 2019; Basinska & Gruszczynska, 2017; Basinska, Wiciak & Dåderman, 2014; Sundqvist et al., 2015). Regarding PTS, it is difficult to establish comparisons because studies employ different measures. However, we found only marginally higher mean levels on the PCL-5 than others who employed the same instrument in police officers' populations and public safety personnel during normal conditions (e.g., Lentz, Silverstone & Krameddine, 2020; Shields et al., 2021). While 26.1% of our study's participants were above the PCL-5 cut off point indicating probable PTSD, a study by the University of Cambridge (2018) estimated a prevalence of 20% of PTSD in officers who had experienced traumatic events other than catastrophes. Therefore, the current scenario differs from that found during cataclysms, as it has been estimated that the excess of morbidity rate of psychiatric pathology can reach 20% in the first year of a catastrophe (Bromet, 2012). Anxiety spectrum disorders are amongst the highest rates, especially among emergency workers exposed to a higher number of deaths (Government Office for Science, 2010; Razik et al., 2013; Wisnivesky et al., 2011).

The development of mental health problems during catastrophes is directly related to the fear of severe injury or death caused by a threatening event and a perceived lack of control (Butler, Panzer & Goldfrank, 2003). Regarding the COVID-19 pandemic, although the num-

ber of deaths and people affected is much higher than any other known natural or human-caused disaster in modern times, the fact that it is occurring over a long time span might be producing a tolerance effect that increases resilience for major mental health problems. Furthermore, the impact of the COVID-19 pandemic seems to differ whether officers are newer or more experienced in the profession. While newer officers are more vulnerable to burnout, those with more years of service are more vulnerable to psychological distress and posttraumatic stress. These results are consistent with previous findings reported in the scientific literature about the impact of the experience levels on occupational stress (Ahola et al., 2017; Balakrishnamurthy & Shankar, 2009; Queirós et al., 2020), an aspect that should be considered in preventive and clinical intervention efforts.

Regarding our second objective, we verified the impact of exposure to COVID-19 and stressful experiences in the context of the COVID-19 pandemic as a risk factor for mental health problems. Matsuoka and colleagues (2012) reported an association between PTSD symptoms and concern for risk of radiation exposure in rescue workers following the Great East Japan Earthquake. In our study, we found that exposure to stressful experiences had a greater effect on mental health than exposure to COVID-19. Thus, the concern for being exposed to a potentially life-threatening virus seemed to cause less strain and have less psychological repercussion on officers than exposure to experiences related to serious injury or death, even if these experiences were not a direct threat to the respondent. On the other hand, it was interesting to verify that non-exposure increased burnout levels. This finding requires further investigation and is a clear direction for new research.

It is noteworthy that psychological distress and post-traumatic stress were associated with the responsibility for taking care of an elderly relative. Since the risk of death due to infection by COVID-19 is so high among elderly people (e.g., Kang & Jung, 2020; Yanez et al., 2020), this represented a cumulative stress factor that added to the job-related factors.

As a final note, we highlight the implications of the study for law enforcement management. While there is an increased need for mental health support, the severity of the effect produced by the COVID-19 pandemic appears far less damaging than that produced by other cataclysmic events in first responders. Managers

should not fear a major mental health crisis in the profession, and low-intensity intervention and follow-up should address the current needs of most officers. The COVID-19 pandemic is having a heterogeneous effect based on officers' characteristics, which brings us to a "one size does not fit all" situation where tailored ser-

vices might prove more efficient in addressing mental health needs. Attention should be given not only to officers exposed to risks, as those who reported having not been exposed also showed psychological vulnerabilities. If support is provided, the problem might be contained without major job losses.

## References

- Agolla, J. E. (2009). Occupational stress among police officers: The case of Botswana police service. *Research Journal of Business Management*. 2, 25-35. <https://doi.org/10.3923/rjbm.2009.25.35>
- Ahola, K., Honkonen, T., Virtanen, M., Aromaa, A. & Lönnqvist, J. (2017) Burnout in relation to age in the adult working population. *Journal of Occupational Health*. 50, 362–365. <https://doi.org/10.1539/joh.M8002>
- Backteman-Erlanson, S., Padyab, M. & Brulin, C. (2013) Prevalence of burnout and associations with psychosocial work environment, physical strain, and stress of conscience among Swedish female and male police personnel. *Police Practice and Research*. 14 (6), 491-505. <http://doi.org/10.1080/15614263.2012.736719>
- Balakrishnamurthy, C. & Shankar, S. (2009) Impact of age and level of experience on occupational stress experienced by non-gazetted officers of the central reserve police force. *Industrial Psychiatry Journal*. 18 (2), 81–83. <http://doi.org/10.4103/0972-6748.62264>
- Basinska, B. A. & Dåderman, A. M. (2019) Work values of police officers and their relationship with job burnout and work engagement. *Frontiers in Psychology*. 10, 442. <https://doi.org/10.3389/fpsyg.2019.00442>
- Basinska, B. A. & Gruszczynska, E. (2017) Positivity and job burnout in emergency personnel: Examining linear and curvilinear relationship. *Polish Psychological Bulletin*. 48 (2), 212–219. <https://doi.org/10.1515/ppb-2017-0024>
- Basinska, B. A., Wiciak, I. & Dåderman, A. M. (2014) Fatigue and burnout in police officers: The mediating role of emotions. *Policing*. 37 (3), 665–680. <https://doi.org/10.1108/PIJPSM-10-2013-0105>
- Berg, A. M., Hem, E., Lau, B. & Ekeberg, Ø. (2006) An exploration of job stress and health in the Norwegian police service: A cross sectional study. *Journal of Occupational Medicine and Toxicology*. 1, 26. <https://doi.org/10.1186/1745-6673-1-26>
- Berger, W., Figueira, I., Maurat, A. M., Bucassio, A. P., Vieira, I., Jardim, S. et al. (2007) Partial and full PTSD in Brazilian ambulance workers: Prevalence and impact on health and on quality of life. *Journal of Traumatic Stress*. 20, 637-642. <https://doi.org/10.1002/jts.20242>
- Blanchard, E. B., Alexander, J. J., Buckley, T. C. & Forneris, C. A. (1996) Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy*. 34, 669-673. [https://doi.org/10.1016/0005-7967\(96\)00033-2](https://doi.org/10.1016/0005-7967(96)00033-2)
- Bovin, M. J., Marx, B. P., Weathers, F. W., Gallagher, M. W., Rodriguez, P., Schnurr, P. P. et al. (2016) Psychometric properties of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (PCL-5) in veterans. *Psychological Assessment*. 28 (11), 1379–1391. <https://doi.org/10.1037/pas0000254>
- Bromet, E. J. (2012) Mental health consequences of the Chernobyl disaster. *Journal of Radiological Protection*. 32 (1), N71. Available from: <https://iopscience.iop.org/article/10.1088/0952-4746/32/1/N71/meta> [access 20th August 2021]
- Butler, A. S., Panzer, A. M. & Goldfrank, L. R. (Eds.) (2003) *Preparing for the psychological consequences of terrorism: A public health strategy*. Washington, National Academics Press.
- Carlier, I. & Gersons, B. (1994) Trauma at work: post-traumatic stress disorder – an occupational health hazard. *Journal of Occupational Health Safety*. 10, 264-266.
- Chen, S. Y., Feng, Z. & Yi, X. (2017) A general introduction to adjustment for multiple comparisons. *Journal of Thoracic Disease*. 9 (6), 1725–1729. <https://doi.org/10.21037/jtd.2017.05.34>
- Chopko, B. A., Palmieri, P. A. & Adams, R. E. (2015) Critical incident history questionnaire replication: Frequency and severity of trauma exposure among officers from small and midsize police agencies. *Journal of Trauma and Stress*. 28, 157-161. <https://doi.org/10.1002/jts.21996>
- Demerouti, E., Bakker, A. B., Nachreiner, F. & Schaufeli, W. B. (2001) The job demands–resources model of burnout. *Journal of Applied Psychology*. 86, 499–512. <https://doi.org/10.1037/0021-9010.86.3.499>

- Demerouti, E., Bakker, A. B., Vardakou, I. & Kantas, A. (2003) The convergent validity of two burnout instruments: A multitrait-multimethod analysis. *European Journal of Psychological Assessment*. 18, 296–307. <https://doi.org/10.1027/1015-5759.19.1.12>
- Deschamps, F., Paganon-Bardinier, I., Marchand, A. C. & Merle, C. (2003) Sources of assessment of occupational stress in the police. *Journal of Occupational Health*. 45 (6), 358-364. <https://doi.org/10.1539/joh.45.358>
- Forbes, D., Creamer, M. & Biddle, D. (2001) The validity of the PTSD checklist as a measure of symptomatic change in combat-related PTSD. *Behaviour Research & Therapy*. 39, 977-986. [https://doi.org/10.1016/S0005-7967\(00\)00084-X](https://doi.org/10.1016/S0005-7967(00)00084-X)
- Goldberg, D. P. & Williams, P. (1988). *A user's guide to the General Health Questionnaire*. Basingstoke, NFER-Nelson
- Halbesleben, J. R. B. & Demerouti, E. (2005). The construct validity of an alternative measure of burnout: Investigating the English translation of the Oldenburg Burnout Inventory. *Work & Stress*. 19 (3), 208-220. <https://doi.org/10.1080/02678370500340728>
- Harman, G. (2019). Answering the call: Mental health needs of police and emergency services personnel. *Australian Journal of Emergency Management*. 34 (1), 23. Available from <https://knowledge.aidr.org.au/resources/ajem-jan-2019-answering-the-call-mental-health-needs-of-police-and-emergency-services-personnel/> [Access 16th May 2021]
- Houdmont, J. & Elliott-Davies, M. (2016). Police Federation of England and Wales 2016 Officer Demand, Capacity, and Welfare Survey: Initial report – Descriptive results. Available from <https://www.polfed.org/media/14061/welfare-survey-2016-pfew-descriptive-results-report-v30.pdf>. [Access 16th May 2021]
- Hystad, S. W. & Johnsen, B. H. (2020) The dimensionality of the 12-Item General Health Questionnaire (GHQ-12): Comparisons of factor structures and invariance across samples and time. *Frontiers in Psychology*. 11, 1300. Available from: <https://doi.org/10.3389/fpsyg.2020.01300>
- Kang, S. J. & Jung, S. I. (2020) Age-related morbidity and mortality among patients with COVID-19. *Infection & Chemotherapy*. 52 (2), 154–164. <https://doi.org/10.3947/ic.2020.52.2.154>
- Lentz, L., Silverstone, P. H. & Krameddine, Y. I. (2020) High rates of mental health disorders in civilian employees working in police organizations. *Frontiers in Psychology*. 11, 1031. <https://doi.org/10.3389/fpsyg.2020.01031>
- Liberman, A. M., Best, S. R., Metzler, T. J., Fagan, J. A., Weiss, D. S. & Marmar, C. R. (2002) Routine occupational stress and psychological distress in police. *Policing*. 25 (2), 421-441.
- Lundin, A., Hallgren, M., Theobald, H., Hellgren, C. & Torgén, M. (2016) Validity of the 12-item version of the General Health Questionnaire in detecting depression in the general population. *Public Health*. 136, 66–74. <https://doi.org/10.1016/j.puhe.2016.03.005>
- Maia, D. B., Marmar, C. R., Metzler, T., Nóbrega, A., Berger, W., Mendlowicz, M. V. et al. (2007) Post-traumatic stress symptoms in an elite unit of Brazilian police officers: Prevalence and impact of psychosocial functioning and on physical and mental health. *Journal of Affective Disorders*. 97, 241-245. <https://doi.org/10.1016/j.jad.2006.06.004>
- Matsuoka, Y., Nishi, D., Nakaya, N., Sone, T., Noguchi, H., Hamazaki, K., et al. (2012) Concern over radiation exposure and psychological distress among rescue workers following the Great East Japan Earthquake. *BMC Public Health*. 12, 249. <https://doi.org/10.1186/1471-2458-12-249>
- Neria, Y., DiGrande, L. & Adams, B. G. (2011) Posttraumatic stress disorder following the September 11, 2001, terrorist attacks: A review of the literature among highly exposed populations. *American Psychologist*. 66, 429-446. <https://doi.org/10.1037/a0024791>
- Police Firearms Officer Association (2017) Police mental health sickness up by 47% - The PFOA News feed. Available from <https://www.pfoa.co.uk/blog/police-mental-health-sickness-up-by-47> [Access 16th May 2021]
- Queirós, C., Pasos, F., Bártolo, A., Faria, S., Fonseca, S. M., Marques, et al. (2020) Job stress, burnout, and coping in police officers: Relationships and psychometric properties of the Organizational Police Stress Questionnaire. *International Journal of Environmental Research and Public Health*. 17, 6718. <http://doi.org/10.3390/ijerph17186718>
- Razik, S., Ehring, T. & Emmelkamp, P. M. G. (2013) Psychological consequences of terrorist attacks: Prevalence and predictors of mental health problems in Pakistani emergency responders. *Psychiatry Research*. 207, 80–85. <https://doi.org/10.1016/j.psychres.2012.09.031>
- Ruggiero, K. J., del Ben, K., Scotti, J. R. & Rabalais, A. E. (2003) Psychometric Properties of the PTSD Checklist-Civilian Version. *Journal of Traumatic Stress*. 16, 495-502. <https://doi.org/10.1023/A:1025714729117>



- Shields, R. E., Korol, S., Carleton, R. N., McElheran, M., Stelnicki, A. M., Groll, D., et al. (2021) Brief mental health disorder screening questionnaires and use with public safety personnel: A review. *International Journal of Environmental Research and Public Health*. 18 (7), 3743. <http://doi.org/10.3390/ijerph18073743>
- Summerfield, D. (2011) Metropolitan Police blues: Protracted sickness absence, ill health retirement, and the occupational psychiatrist. *British Medical Journal*. 342, d2127. <https://doi.org/10.1136/bmj.d2127>
- Sundqvist, J., Hansson, J., Ghazinour, M., Ögren, K. & Padyab, M. (2015) Unaccompanied asylum-seeking refugee children's forced repatriation: Social workers' and police officers' health and job characteristics. *Global Journal of Health Science*. 7 (6), 215–225. <https://doi.org/10.5539/gjhs.v7n6p215>
- Tait, R. J., French, D. J. & Hulse, G. K. (2003) Validity and psychometric properties of the General Health Questionnaire-12 in young Australian adolescents. *The Australian and New Zealand Journal of Psychiatry*. 37 (3), 374–381. <https://doi.org/10.1046/j.1440-1614.2003.01133.x>
- Tuckey, M. R., Winwood, P. C. & Dollard, M. F. (2012) Psychosocial culture and pathways to psychological injury within policing. *Police Practice and research*. 13 (3), 224-240. <https://doi.org/10.1080/15614263.2011.574072>
- University of Cambridge (2018). Policing: The job & the life. Available from <https://www.policingtrauma.sociology.cam.ac.uk/survey> [Access 16<sup>th</sup> May 2021]
- Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P. & Schnurr, P. P. (2013) *The PTSD Checklist for DSM-5 (PCL-5)*. National Center for PTSD. Available from <https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp> [Accessed 30<sup>th</sup> April 2021].
- Weiss, D. S., Brunet, A., Best, S. R., Metzler, T. J., Liberman, A., Pole, N., et al. (2010) Frequency and severity approaches to indexing exposure to trauma: The critical incident history questionnaire for police officers. *Journal of Traumatic Stress*. 23 (6), 734-743. <https://doi.org/10.1002/jts.20576>
- Wisnivesky, J. P., Teitelbaum, S. L., Todd, A. C., Boffetta, P., Crane, M., Crowley, L., et al. (2011) Persistence of multiple illnesses in World Trade Center rescue and recovery workers: A cohort study. *Lancet*. 378 (9794), 888–897. [https://doi.org/10.1016/S0140-6736\(11\)61180-X](https://doi.org/10.1016/S0140-6736(11)61180-X)
- Yanez, N. D., Weiss, N. S., Romand, J. A. & Treggiari, M. M. (2020) COVID-19 mortality risk for older men and women. *BMC Public Health*. 20, 1742. <https://doi.org/10.1186/s12889-020-09826-8>