

Factors Influencing Occupational Stress of State Security Forces During the COVID-19 Pandemic: A Scoping Review

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Objective: The aim of this review was to assess the factors influencing the occupational stress of state security forces during the COVID-19 pandemic.

Methods: We conducted a scoping review using the Pubmed, Scopus, and Web of Science databases, adhering to the PRISMA statement standards and the guidelines for narrative syntheses.

Results: We included a total of 26 studies. The prevalence of stress varied from 22% to 87.2%. Factors that may have influenced the stress levels of police officers during the pandemic include not having basic personal protective equipment, having little or no rest periods between tasks, long working hours, fear of contagion to themselves or others, pressure to maintain law and order, emotion regulation and preparedness, sex, marital status, work experience, age, presence of chronic underlying illnesses, family-work conflict, lack of psychological support, and others. The long working hours, the fear of infecting themselves or others, the pressure to maintain law and order, sex, and age are the six main factors evaluated for more studies.

Conclusion: Organisational, situational, and personal factors may have influenced the stress levels of police officers during the pandemic, and measures need to be taken to minimise their impact.

Keywords: COVID-19, police, state security forces, stress, occupational health

Introduction

The pandemic situation caused by COVID-19 has posed significant and unprecedented challenges to police forces worldwide.¹ Police officers were responsible for enforcing the rules and other public health measures implemented during the lockdown aimed at curbing the spread of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The unpredictable nature of the situation and the uncertainty about the control and/or potential danger of the disease subjected police officers to considerable psychological pressure in addition to the health-related dangers.^{1,2}

Police officers faced a multitude of risk factors during the COVID-19 pandemic that could potentially impact their well-being. These included the constant possibility of infection, frequent changes in government guidelines and adjustments in police protocols, a highly stressful work environment, and working under exceptional conditions.³

An individual's response to internal and external threats and challenges, which can cause major changes in their physical and mental state, is known as stress.⁴ Both the Transactional Model of Stress and Coping by Lazarus et al⁵ and the General Strain Theory by Agnew⁶ offer a valuable perspective for understanding the stress experienced by police officers during the pandemic. According to these theories, stress arises when individuals perceive a discrepancy between the demands of the environment and their coping resources in a particular situation. The individual assesses the level of stress resulting from environmental demands, known as stressors, and evaluates the own availability and effectiveness of coping resources to meet these demands. In the case of police officers, stressors such as the risk of infection and additional workload frequently exceeded their available resources, leading to a state of negative stress, accompanied by fatigue and impaired mood.^{7,8}

Some authors have classified possible stressors as either organisational (caused by the police administration and management) or inherent to the job (derived from the performance of their duties). In contrast, other authors have distinguished four groups according to the sources of risk, including management, task performance, community or context, and the judicial system.⁹

During the pandemic, police officers encountered new stressful situations in addition to the ones they have always encountered.¹⁰ Firstly, the outbreak of the novel coronavirus (SARS-CoV-2) has become a constant threat to one's own health and, particularly, the health of family and friends. Furthermore, the introduction of new protocols and the implementation of new social norms caused many people to react against authority in times of pandemic.^{3,11} At the same time, the initial phase of the pandemic was characterised by a shortage of personal protective equipment and a continuous adjustment of working hours due to contagions and rotations. Changes in the working team, a certain degree of social isolation, the need to quickly adapt to changing procedures, the limited availability of work permits, and the threat of being assaulted, among others, increased the workload and stress among the officers.^{11–13} Possible manifestations of high levels of stress include headaches, frustration, digestive disorders, fatigue, difficulty in interpersonal relationships, or insomnia.^{14,15} Other professionals, such as health professionals, were afraid to work and faced personal and family risks due to the possibility of contracting the virus. Despite this, just as with police officers, their commitment and dedication motivated them to offer the best care possible.¹⁶ Consequently, prolonged and intense stress resulting from a high-risk environment, high-intensity work demands, and a high workload can potentially lead to more serious mental health issues such as depression, substance abuse, and suicide.

It is necessary to evaluate the stress experienced by police officers during the COVID-19 pandemic, as this was a frontline group that faced the virus and suffered a significant rise in their workload, having to fulfil both their regular duties and new responsibilities related to enforcing public health measures. This situation, combined with uncertainty and prolonged exposure to high-risk environments, likely had a considerable impact on their mental health, manifesting in high levels of stress, anxiety, and exhaustion. Evaluating this issue is crucial not only to protect the well-being of officers but also to ensure an adequate response to future public health emergencies or similar crises. Thus, it is crucial to implement protection and prevention mechanisms aimed at these occupational groups.¹⁷

As a result, this review aimed to assess the factors influencing the occupational stress of state security forces during the COVID-19 pandemic.

Methods

Study Design

A scoping review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for scoping reviews.¹⁸ We then followed the guidelines set out by Popay et al¹⁹ to carry out a narrative synthesis. This framework consists of four main principles: 1) Developing a theory of the stressors faced by state security forces during the COVID-19 pandemic; 2) Developing a preliminary synthesis of the findings across the included studies; 3) Exploring the relationships between the sets of data; and 4) Assessing the robustness of the synthesis.

Databases and Search Strategy

Using the Condition, Context, Population (CoCoPop) strategy²⁰ (Table 1), we conducted the search in the Pubmed, Scopus, and Web of Science electronic databases based on the keywords that the research question yielded.

Table 1 CoCoPop Format: Keywords

Condition	Stress Levels and/or Stressors
Context	Performance of duties during the COVID-19 pandemic
Population	State security forces
Research question	What were the main stressors for state security forces during the performance of their duties in the COVID-19 pandemic?

Based on these keywords, the Medical Subject Headings (MeSH) thesaurus was consulted, yielding the following descriptors: *Police*, *Psychological Distress*, *Psychological Stress*, and *COVID-19*. We used related terms to complete the search strategy based on the MeSH descriptors (Table 2), linking them with Boolean operators and/or to enhance the number of published studies related to the study's subject.

Table 3 shows the search strategy used, carried out on 05 April 2024 in each of the databases mentioned above during the search process.

Table 2 Terms Used in the Search

MeSH	Meaning	Terms
Police	Agents of the law charged with the responsibility of maintaining and enforcing law and order among the citizenry	Police OR security forces
Psychological Distress	Negative emotional state characterized by physical and/or emotional discomfort, pain, or anguish.	Psychological Distress OR Psychological Stress OR Stressors
Psychological Stress	Stress wherein emotional factors predominate.	
COVID-19	A viral disorder generally characterized by high fever; cough; dyspnoea; chills; persistent tremors; muscle pain; headache; sore throat; a new loss of taste and/or smell (see ageusia and anosmia) and other symptoms of viral pneumonia.	COVID-19 OR SARS-CoV-2

Table 3 Search Strategy

Database	Search Strategy	Results
Pubmed	(((((COVID-19[MeSH Terms]) OR (COVID-19[Title/Abstract])) OR (SARS-CoV-2[Title/Abstract])) AND (((police[MeSH Terms]) OR (security force*[Title/Abstract])) OR (police*[Title/Abstract]))) AND (((Psychological Distress[MeSH Terms]) OR (psychological stress[MeSH Terms])) OR (stress*[Title/Abstract])) OR (distress[Title/Abstract]))	100
Scopus	(TITLE-ABS-KEY (police* OR "security force*") AND TITLE-ABS-KEY ("psychological distress" OR "psychological stress" OR stress* OR distress) AND TITLE-ABS-KEY (covid-19 OR sars-cov-2))	188
Web Of Science	Police* OR security force* (Topic) AND Psychological Distress OR Psychological Stress OR Stress* OR distress (Topic) AND COVID-19 OR SARS-CoV-2 (Topic)	284
Other sources	Articles identified from other sources	0
Date of search: 05/04/2024	Total	572

Selection Criteria

The following criteria were used for the selection of the articles:

Inclusion Criteria

- Type: original articles, and meta-analyses.
- Population: state security forces.
- Idiomatic criteria: all languages.
- Studies where data collection took place from 1 January 2020 to 5 May 2023 (date on which the WHO decreed the end of the international emergency for COVID-19).
- Articles measuring any of the following values and/or effects: Stress levels and/or main stressors.

Exclusion Criteria

- Type: opinion articles, editorials, and letters to the editor/publisher.
- Studies of low scientific-technical quality after applying the quality assessment tool.
- Population: Non-military and not in off-duty situations.
- Articles that did not answer the research question and were not related to the objective of the review.

Data Collection and Extraction

Two researchers independently conducted searches, eliminated duplicate studies, and selected articles for inclusion after reading the abstract and title, according to the criteria set out above. To do this, descriptive summaries were drafted for each of the studies, including all relevant information from the data extraction sheet: details of the studies, context (date of data collection), study objective, study type, participants, methods, main findings, and quality, which would also help to explore preliminary relationships within and across studies. A thematic analysis approach was used to systematically identify the main, recurring and most important topics across multiple studies.

Subsequently, these same two authors reviewed the full text of the studies potentially eligible for inclusion in the review, and the decision to include or exclude studies in the review was made by consensus. The discrepancies were resolved by a third author.

Methodological Quality Assessment

The Joanna Briggs Institute (JBI) at the University of Adelaide tools were used.²¹ These tools make it possible to assess the methodological quality of a study and to determine the extent to which a study has excluded or minimised the possibility of bias in its design, conduct, and/or analysis. The versions for analytical cross-sectional studies (8 items), for qualitative research (10 items), and for Case-Control Studies (10 items) were used, setting the cut-off point at 6 to be accepted for inclusion in this review for the first, and 8 for the second and the third ([Table S1–S3](#)).

Results

The initial search strategy identified a total of 572 references, which were then screened according to the objective of this review. A total of 26 studies were finally selected ([Figure 1](#)). All these 26 studies have been compiled in [Table 4](#).

According to the setting, the 19% (n=5) of the studies were conducted in China^{22,26,27,33,45} and another 19% (n=5) in India;^{23,24,37,44,46} 8% (n=2) of the studies were conducted in Spain^{9,34} and another 8% (n=2) in Taiwan,^{38,42} the remaining countries in which studies were carried out were Mexico;³¹ Nepal;³⁰ Turkey;³² Norway;²⁸ Wales;²⁹ Greece;³⁵ Singapore;³⁶ Hong Kong;⁴⁷ Nigeria;⁴³ USA;⁴¹ Serbia;³⁹ and a multicentre study in Austria, Germany, Switzerland, the Netherlands, and Spain.²⁵

All but three of the selected studies were quantitative descriptive cross-sectional studies^{23,41,43} and one was a case-control study.³⁵ Similarly, in all the studies, the sample consisted of police officers except for the study by Dey et al,²⁴ in which police officers were engaged in specific traffic activities. Also, in the study by Langvik et al,²⁸ there was a part of the sample of police officers who worked entirely/partly from home. In the study by Kukić et al,³⁹ the sample consisted of police officers in training.

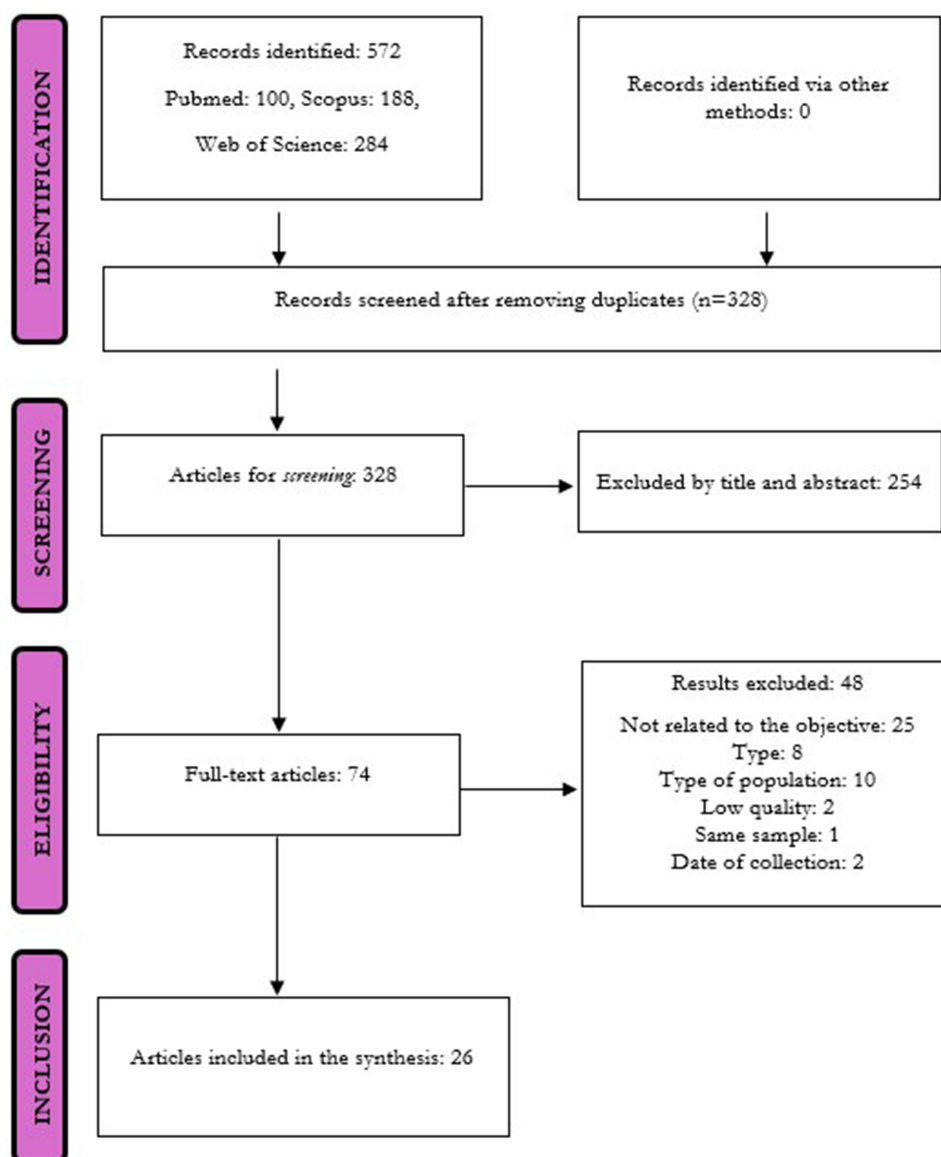


Figure 1 Search flow diagram.

Among the most frequently used instruments were the Perceived Stress Scale (PSS) in its various versions and the Depression, Anxiety and Stress Scales (DASS-21), which were applied in multiple contexts to assess the emotional and psychological impact on participants. Other validated scales such as the Maslach Burnout Inventory (MBI), including its human services survey version (MBI-HSS), the Insomnia Severity Index (ISI), the Kessler Psychological Distress Scale (K10 and K6), the Brief Resilience Scale (BRS), among others, were also used.

The prevalence of stress varied widely across the studies, ranging from 22% to 87.2%. Factors that increased stress levels included: lack of basic personal protective equipment,^{9,34} having hardly any rest periods between tasks,²³ long working hours,^{24,26,32,43} fear of infecting themselves or others,^{24,25,30,32–34,38,39,41–43} the pressure to maintain law and order,^{24,30,32,42,43} sex,^{25,26,30,39,46} marital status,^{30,45} level of education,^{33,45} work experience,^{25,33} age,^{26,30,37,45,46} xenophobia,³⁰ emotion regulation and preparedness,^{25,27} poor communication and/or training,^{25,32} the presence of underlying chronic diseases,^{26,33} recently having been infected or having had close contact with the disease,³³ lack of psychological support,²⁷ reduced interaction with co-workers,²⁸ perceived quality of life,³¹ sleep quality,^{33,42,46} self-

Table 4 Characteristics of the Studies Included in the Review

Studies	Context (Country and Collected Date)	Objective	Type of Study	Participants	Methods	Findings	JB1
(Gómez-Galán et al, 2020) ⁹	Spain, August to September 2020	To determine the levels of burnout in these professionals using the MBI scale, both in its different subscales and in its total value	Quantitative cross-sectional study	State security forces (n=2182)	<ul style="list-style-type: none"> • Socio-demographic variables • Perceptions of working conditions and the need for psychological treatment • Death Anxiety Scale • MBI 	87.2% of the participants reported that their level of stress and/or anxiety increased at work because they did not have basic resources for personal protection.	7/8
(Zhu et al, 2020) ²²	China March, 2020	To investigate the mental status and psychological needs of police officers during the COVID-19 outbreak in China	Cross-sectional study	Police officers (n=5467)	<ul style="list-style-type: none"> • Anti-pandemic Public Mental Status Scale • Psychological Needs Scale 	More than 70% of the city's police officers suffered from stress. Among the police officers who experienced a lot of stress, 60.48% did not think they needed psychological support. Relaxation and stress relief were the most frequently reported psychological needs, as well as relaxing activities and reading.	6/8
(Boovaragasamy et al, 2021) ²³	India. April 2020	To explore police officers' perceptions of illness, factors influencing stress, and their coping skills in the midst of COVID-19	Qualitative cross-sectional study	Police officers (n=32)	<ul style="list-style-type: none"> • In-depth interviews. 5 topics: perception, practice they follow amid COVID-19, stress they go through, challenges faced, and coping strategies used by them. 	Most of the police officers expressed that they faced stress in various aspects, both on a personal and professional level. They indicated that there were fewer opportunities to take refreshments between duties, which added to the stress of their daily tasks.	10/10

(Dey et al, 2021) ²⁴	India. May to June, 2020	To determine the effect of the added stress caused by the COVID-19 pandemic and the confinement of the population on the 24-hour sleep/wake rhythm of traffic police.	Quantitative cross-sectional study	Traffic police officers (n=120)	<ul style="list-style-type: none"> • Socio-demographic variables • MCTQ • DASS-21 	The disruption of the work schedule, the fear of being vulnerable to the disease, and the pressure to maintain law and order during confinement increased the level of stress. Fear of being affected by COVID-19 generated anxiety and stress, potentially affecting their health. In addition, long working hours during stressful conditions of confinement could disrupt daily routine and eating habits, leading to digestive health problems.	8/8
(Frenkel et al, 2021) ²⁵	Austria, Germany, Switzerland, the Netherlands, and Spain. March to June, 2020	To investigate officers' strain over a three-month-period after the lockdown	Quantitative cross-sectional study	Police officers (n=2567)	<ul style="list-style-type: none"> • Socio-demographic variables • Perceived stress • Fatigue • COVID-19 Stressors Assessment • Emotion regulation strategies • Police training 	Sex, work experience, assessment of stressors, emotion regulation, and preparedness significantly predicted stress. Risk of infection and poor communication emerged as the main stressors.	6/8
(Q. Huang et al, 2021) ²⁶	China. February to March, 2020	To explore the health risk perception, work stress, and psychological distress of police officers who worked at the front line to implement lockdown measures.	Cross-sectional study	Police officers (n=5611)	<ul style="list-style-type: none"> • Socio-demographic variables • K6 • Health Risk Perception • Work Stress 	The results showed a sex-related difference in the perception of job stress among police officers. In addition, police officers with chronic illnesses perceived greater health risks, more psychological distress, and higher work stress. In addition, police officers over 45 years of age perceived significantly higher health risks than younger officers. It was also revealed that working hours contributed to perceived health risks, psychological distress, and work-related stress among police officers. Finally, the results highlighted that age, working hours, chronic illness, perceived health risks, and work-related stress all significantly contributed to the psychological distress experienced by police officers.	7/8

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Table 4 (Continued).

Studies	Context (Country and Collected Date)	Objective	Type of Study	Participants	Methods	Findings	JBI
(Jiang, 2021) ²⁷	China. March, 2020	To develop a mediation model to examine the relationship between the psychological support police officers received and their response to stress.	Cross-sectional study	Police officers (n=553)	<ul style="list-style-type: none"> • Socio-demographic variables • Emotional Identity of Profession Scale • DSM-5 Self-Rated Level I Cross-Cutting Symptom Measure-Adult • Psychological Support Scale • Active Work Adaptation Scale 	Stress response was negatively correlated with psychological support, emotional identity of the profession, and active work adjustment. Psychological support, the emotional identity of the profession, and active work adjustment were positively correlated. Psychological support had a direct negative effect on the stress response, and the mediating effect of emotional job identity differed and was moderated by active work adjustment.	7/8
(Langvik et al, 2021) ²⁸	Norway. May to June, 2020	To explore the role of extraversion in an occupation-specific work context during the COVID-19 restrictions.	Cross-sectional study	Police officers working fully/ partly from home (n=1472)	<ul style="list-style-type: none"> • Socio-demographic variables • BFI-20 • Stress • Personal contact 	45% reported no stress and 30% little stress, while less than 1% reported much stress. Stress was positively associated with the absence of colleagues and negatively associated with satisfaction with working from home. There was a marginal but significant negative association between extraversion and stress, and a significant positive relationship between stress and the extent to which respondents missed their colleagues during the lockdown, independently of extraversion.	7/8
(Pink et al, 2021) ²⁹	Wales. June to July, 2020	To assess psychological distress and resilience in Welsh rescuers and healthcare professionals during the COVID-19 pandemic	Cross-sectional study	Police officers (n=473)	<ul style="list-style-type: none"> • Socio-demographic variables • K10 • TriPM: stress immunity sub-scale • BRS • WIMD 	Firefighters and rescue workers, police officers and healthcare workers reported higher levels of psychological distress than the rest of the workers. The first two groups had significantly higher stress immunity scores than the third group. In this regard, the police force was 0.77 times more likely to experience distress during this period than those not in the police force.	7/8

(Rajbhandari et al, 2021) ³⁰	Nepal. August to September, 2020	To identify the prevalence of stress associated with COVID-19 among Nepal police officers working during the pandemic.	Cross-sectional study	Police officers (n=1526)	<ul style="list-style-type: none"> • Socio-demographic variables • Semi-structured questionnaire • CSS-36 	The highest percentage was found in the xenophobia subscale (24.63%), followed by pollution (20.10%) and compulsive control (19.21%). When comparing socio-demographic variables, groups aged 18–27 years, including male officers and single groups, had experienced high stress due to COVID-19.	8/8
(Rojas-Solis et al, 2021) ³¹	Mexico. July, 2020	To analyse the degree of burnout syndrome, psychological distress, and life satisfaction in a sample of Mexican police officers during the COVID-19 pandemic.	Cross-sectional study	Police officers (n=27)	<ul style="list-style-type: none"> • Socio-demographic variables • MBI-HSS • K10 • SWLS 	A high prevalence of depersonalisation was found in 81.5% of the sample; low self-fulfilment, 55.6%; and high emotional exhaustion, 37%; 63% reported moderate psychological distress and 51.9% high life satisfaction. Similarly, partial associations were identified between the variables included.	6/8
(Sener et al, 2021) ³²	Turkey. July to August, 2020	To determine the effect of burnout and stress levels on the perceptions and behaviours of law enforcement officers to emphasise the need for adequate care and attention to these individuals during the COVID-19 outbreak.	Cross-sectional study	Police officers (n=963)	<ul style="list-style-type: none"> • Socio-demographic variables • PSS • BM-SV 	PSS scores were higher and significant in the group whose working hours were not increased due to the COVID-19 pandemic and who thought there was a decrease in crime rates and did not need psychological support ($p \leq 0.05$). PSS scores were higher and significant in the group that adhered to the COVID-19 recommendations, who feared contracting the virus, were not concerned about the progression of the epidemic, and used the mask correctly. In addition, BM-SV scores were higher and significant in the group that stated they were not afraid of contracting the virus ($p \leq 0.05$).	6/8

(Continued)

Table 4 (Continued).

Studies	Context (Country and Collected Date)	Objective	Type of Study	Participants	Methods	Findings	JB1
(Si et al, 2021) ³³	China. March, 2020	To assess sleep quality and its associated factors among non-medical community-based anti-epidemic workers.	Cross-sectional study	Police officers (n=195)	<ul style="list-style-type: none"> • Socio-demographic variables • Health-related factors • Contact with an individual with a confirmed or suspected COVID-19 infection • MSPSS • PSS • BM-SV • PSQI 	Participants with a high school or higher educational background, members of the police force, participants with at least 10 years of work experience, participants who had been in contact with persons with confirmed COVID-19 infection, participants who had chronic illnesses, participants who had become ill in the past 2 weeks, and participants with a high level of perceived stress were more likely to report poor sleep quality. Those with high perceived stress were 8.60 times more likely to report poor sleep quality ($p<0.01$), and those with moderate perceived stress were 3.99 times more likely to report poor sleep quality ($p<0.01$).	8/8
(Talavera-Velasco et al, 2021) ³⁴	Spain. November, 2020	To assess the relationship between demographic, occupational, and COVID-19 variables and resilience, engagement, and health perceptions, and to assess which variables are most important in predicting health perceptions.	Cross-sectional study	Police officers (n=640)	<ul style="list-style-type: none"> • Socio-demographic variables • BRS • UWES-9 • GHQ-12 	Perceived lack of personal protective equipment, belief that it was easy to become infected with COVID-19, or working as a police officer were associated with low levels of engagement and resilience and poorer perceived health. More years of experience in the police force were associated with poorer health and lower levels of engagement and resilience. Engagement and resilience would be protective variables for health.	7/8

(Brouzos et al, 2022) ³⁵	Greece. October to December, 2020	To explore the effectiveness of an online Positive Psychology group intervention for police officers to mitigate the psychological impact of the COVID-19 pandemic and to enhance their personal strengths and resilience.	Case and control studies	Police officers (n=95)	<ul style="list-style-type: none"> • Socio-demographic variables • FCQ • IRI • CD-RISC-10 • PANAS • Jong Gierveld Loneliness Scale • DASS-21 • GAD-7 • PHQ-9 	Members of the intervention group experienced significantly less depression ($p < 0.05$) and stress ($p < 0.001$) at the post-test.	10/10
(Danker et al, 2022) ³⁶	Singapore. April, 2020	To assess the effects of prolonged teleworking in the Singapore Police Force.	Cross-sectional study	Police officers (n=2024)	<ul style="list-style-type: none"> • Socio-demographic variables • General well-being • Satisfaction with teleworking • Productivity 	It was found that caregivers reported significantly lower stress management and significantly higher stress levels compared to non-caregivers.	7/8
(Grover et al, 2022) ³⁷	India. March to May, 2020	To assess psychosocial problems among police officers during the COVID-19 pandemic.	Cross-sectional study	Police officers (n=623)	<ul style="list-style-type: none"> • Socio-demographic variables • PHQ-4 • PSS 	Older age was significantly associated with higher depressive symptoms, PHQ-4 total score, and higher perceived stress. No significant sex differences in perceived stress scores were observed.	7/8
(Hung & Liu, 2022) ³⁸	Taiwan. March to April 2022	To explore how police officers' COVID-19 fear, resistance to organizational change, intolerance of uncertainty, and secondary trauma affect emotional exhaustion and insomnia in the context of COVID-19.	Cross-sectional study	Police officers (n=205)	<ul style="list-style-type: none"> • Socio-demographic variables • STSS • ISI • MBI • Intolerance of Uncertainty Scale • FSV-19 • Organisational environment 	Frontline staff exposed to traumatised people were also prone to fear and stress related to COVID-19.	6/8

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Table 4 (Continued).

Studies	Context (Country and Collected Date)	Objective	Type of Study	Participants	Methods	Findings	JB1
(Kukić et al, 2022) ³⁹	Serbia. April, 2020	To explore the association between perceived stress and coping strategies and fear of COVID-19 in police students.	Cross-sectional study	Police students (n=340)	<ul style="list-style-type: none"> • Socio-demographic variables • PSS-10 • Brief COPE • FSV-19 	There were significant differences in perceived stress, 3 primary coping styles, and fear of COVID-19 according to sex. Stepwise regression analysis extracted the most important predictors of fear of COVID-19. Perceived stress was the strongest predictor overall and in both sexes. Denial and self-distancing were significant coping subscales in men, while humour and denial were significant in women.	7/8
(J. C. M. Li et al, 2022) ⁴⁰	Hong Kong. May to July, 2020	To examine the impacts of family and work-related resource losses and gains on occupational stress and turnover intention in the midst of the pandemic.	Cross-sectional study	Police officers (n=335)	<ul style="list-style-type: none"> • Socio-demographic variables • Work stress • Turnover intention • Work-to-family Conflict Scale • Family-to-work Conflict Scale • Supervisor Support Scale • Family Support • Constructive Coping 	Police officers were found to have average levels of job stress (M=40.0, SD=18.7) and exhibited lower levels of turnover intention (M=15.3, SD=19.6). Police officers “sometimes” felt job stress and “rarely” intended to turnover during the COVID-19 pandemic. Results indicated that police job stress was significantly related to Work-to-family Conflict ($\beta=0.443$, $p<0.001$) and Family-to-work Conflict ($\beta=0.305$, $p<0.001$), but not to Supervisor Support, Family Support, and Constructive Coping.	7/8
(McAlearney et al, 2022) ⁴¹	The USA. February to April, 2021	To assess how rescuers felt about COVID-19 and its impact on their work.	Qualitative study	Police officers (n=13)	<ul style="list-style-type: none"> • Semi-structured interview. • Experience in the pandemic. • Viral and serological tests. • Vaccination. • Sources of information and guidance on COVID-19. 	Police officers, firefighters, and paramedics described increased stress due to the COVID-19 pandemic caused by factors such as fear of exposure to COVID-19 during emergency responses, concern about infecting family members, and frustration with new work policies.	10/10

(F. F.-Y. Huang & Liu, 2023) ⁴²	Taiwan. August to October 2022	To examine whether law enforcement officers' fear of COVID-19, job burnout, and job stress have increased their post-traumatic stress disorder and insomnia during the epidemic.	Cross-sectional study	Police officers (n=306)	<ul style="list-style-type: none"> • Socio-demographic variables • FSV-19 • MBI • PTSD scale • PSS-14 • ISI 	Perceived formalism positively affected police officers' job burnout and job stress. Job stress, fear of COVID-19, and job burnout positively affected post-traumatic stress disorder and insomnia. In the case of the COVID-19 outbreak, policy uncertainty, lack of effective vaccines, and insufficient protective equipment have made police officers more susceptible to developing PTSD-related disorders as a result of increased work stress.	7/8
(Ndubueze, 2023) ⁴³	Nigeria. March, 2021	To examine the sources, nature, and effects of stress among police personnel during the SARS-CoV-2 pandemic lockdown (COVID-19) and how police officers dealt with and managed it.	Qualitative study	Police officers (n=30)	Interviews <ul style="list-style-type: none"> • Socio-demographic variables. • Sources and nature of police stress. • Effects of stress on police personnel. • Stress management/coping. 	The results showed that most participants experienced stress during the lockdown. Stress arose from a lack of cooperation from defiant members of the public who disobeyed movement restrictions, increased work hours/ workload, fear of contracting the virus, and lack of understanding from family/ friends. In addition, some participants reported experiencing depression, anxiety, post-traumatic stress disorder and suicidal thoughts as a result of the stress they faced. However, most participants reported that the availability of support from family members, peer support and reassurance, physical exercise, talking about work stress with colleagues/superiors, spending time on hobbies, eating well, deep breathing, meditation and prayer had helped them to alleviate work stress.	10/10
(Ravikumar, 2023) ⁴⁴	India. February to June, 2021	To examine the levels of occupational stress and psychological well-being of healthcare workers and police personnel during the pandemic.	Cross-sectional study	Police officers (n=65)	<ul style="list-style-type: none"> • Socio-demographic variables. • Occupational stress scale. • Positive Psychological Capital scale. • SSEIT. • Psychological well-being scale. 	Occupational stress did not vary by marital status or age, and there were no differences between healthcare workers and police officers. However, occupational stress was strongly related to Positive Psychological Capital and was moderately positively related to psychological well-being.	7/8

(Continued)

Table 4 (Continued).

Studies	Context (Country and Collected Date)	Objective	Type of Study	Participants	Methods	Findings	JB1
(Wu et al, 2023) ⁴⁵	China. March to May, 2022	To explore the effects of work-related stress and risk perception on the mental health of police officers during the epidemic.	Cross-sectional study	Police officers (n=302)	<ul style="list-style-type: none"> • Socio-demographic variables. • Work stress scale. • SCL-90. • Epidemic risk perception scale. 	Among the surveyed police officers, the prevalence of mental health problems was 38.74%. The results indicated that the SCL-90 total score and its sub-dimensions were positively correlated with job stress and risk perception. In addition, three factors were relevant to police mental health: age, marital status, and education.	8/8
(Sharma et al, 2024) ⁴⁶	India May to June, 2020	To estimate the impact of COVID-19 pandemic distress, anxiety, depression, and sleep disturbance on essential workers through an online survey.	Cross-sectional study	Police officers (n=274)	<ul style="list-style-type: none"> • Peritraumatic distress inventory. • ISI. • DASS. 	Mild to moderate stress was experienced by 10.2% to 6.2% of police personnel, and severe or extremely severe by 5.9%. Age was found to have a significant negative association with distress and insomnia. Sex had a significant positive association with distress, insomnia, stress, and depression. Education and measures for distress, insomnia, stress, and depression had significant positive associations. Occupation was found to be positively associated with distress, insomnia, anxiety, and depression. Distress was positively associated with insomnia, stress, anxiety, and depression.	6/8

Abbreviations: BFI-20, Big Five Inventory; BM-SV, Burnout Measure-Short Version; BRS, Brief Resilience Scale; CD-RISC-10, Connor-Davidson Resilience Scale 10; CSS-36, COVID Stress Scale-36; DASS-21, Depression, Anxiety and Stress Scale-21; FCQ, Fear of the Coronavirus Questionnaire; FSV-19, Fear of COVID-19; GAD-7, Generalised Anxiety Disorder Scale; GHQ-12, General Health Questionnaire-12; IRI, Interpersonal Reactivity Index; ISA, Intellectual, Social, Affective engagement scale; ISI, Insomnia Severity Index; JBI, score of Joanna Briggs Institute tools; K6/K10, Kessler Psychological distress scale; MBI, Maslach Burnout Inventory; MBI-HSS, Maslach Burnout Inventory-Human Services Survey; MCTQ, Munich Chrono-Type Questionnaire; MSPSS, Multidimensional Scale of Perceived Social Support; PANAS, Positive and Negative Affect Schedule; PHQ-4/PHQ-9, Patient Health Questionnaire; PSQI, Pittsburgh Sleep Quality Index; PSS, Perceived stress scale; PTSD, Post-Traumatic Stress Disorder; SCL-90, Symptom Checklist 90; SSEIT, Schutte Self Report Emotional Intelligence Test scale; STSS, Secondary Traumatic Stress Scale; SWLS, Satisfaction with Life Scale; TriPM, Triarchic Psychopathy Measure; UWES-9, Utrecht Work Engagement Scale-9; WIMD, Welsh Index of Multiple Deprivation.

perceived health,³⁴ levels of engagement,^{34,44} coping styles,³⁹ turnover intention,⁴⁰ work-family conflict,⁴⁰ policies,⁴² and physical activity.⁴³

Finally, in some studies, police officers felt that they did not need psychological support.^{22,32}

Discussion

The goal of this review was to evaluate the stressors that could affect stress levels in state security forces while performing their duties during the COVID-19 pandemic.

Firstly, it was found that the prevalence of stress varied widely in the reviewed studies, ranging from 22% to 87.2%. This could imply that while stress is a prevalent issue, its magnitude can significantly fluctuate based on the study's context and the unique working conditions involved.⁴⁸

Various structural, organisational, situational, and personal elements have been identified as stressors. Lack of basic personal protective equipment^{9,34} is a variable that can cause stress to officers, as same as to other professionals such as healthcare workers,⁴⁹ in many cases for fear of contracting the disease due to the absence of protective equipment.^{24,25,30,32–34,38,39,41–43}

Moreover, police officers' duties include ensuring the safety and order of the population, and this can lead to exacerbated stress as they try to maintain law and order,²⁴ especially when part of the population may be against the movement restrictions imposed by some governments.⁵⁰ Long working hours^{24,26,32,43} and the lack of adequate rest periods between tasks should be considered.²³ Police work is unpredictable, and during the pandemic, the number of working days or shifts may have been increased to cover for colleagues who have become infected.⁵¹ These findings highlight the importance of working conditions and the need to ensure that a safe and appropriate working environment is in place to reduce stress.

In terms of personal factors, there were some discrepancies between the studies. While for Q. Huang et al²⁶ and Grover et al³⁷ being over 45 years of age was a potential factor for stress, for Rajbhandari et al³⁰ the most predisposed group was the 18–27 age group, and for Ravikumar⁴⁴ occupational stress was not affected by age. Other studies in the general population suggest that older age may be associated with higher levels of stress, although further concomitant factors may play a role.⁵² In this sense, other variables such as being male and single were factors that might predispose to stress, yet no statistically significant differences were found.³⁷ Conversely, in the study by Ravikumar,⁴⁴ occupational stress did not vary by marital status or age. On the other hand, in the studies,^{25,26,30,39} sex significantly predicted stress, with women being more likely to suffer stress than men, as in other exceptional situations.⁵³ Years of experience also play an important role in coping with new situations, and some studies have shown that fewer years of experience may increase the stress level related to job maintenance during COVID-19,^{25,33} as in a sample of Swedish police officers before the pandemic.⁵⁴ These factors suggest that stress is not only influenced by working conditions but also by individual and socio-demographic characteristics.

Other factors assessed in the studies relate to changes in working conditions brought about by the COVID-19 pandemic, such as the presence of chronic underlying diseases,^{26,33} having less contact with co-workers,²⁸ a lower perceived quality of life,³¹ a decline in sleep quality,^{33,42,46} reduced self-perceived health,³⁴ a work-family conflict and vice versa,⁴⁰ which, among others, are equally decisive. Such variety and multiplicity of factors underline the complexity of the stress phenomenon and the need to address it from a multifactorial perspective.¹⁷

Finally, it should be noted that some studies reported individuals believing that they did not need psychological support^{22,32} and that for others, it was not even considered.²⁷ In contrast, in the study by Ndubueze,⁴³ psychological support did help. These differing approaches can be a major barrier to implementing effective interventions. It is, therefore, crucial to promote an organisational culture that is accepting and supportive of access to mental health resources and training in coping abilities.

This study is not without limitations. Firstly, the contexts and instruments used to collect the information varied. So, in many cases, knowledge of the setting was necessary to understand the results. In addition, each study was carried out at a different pandemic phase, and the events of counteracting the pandemic were not always comparable across studies. Furthermore, there have been several studies in which it was not possible to collect specific information from police forces. Lastly, the study did not include military personnel because their training and functions differ from those of the police.

Conclusion

This study aimed to evaluate the factors that could affect stress levels in state security forces while performing their duties during the COVID-19 pandemic. Our findings suggest that the demands imposed by COVID-19 on police officers, which go beyond the standard duty of maintaining law and order, had a considerable psychological impact on them.

It was found that the prevalence of stress varied between different studies, ranging from 22% to 87.2%. Therefore, this was prevalent issue which fluctuated between dates and context.

There was a wide variability of factors that may have had an influence on stress levels during the pandemic, including organisational factors (lack of basic personal protective equipment, lack of resting periods, long working hours or poor communication), pandemic situational factors (fear of contagion, pressure to maintain law and order, emotion coping, between others), and personal factors (mainly, sex, marital status, educational level, work experience, age, chronic illnesses, and family-work conflicts).

There is a vital need for police officers to receive psychological support, implementing strategies to reduce the effects of stress and offering customized psychological therapy and coping tools.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Laufs J, Waseem Z. Policing in pandemics: a systematic review and best practices for police response to COVID-19. *Int J Disaster Risk Reduct.* 2020;51:101812. doi:10.1016/J.IJDRR.2020.101812
2. Edwards AM, Kotera Y. Policing in a pandemic: a commentary on officer well-being during COVID-19. *J Police Crim Psychol.* 2021;36(3):360–364. doi:10.1007/s11896-021-09469-4
3. Stogner J, Miller BL, McLean K. Police Stress, Mental health, and resiliency during the COVID-19 pandemic. *Am J Crim Justice.* 2020;45(4):718–730. doi:10.1007/S12103-020-09548-Y
4. Schneiderman N, Ironson G, Siegel SD. STRESS AND HEALTH: psychological, behavioral, and biological determinants. *Annu Rev Clin Psychol.* 2005;1(1):607. doi:10.1146/ANNUREV.CLINPSY.1.102803.144141
5. Lazarus RS, Folkman S, Gentry WD. The handbook of behavioral medicine. (Guildford, ed.). Guildford; 1984. Available from: https://scholar.google.com/scholar_lookup?title=The+handbook+of+Behavioral+medicine&author=R.S.+Lazarus&author=S.+Folkman&publication_year=1984&. Accessed May 31, 2024.
6. Agnew R. Foundation for a general strain theory of crime and delinquency. *Criminology.* 1992;30(1):47–88. doi:10.1111/J.1745-9125.1992.TB01093.X
7. Doerr JM, Ditzen B, Strahler J, et al. Reciprocal relationship between acute stress and acute fatigue in everyday life in a sample of university students. *Biol Psychol.* 2015;110:42–49. doi:10.1016/J.BIOPSYCHO.2015.06.009
8. Giessing L, Frenkel MO, Zinner C, et al. Effects of coping-related traits and psychophysiological stress responses on police recruits' shooting behavior in reality-based scenarios. *Front Psychol.* 2019;10. doi:10.3389/FPSYG.2019.01523
9. Gómez-Galán J, Lázaro-Pérez C, Martínez-López JÁ, Fernández-Martínez MM. Burnout in Spanish security forces during the covid-19 pandemic. *Int J Environ Res Public Health.* 2020;17(23):1–15. doi:10.3390/ijerph17238790
10. Backteman-Erlanson S, Padyab M, Brulin C. Prevalence of burnout and associations with psychosocial work environment, physical strain, and stress of conscience among Swedish female and male police personnel. *Police Pract Res.* 2013;14(6):491–505. doi:10.1080/15614263.2012.736719
11. Jennings WG, Perez NM. The immediate impact of COVID-19 on law enforcement in the United States. *Am J Crimi Justice.* 2020;45(4):690. doi:10.1007/S12103-020-09536-2
12. Violanti JM, Charles LE, McCanlies E, et al. Police stressors and health: a state-of-The-art review. *Policing.* 2017;40(4):642. doi:10.1108/PIJPSM-06-2016-0097
13. Fleming J, Brown J. Staffing the force: police staff in England and Wales' experiences of working through a COVID-19 lockdown. *Police Pract Res.* 2022;23(2):236–253. doi:10.1080/15614263.2021.1938048
14. Singh S, Kar SK. Sources of occupational stress in the police personnel of North India: an exploratory study. *Indian J Occup Environ Med.* 2015;19(1):56. doi:10.4103/0019-5278.157012
15. Cieślak I, Kielan A, Olejniczak D, et al. Stress at work: the case of municipal police officers. *Work.* 2020;65(1):145–152. doi:10.3233/WOR-193067
16. Chaudhary P, Payal N, Nain P, et al. Perceived risk of infection, ethical challenges and motivational factors among frontline nurses in Covid-19 pandemic: prerequisites and lessons for future pandemic. *BMC Nurs.* 2024;23(1):1–10. doi:10.1186/s12912-023-01653-7
17. Edwards AM, Kotera Y. Mental health in the UK police force: a qualitative investigation into the stigma with mental illness. *Int J Ment Health Addict.* 2021;19(4):1116–1134. doi:10.1007/S11469-019-00214-X/TABLES/1
18. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ.* 2021;372. doi:10.1136/BMJ.N71.
19. Popay J, Roberts H, Jennie Popay A, et al. Developing guidance on the developing guidance on the conduct of narrative synthesis conduct of narrative synthesis in systematic reviews in systematic reviews. An ESRC Research Methods Programme project; January 2014. Available from: <http://www.lancaster.ac.uk/shm/research/nssr/research/dissemination/publications/medsocsept05pdf>. Accessed November 14, 2024.

20. Munn Z, Stern C, Aromataris E, Lockwood C, Jordan Z. What kind of systematic review should i conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. *BMC Med Res Methodol*. 2018;18(1):1–9. doi:10.1186/S12874-017-0468-4/TABLES/1
21. Institute Joanna Briggs. JBI critical appraisal tools (JBI). *Joanna Briggs Institute*; Published online 2023. Published online 2023<https://jbi.global/critical-appraisal-tools>. Accessed November 14, 2024.
22. Zhu X, Xia M, Hu Y, et al. Mental status and psychological needs of Chinese police officers in a highly impacted city during the COVID-19 pandemic. *Int J Mental Health Promotion*. 2020;22(3):149–157. doi:10.32604/IJMHP.2020.011097
23. Boovaragasamy C, Kumar M, Sandirakumaran A, Gnanasabai G, Rahman M, Govindasamy A. COVID-19 and police personnel: an exploratory community based study from South India. *J Family Med Prim Care*. 2021;10(2):816–819. doi:10.4103/jfmpe.jfmpe_1249_20
24. Dey A, Majumdar P, Saha A, Sahu S. COVID-19 pandemic lockdown-induced altered sleep/wake circadian rhythm, health complaints and stress among traffic police personnel in India. *Chronobiol Int*. 2021;38(1):140–148. doi:10.1080/07420528.2020.1831524
25. Frenkel MO, Giessing L, Egger-Lampl S, et al. The impact of the COVID-19 pandemic on European police officers: stress, demands, and coping resources. *J Crim Justice*. 2021;72:doi:10.1016/j.jcrimjus.2020.101756.
26. Huang Q, Bodla AA, Chen C. An exploratory study of police officers' perceptions of health risk, work stress, and psychological distress during the COVID-19 outbreak in China. *Front Psychol*. 2021;12. doi:10.3389/fpsyg.2021.632970
27. Jiang Q. Stress response of police officers during COVID-19: a moderated mediation model. *J Investig Psychol Offender Profilin*. 2021;18(2):116–128. doi:10.1002/jip.1569
28. Langvik E, Karlsen HR, Saksvik-Lehouillier I, Sørengaard TA. Police employees working from home during COVID-19 lockdown: those with higher score on extraversion miss their colleagues more and are more likely to socialize with colleagues outside work. *Pers Individ Dif*. 2021;179. doi:10.1016/j.paid.2021.110924
29. Pink J, Gray NS, O'Connor C, Knowles JR, Simkiss NJ, Snowden RJ. Psychological distress and resilience in first responders and health care workers during the COVID-19 pandemic. *J Occup Organ Psychol*. 2021;94(4):789–807. doi:10.1111/joop.12364
30. Rajbhandari B, Tiwari B, Gurung M, et al. COVID stress among Nepal police officers. *J Nepal Health Res Counc*. 2021;19(2):390–395. doi:10.33314/jnhrc.v19i2.3672
31. Rojas-Solis JL, Hernandez-Corona ME, Garcia-Ramirez BEB, Lopez-Cortes VA. Burnout, psychological discomfort and life satisfaction in police officers during the health contingency due to COVID-19: an exploratory study. *Arch Med*. 2021;21(2):556–566. doi:10.30554/archmed.21.2.4118.2021
32. Sener H, Arıkan 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. *Soc Work Public Health*. 2021;36(4):486–495. doi:10.1080/19371918.2021.1915910
33. Si G, Xu Y, Li M, Zhang Y, Peng S, Tan X. Sleep quality and associated factors during the COVID-19 epidemic among community non-medical anti-epidemic Workers of Wuhan, China. *BMC Public Health*. 2021;21(1). doi:10.1186/s12889-021-11312-8
34. Talavera-Velasco B, Luceno-Moreno L, Garcia-Albuena Y, Martin-Garcia J. Perception of health, resilience, and engagement in Spanish police officers during the COVID-19 pandemic. *Psicothema*. 2021;33(4):556–563. doi:10.7334/psicothema2021.153
35. Brouzos A, Vassilopoulos SP, Romosiou V, et al. 'Stay safe-feel positive' on the frontline: an online positive psychology intervention for police officers during the COVID-19 pandemic. *J Posit Psychol*. 2022;17(6):898–908. doi:10.1080/17439760.2021.1975161
36. Danker TN, Yap HL, Zalzuli AD, Ho HF, Ang J. Surviving work from home: observations from Singapore. *J Police Crim Psychol*. 2022;37(2):407–422. doi:10.1007/s11896-021-09461-y
37. Grover S, Sahoo S, Dua D, Mehra A, Nehra R. Psychological impact of COVID-19 duties during lockdown on police personnel and their perception about the behavior of the people: an exploratory study from India. *Int J Ment Health Addict*. 2022;20(2):831–842. doi:10.1007/s11469-020-00408-8
38. Hung WL, Liu HT. Causal model analysis of police officers' COVID-19 fear, resistance to organizational change effect on emotional exhaustion and insomnia. *Int J Environ Res Public Health*. 2022;19(16):10374. doi:10.3390/ijerph191610374
39. Kukić F, Orr RM, Veskočić A, Petrović N, Subošić D, Koropanovski N. Association between perceived stress, coping profile and fear during the COVID-19 pandemic among male and female police students. *Med Pr*. 2022;73(3):179–190. doi:10.13075/mp.5893.01145
40. Li JCM, Cheung CK, Sun IY, Cheung YK, Zhu S. Work–family conflicts, stress, and turnover intention among Hong Kong police officers amid the COVID-19 pandemic. *Police Q*. 2022;25(3):281–309. doi:10.1177/10986111211034777
41. McAlearney AS, Gaughan AA, Macewan SR, et al. Pandemic experience of first responders: fear, frustration, and stress. *Int J Environ Res Public Health*. 2022;19(8):4693. doi:10.3390/ijerph19084693
42. Huang FFY, Liu HT. Path model analysis of the effects of perceived formalism, and fear of COVID-19 on police officers' PTSD and insomnia. *Behav Sci*. 2023;13(10):867. doi:10.3390/bs13100867
43. Ndubueze PN. Police personnel stress during COVID-19 pandemic lockdown in Kano, Nigeria. *Int J Police Sci Manag*. 2023;26(2):170–181. doi:10.1177/14613557231209834
44. Ravikumar T. Occupational stress and psychological wellbeing during COVID 19: mediating role of positive psychological capital. *Curr Psychol*. 2023;42(23):20157–20164. doi:10.1007/s12144-022-02861-1
45. Wu J, Wu Q, Xia M, Xiao J, Yan X, Li D. A study on mental health and its influencing factors among police officers during the COVID-19 epidemic in China. *Front Psychiatry*. 2023;14. doi:10.3389/fpsyg.2023.1192577
46. Sharma R, Kumar K, Aditya AS, et al. To study the distress, anxiety, depression, and sleep effects of the COVID-19 pandemic on essential workers. *Indian J Community Med*. 2024;49(2):424–428. doi:10.4103/ijcm.ijcm_140_23
47. Li Y, Wen Z, He Y, Huang J. Mental health status among prison officers in the process of enforcing the law during COVID-19 epidemic: a cross-sectional survey from China. *BMC Psychiatry*. 2022;22(1). doi:10.1186/s12888-021-03679-0
48. Der Molen HFV, Nieuwenhuijsen K, Frings-Dresen MHW, De Groene G. Work-related psychosocial risk factors for stress-related mental disorders: an updated systematic review and meta-analysis. *BMJ Open*. 2020;10(7). doi:10.1136/BMJOPEN-2019-034849
49. Al Hourri HN, Alhourri A, Arrouk DMN, et al. Stress, depression, anxiety, and quality of life among the healthcare workers during COVID-19 pandemic in Syria: a multi-center study. *Ann Gen Psychiatry*. 2023;22(1). doi:10.1186/S12991-023-00470-1
50. Fazio M, Pluchino A, Inturri G, Le Pira M, Giuffrida N, Ignaccolo M. Exploring the impact of mobility restrictions on the COVID-19 spreading through an agent-based approach. *J Transp Health*. 2022;25:101373. doi:10.1016/J.JTH.2022.101373
51. Krishna Reddy CH, Achari PK, Nisha B, Radha AR. Significance of laboratory markers in predicting the severity of COVID-19 in the central reserve police force front-line workers with a review of literature. *Indian J Public Health*. 2022;66(4):512–515. doi:10.4103/ijph.ijph_1470_21

52. Harris MW, Byrne KA, Pury CLS, et al. More relaxed but less helpful: the relationship between stress, age, and self-reported prosocial behavior during the COVID-19 pandemic. *Psych.* 2022;4(4):833–842. doi:10.3390/PSYCH4040061
53. Bowler RM, Han H, Gocheva V, et al. Gender differences in probable posttraumatic stress disorder among police responders to the 2001 World Trade Center terrorist attack. *Am J Ind Med.* 2010;53(12):1186–1196. doi:10.1002/AJIM.20876
54. Hansson J, Padyab M. How the availability and adequacy of social support affect the general mental health of Swedish police officers. *Front Psychol.* 2023;14. doi:10.3389/FPSYG.2023.1196320

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