SYSTEMATIC REVIEW

Coping Strategies for Exposure to Trauma Situations in First Responders: A Systematic Review

Alejandra María Díaz-Tamayo, BSc, MSc, PhDc;[1,2] Jorge Reinerio Escobar-Morantes, MD;[1] Herney Andrés García-Perdomo, MD, MSc, EdD, PhD, FACS[2,3]

1. Technology Program in Prehospital Care, School of Medicine, Universidad del Valle, Cali, Colombia
2. UROGIV Research Group, School of Medicine, Universidad del Valle, Cali, Colombia
3. Division of Urology/Urooncology, Department of Surgery, School of Medicine, Universidad del Valle, Cali, Colombia

Correspondence:
Prof. Alejandra María Diaz
Cll 4b # 36-00
E-mail: alejandra.diaz@correounivalle.edu.co

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Abbreviations:
CISS: Coping Inventory for Stressful Situations
COPE: Coping Orientation to Problems Experienced scale
PTSD: posttraumatic stress disorder
WCCL: Ways of Coping Checklist
WCQ: Ways of Coping Questionnaire

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Abstract

Objective: The objective of the present work was to characterize the coping strategies used by first responders to emergencies in the face of exposure to traumatic events.

Methods: A systematic search was performed in the databases MEDLINE (Ovid), EMBASE, LILACS (Latin American and Caribbean Literature in Health Sciences), and the Cochrane Central Registry of Controlled Clinical Trials (CENTRAL) from their inception through February 2022. First responders to emergencies with training in the prehospital area and who used validated measurement instruments for coping strategies were included.

Results: First responders to emergencies frequently used nonadaptive coping strategies, with avoidance or disconnection being one of the main strategies, as a tool to avoid confronting difficult situations and to downplay the perceived stressful event. The nonadaptive coping strategies used by these personnel showed a strong relationship with posttraumatic stress disorder (PTSD) symptoms, burnout syndrome, psychiatric morbidity, and chronic stress. As part of the adaptive strategies, active coping was found, which includes acceptance, positive reinterpretation, focusing on the problem, self-efficacy, and emotional support, either social or instrumental, as protective strategies for these personnel.

Conclusions: Developing adaptive coping strategies, whether focused on problems or seeking emotional support, can benefit emergency personnel in coping with stressful situations. These coping strategies should be strengthened to help prevent people from experiencing long-term negative effects that could arise from the traumatic events to which they are exposed. Active coping strategies instead of avoidance strategies should be promoted.

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Introduction

Emergency first-response care includes rescue interventions such as identification, stabilization, and treatment of life-threatening conditions at the site of the event and support measures during medical transport.[1] Prehospital care is provided to people who present medical or traumatic health events in different settings outside of the hospital setting. Emergency personnel who perform work in the prehospital setting usually attend to varied and complex emergencies in an environment of extreme conditions in terms of safety and resources, both in care personnel and in equipment and supplies that are difficult to control.[2] Therefore, first responders are exposed to multiple health risks (physical and psychological).[3] These risks can be preventable, mitigated, and treated in a timely manner to facilitate the recovery of caregivers. The nature of emergency work leaves these care personnel vulnerable to particular risks that most workers in other fields do not face. Among them, the high emotional demand and great stress to which they are exposed when fulfilling their responsibilities affects their psychological and physical well-being.[4–6]

Coping strategies have been defined as the cognitive and behavioral skills used to face internal and external demands that can overwhelm the resources of an individual.[7] How people perceive and respond to stressful situations is key, particularly in the emergency responder scenario.[8] Adaptive coping skills allow individuals to increase their ability to recover psychologically after stressful events, overcome long-term emotional damage, and

reduce the psychological impact of exposure to stress, particularly in high-risk groups such as emergency personnel.[9] In contrast, nonadaptive strategies are actions, thoughts, and feelings that avoid confronting and dealing with various stressors, which leads to negative effects on mental health, including the development of different mental disorders.[10,11] Emergency responders are faced with traumatic events, and their resources, strategies, and capacities to cope with these stressful situations will determine their adaptation process.[12]

This systematic review is important because it examines the research related to the coping strategies of first responders at the international level, the methodologies that have been carried out in studies, and the significant findings and the best available evidence. The objective of the present work was to characterize the coping strategies used by first responders in the face of exposure to traumatic events.

Methods

This study followed the recommendations of the Cochrane collaboration[13] and guidelines established by PRISMA (PRISMA Checklist available as online supplementary material).[14] The protocol for this systematic review was previously published.[15]

Inclusion Criteria

Types of Design—Clinical trials; cohort studies; case-control studies; and observational, analytical, and descriptive studies were included in first-response populations.

Participants—Studies that evaluated coping strategies in prehospital care technologists, professional technicians in prehospital care, paramedics, emergency medical technicians, firefighters, first responders, graduates in medical emergencies, prehospital emergency personnel, prehospital medical care personnel, technicians in health emergencies, technologists in medical emergencies, and graduates in medical emergencies/prehospital care were included.

Instruments—Studies that used validated measurement instruments of coping strategies in this population were included.

Outcomes—The most commonly used coping strategies by first responders to emergencies after attending critical events were sought.

Exclusion Criteria

Studies including staff from other disciplines, such as doctors and nurses, who worked in emergency care services and volunteer personnel were excluded.

Information Sources

The following databases were searched: MEDLINE (Ovid) (US National Library of Medicine, National Institutes of Health; Bethesda, Maryland USA); EMBASE (Elsevier; Amsterdam, Netherlands); LILACS (Latin American and Caribbean Literature in Health Sciences) (Latin American and Caribbean Center on Health Sciences Information, Department of Evidence and Intelligence for Action in Health – EIH; Rua Vergueiro, Brazil); and the Cochrane Central Registry of Controlled Clinical Trials (CENTRAL) (The Cochrane Collaboration; London, United Kingdom) from the first registries through February 2022 (Appendix 1; available online only). To ensure the saturation of the literature, references of relevant articles identified through the search, conferences, thesis databases, Open Grey (INIST-CNRS - Institut de l'Information Scientifique et Technique; Paris, France), Google Scholar (Google Inc.; Mountain View, California USA), and Clinicaltrials.gov, among others, were scanned. No language restrictions were established.

Data Collection

Two researchers independently searched the different databases, reviewing each reference by title and abstract. Then, they scanned the full texts of the relevant studies, applying the pre-specified inclusion and exclusion criteria, and extracting the data from the full texts in the final selection. Disagreements regarding eligibility, quality, and retrieved data were resolved by consensus. Duplicate articles were eliminated.

Two trained reviewers who used a standardized form independently extracted the following information from each article: first author and year, geographic location, study design, age, title, objectives, inclusion and exclusion criteria, number of participants included, and instrument used, prevalence of posttraumatic stress disorder (PTSD), coping strategies used, time, outcome definitions, results, and measures of association, if applied. The reviewers confirmed all data, making sure they were accurate.

Risk of Bias

The evaluation of the risk of bias for each study was performed using the Newcastle-Ottawa quality assessment scale, adapted for cross-sectional studies.[16] This identified factors such as sample size and representativeness, characteristics of those who did not participate in the studies, validity of the instruments, comparison between groups, evaluation of the results, and the statistical test used.

Data Analysis/Synthesis of Results

The results were summarized in qualitative and descriptive terms due to the high heterogeneity of the findings.

Results

Selection of Studies

Once the search strategies were applied, 1,140 studies were found. Duplicate records were excluded, and after applying the eligibility criteria, 31 studies were included for the systematic review (Figure 1).

Characteristics of the Included Studies

In the studies analyzed, a total of 3,012 firefighters, 2,876 paramedics, and 161 rescuers were presented, with ages ranging from 20 to 62 years, with a significant percentage of males, and with an average seniority in the position of 9.7 years. Of the 31 articles, 14 included firefighters, 13 included paramedics, and four included both populations.

The articles by Witczak-Błoszyk, et al;[17] Miller, et al;[18] and Almutairi, et al[19] sought the relationship between burnout and coping mechanisms. Alghamdi, et al;[20] Meyer, et al;[21] Soravia, et al;[22] Lee, et al;[23] Witt, et al;[24] Kucmin, et al;[25] Theleritis, et al;[26] Clohessy, et al;[27] Durham, et al;[28] Huang, et al;[29] and Tomaka, et al[30] established the relationship between symptoms of PTSD and coping styles and how these can be protective or risk factors. Regarding the workplace and exposure to traumatic events, Moskola, et al;[31] Minnie, et al;[32] Boland, et al;[33] Dowdall-Thomae, et al;[34] Pisarski, et al;[35] Shakespeare-Finch, et al;[36] and Halpern, et al[37] presented the coping strategies used by this population after these events. Fonseca, et al;[38] Iwasaki, et al;[39] Piñar-Navarro, et al;[40] and Völker, et al[41] examined coping strategies related to stress. Sattler, et al[42] and Yang, et al[43] evaluated how coping strategies contributed to posttraumatic growth in these professionals. The articles of Chang, et al[44,45] evaluated the association between

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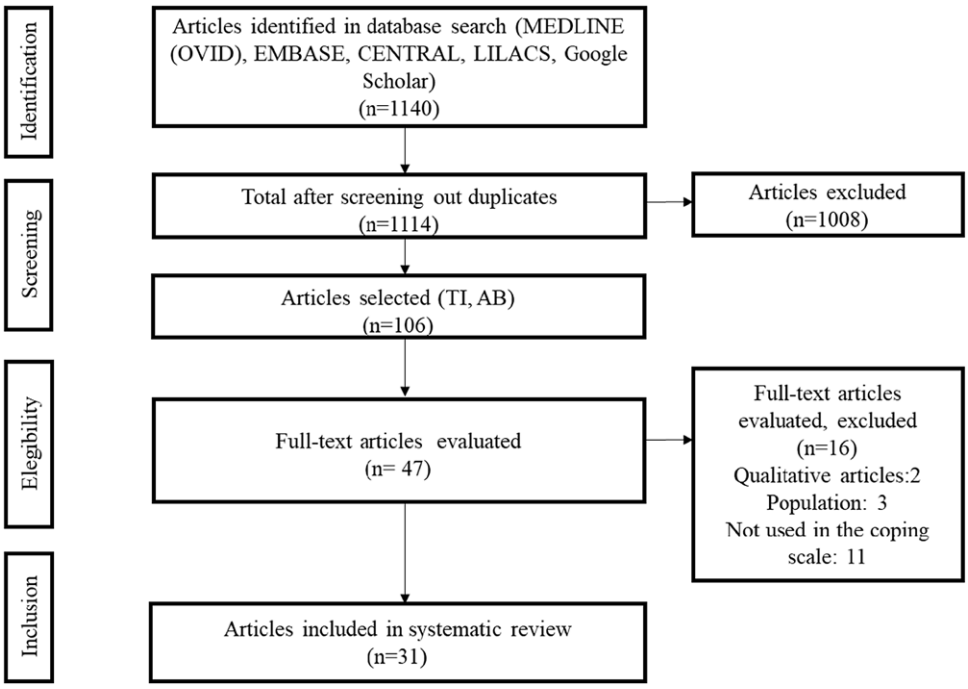

Figure 1. Selection of Articles.

coping strategies and psychiatric morbidity. Oginska-Bulik, et al[46] investigated the relationship between personality traits and coping strategies. In addition, Vaulerin, et al[47] identified the relationship between musculoskeletal injuries and coping strategies (Table 1).

Five studies presented events that first responders considered traumatic experiences that they had difficulty processing and influenced their emotions, such as accidents or events involving children, accidents with multiple victims, injury or death related to a coworker, dealing with violent people, or suffering from direct physical or verbal threats at the scene of an incident, and witnessing suicides or the death of a patient in their care.[22,25,31,32,42]

In relation to the studies reviewed, there are different instruments to evaluate coping strategies in the face of stress, mostly derived from the theory of Lazarus and Folkman, 1984.[7] In the present review, it was found that the most commonly used instruments were the coping scale COPE (Coping Orientation to Problems Experienced) with 55% of studies, the Ways of Coping Questionnaire (WCQ) with 13% of studies, the Ways of Coping Checklist (WCCL) with 13% of studies, the Coping Inventory for Stressful Situations (CISS) with seven percent of studies, and four different instruments with a total of 12%.

Characteristics of the Excluded Studies

Articles were excluded because they did not measure coping strategies through any instrument, the population was voluntary or had other health training different from that evaluated in this study, or the studies were qualitative. Regarding the type of study, no systematic reviews, topic reviews, protocols, or action plans were included.

Assessment of Risk of Bias

Thirty cross-sectional studies were included, of which six studies were unsatisfactory, mainly due to the lack of comparability,[17,18,25,27,39,42] and three were good studies[19,31,45] (Table 2).

In addition, the only clinical trial included[20] had an unclear risk of bias for the random sequence, allocation concealment, and other biases. Additionally, there was a high risk of bias for blinding, since it was open, and the result could have been evaluated subjectively (Figure 2A and 2B).

Results of Individual Studies

First responders to emergencies are frequently at risk of presenting symptoms of PTSD due to the characteristics of their work, where they are exposed to highly stressful events and severe trauma. Of the studies reviewed in this study, 13 reported the presence of PTSD in the populations analyzed. Of these, two studies (Lee, et al[23] and Huang, et al[29]) despite reporting the evaluation of this condition, did not report the data obtained in terms of PTSD. The study by Meyer, et al[21] reported a prevalence of four percent. The other ten studies reported a prevalence of PTSD between eight percent and 51%.

Nonadaptive Coping Strategies

The studies of Witczak-Błoszyk, et al;[17] Soravia, et al;[22] Völker, et al;[41] Theleritis, et al;[26] Chang, et al;[44] Dowdall-Thomae, et al;[34] and Meyer, et al[21] showed a frequent use of nonadaptive coping strategies, with avoidance or disconnection as a strategy to avoid difficult situations and to downplay the perceived stressful event to prevent experiencing or re-experiencing the stressful situation. The mechanisms of distraction and social fun, as strategies to avoid thinking about situations, and denial as an absence of acceptance of the situation, enable individuals to tolerate or support the emotional state generated by trauma and self-blame while avoiding the real problem. Huang, et al[29] found that the cognition and negative evaluation caused by traumatic events can make people use avoidant coping more frequently.

Another avoidance strategy used by emergency personnel is to escape through the consumption of substances such as alcohol and drugs to generate emotional disconnection and alleviate symptoms

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Author (year) Country	Design	Sample	Instrument	Relationship	Results and Main Findings
Durham, et al - 1985, USA[28]	Cross-Sectional Study	79	COPE Scale	PTSD	The most frequent strategies were those focused on the problem, followed by those of avoidance.
Clohessy, et al - 1999, United Kingdom[27]	Cross-Sectional Study	56	Ways of Coping Questionnaire (WCQ)	PTSD	The most used strategies were professional attitude, search for social support, and reinterpretation and positive growth.
Pisarski, et al - 2002, Australia[35]	Cross-Sectional Study	60	COPE Scale	Exposure to Trauma Events	The most commonly used strategies: social support from coworkers and emotion-focused avoidance coping.
Shakespeare-Finch, et al - 2002, Australia[36]	Cross-Sectional Study	39	Personal Resources Questionnaire (PRQ)	Exposure to Trauma Events	Social support was an important coping mechanism and rational cognitive strategies.
Chang, et al - 2003, Taiwan[44]	Cross-Sectional Study	84	Ways of Coping Questionnaire (WCQ)	Psychiatric Morbidity	Coping by confrontation, distancing, escape avoidance, behavioral avoidance, and emotional disconnection.
Iwasaki, et al - 2005, Canada[39]	Cross-Sectional Study	132	COPE Scale	Stress	Acceptance, moderation, and positive reformulation as protective strategies.
Oginska-Bulik, et al - 2007, Polonia[46]	Cross-Sectional Study	190	COPE Scale	Personality Traits	They predominantly use problem-focused strategies such as planning and active coping and games to reduce stress and negative emotions such as positive reevaluation and acceptance.
Chang, et al - 2008, China[45]	Cross-Sectional Study	193	Ways of Coping Questionnaire (WCQ)	Psychiatric Morbidity	Confrontation, distancing, self-control, seeking social support, acceptance of responsibility, escape-avoidance, planned problem solving, and positive reassessment were identified as the main coping strategies.
Halpern, et al - 2012, Canada[37]	Cross-Sectional Study	189	COPE Scale	Exposure to Trauma Events	Nonadaptive coping strategies. The fearful and avoidant attachment style and coping through disconnection were the most frequent.
Dowdall-Thomae, et al - 2012, USA[34]	Cross-Sectional Study	53	Ways of Coping Checklist (WCCL)	Exposure to Trauma Events	Coping strategies focused on the problem, search for social support, self-blame, illusions, and avoidance were used.
Meyer, et al - 2012, USA[21]	Cross-Sectional Study	142	COPE Scale	PTSD	Strategies such as self-blame and alcohol consumption as nonadaptive strategies.
Sattler, et al - 2014, USA[42]	Cross-Sectional Study	286	COPE Scale	Posttraumatic Growth	Social support either from family, coworkers, and friends as a strategy that helped. Overcome the events they faced. Other means of support included religious leaders and psychologists.
Alghamdi, et al - 2015, Saudi Arabia[20]	Randomized Controlled Trial	34	COPE Scale	PTSD	Passive coping strategies such as disconnection from behavior, substance abuse, and self-blame were reported as significant changes after the intervention.
Minnie, et al - 2015, South Africa[32]	Cross-Sectional Study	189	COPE Scale	Exposure to Trauma Events	EMS personnel used more emotion-focused coping (63%) than problem-focused coping methods (28.4%).
Vaulerin, et al - 2016, France[47]	Cross-Sectional Study	220	Ways of Coping Checklist (WCCL)	Musculoskeletal Injuries	The search for social support and coping focused on the problem most often.
Tomaka, et al - 2017, EEUU[30]	Cross-Sectional Study	369	COPE Scale	PTSD	The use of nonadaptive coping strategies such as alcohol consumption and abuse.

Table 1. Characteristics of the Included Studies (*continued*)

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Author (year) Country	Design	Sample	Instrument	Relationship	Results and Main Findings
Lee, et al - 2018, South Korea[23]	Cross-Sectional Study	212	Ways of Coping Checklist (WCCL)	PTSD	Coping focused on the problem and social support as protection strategies.
Witt, et al - 2018, Poland[24]	Cross-Sectional Study	147	Coping Inventory for Stressful Situations (CISS)	PTSD	The most frequent coping strategies were task-oriented (55%), emotion-oriented (31%), avoidance (39%), distraction (16%), and social fun (15%).
Kucmin, et al - 2018, Poland[25]	Cross-Sectional Study	159	COPE Scale	PTSD	Coping style focused on emotions most often.
Yang, et al - 2019, Korea[43]	Cross-Sectional Study	226	COPE Scale	Posttraumatic Growth	Coping focused on the problem and deliberate rumination after traumatic incidents as a protective factor.
Boland, et al - 2019, USA[33]	Cross-Sectional Study	167	COPE Scale	Exposure to Trauma Events	Common coping responses included planning, positive reformulation, and active coping.
Theleritis, et al - 2020, Greece[26]	Cross-Sectional Study	102	AECOM CSQ Self-Administered Questionnaire	PTSD	The most used coping styles are that of minimization, avoidance, and blame.
Almutairi, et al - 2020, Saudi Arabia[19]	Cross-Sectional Study	270	Ways of Coping Checklist (WCCL)	Burnout Syndrome	Social support as a beneficial coping mechanism for these personnel.
Piñar-Navarro, et al - 2020, España[40]	Cross-Sectional Study	145	COPE Scale	Stress	Regarding coping strategies, active coping, planning, and acceptance were considered adaptive strategies.
Huang, et al - 2021, China[29]	Cross-Sectional Study	431	Coping Strategy Indicator (CSI)	PTSD	Avoidant coping and problem solving were negative and positive coping strategies, respectively.
Soravia, et al - 2021, Switzerland[22]	Cross-Sectional Study	336	Coolidge Axis Inventory II	PTSD	Dysfunctional coping (alcohol consumption, avoidance, self-efficacy, and distraction). The use of alcohol was a coping strategy to forget traumatic situations and events in individuals exposed to disasters.
Miller, et al - 2021, USA[18]	Cross-Sectional Study	38	COPE Scale	Burnout Syndrome	The coping mechanisms with the highest average were acceptance and active coping, humor, and self-distraction.
Völker, et al - 2021, Germany[41]	Cross-Sectional Study	161	COPE Scale	Stress	The most used coping strategy was acceptance; nonadaptive coping strategies such as distraction, self-blame, denial, and use of alcohol and drugs.
Fonseca, et al - 2021, Portugal[38]	Cross-Sectional Study	502	COPE Scale	Stress	Dysfunctional coping as a frequently used strategy.
Moskola, et al - 2021, Hungary[31]	Cross-Sectional Study	658	Ways of Coping Questionnaire (WCQ)	Exposure to Trauma Events	Problem-oriented coping strategies had a higher frequency of use, in addition to nonadaptive strategies related to a behavioral disconnection from the stressful situation and a feeling of loss of control.
Witczak-Błoszyk, et al - 2022, Poland[17]	Cross-Sectional Study	296	Coping Inventory for Stressful Situations (CISS)	Burnout Syndrome	The use of task-oriented coping and avoidance, either as distraction or social fun, was moderate, with these two being the most representative.

Table 1. *(continued).* Characteristics of the Included Studies
Abbreviations: COPE, Coping Orientation to Problems Experienced scale; PTSD, posttraumatic stress disorder; EMS, Emergency Medical Services.

of stress.[30,37] According to Kucmin, et al,[25] the coping style focused on emotions is also a maladaptive strategy that emergency personnel resort to due to the tendency to try to eliminate thoughts, images, or memories, resulting in greater accessibility to them and the activation of emotional memory, which in turn stimulates anxiety.

Miller, et al[18] found that humor was not a positive factor as a coping strategy in these personnel, since they resorted to this tool to try to downplay stressful situations.

Dysfunctional coping was explained by perceived stress after exposure to critical incidents, increasing the level of

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Study	Selection	Comparability	Result	Total score/10
Durham, et al - 1985	***	–	**	5/10
Clohessy, et al - 1999	**	–	**	4/10
Pisarski, et al - 2002	**	*	**	5/10
Shakespeare-Finch, et al - 2002	***	*	**	6/10
Chang, et al - 2003	****	–	**	6/10
Iwasaki, et al - 2005	**	–	**	4/10
Oginska-Bulik, et al - 2007	****	–	**	6/10
Chang, et al - 2008	****	*	**	7/10
Halpern, et al - 2012	***	–	**	5/10
Dowdall-Thomae, et al - 2012	***	–	**	5/10
Meyer, et al - 2012	***	–	**	5/10
Sattler, et al - 2014	**	–	**	4/10
Minnie, et al - 2015	***	–	**	5/10
Vaulerin, et al - 2016	***	–	**	5/10
Tomaka, et al - 2017	****	–	**	6/10
Lee, et al - 2018	***	–	**	5/10
Witt, et al - 2018	***	–	**	5/10
Kucmin, et al - 2018	**	–	**	4/10
Yang, et al - 2019	****	–	**	6/10
Boland, et al - 2019	***	–	**	5/10
Theleritis, et al - 2020	***	–	**	5/10
Almutairi, et al - 2020	****	**	**	8/10
Piñar-Navarro, et al - 2020	***	*	**	6/10
Huang, et al - 2021	***	*	**	6/10
Soravia, et al - 2021	***	*	**	6/10
Miller, et al - 2021	**	–	**	4/10
Völker, et al - 2021	***	*	**	6/10
Fonseca, et al - 2021	****	–	**	6/10
Moskola, et al - 2021	****	*	**	7/10
Witczak-Błoszyk, et al - 2022	**	–	**	4/10

Table 2. Newcastle–Ottawa Scale (Modified) for Cross-Sectional Studies

threat and cancelling the protective role of self-acceptance and life.[38]

According to Alghamdi, et al,[20] emergency personnel presented passive coping strategies such as behavioral disconnection, substance abuse, and self-blame, but showed significant positive changes after the use of narrative exposure therapy.

Additionally, it was reported that nonadaptive strategies that are related to a behavioral disconnection from stressful situations and a feeling of loss of control do not allow people to resort to active strategies to cope with problems.[27,31]

The nonadaptive coping strategies used by these personnel showed a strong relationship with PTSD symptoms, burnout syndrome, psychiatric morbidity, and chronic stress, specifically avoidance coping. The importance of these studies performing correlations with psychiatric symptoms was conclusive evidence with respect to the adaptability of these coping styles.

Adaptive Coping Strategies

These types of strategies were presented less frequently among these personnel, but they are significant in cushioning the adverse effects of continuous exposure to trauma. Strategies that involve active coping as behaviors aimed at resolving such situations can minimize the negative effects of the experience. Among these active coping strategies, the authors reported acceptance as a strategy in which both the situation faced and the emotions generated from it are recognized and accepted, solutions to resolve them are sought, and the stressful event is interpreted in a positive way based on the deliberate reflection of trying to understand the trauma, reflective and constructive thoughts, valuing the traumatic event as an experience of growth and learning, and interpreting it as rewarding.[18,39–41] Acceptance is an important component in building resilience.[48] In this sense, Chang, et al[45] and Clohessy, et al[27] reported positive reinterpretation as another important strategy that seeks the positive in the situation to improve and grow from it, promote well-being, and decrease anxiety and stress.

For Moskola, et al;[31] Sattler, et al;[42] Yang, et al;[43] Durham, et al;[28] Vaulerin, et al;[47] Oginska-Bulik, et al;[46] and Witt, et al,[24] coping focused on addressing situation and seeking to resolve the internal or environmental demands that were generated by the stressful event. This is accomplished through meetings in which staff are exposed to psychological debriefing, impressions are explored, facts, thoughts, and emotions are reviewed, and

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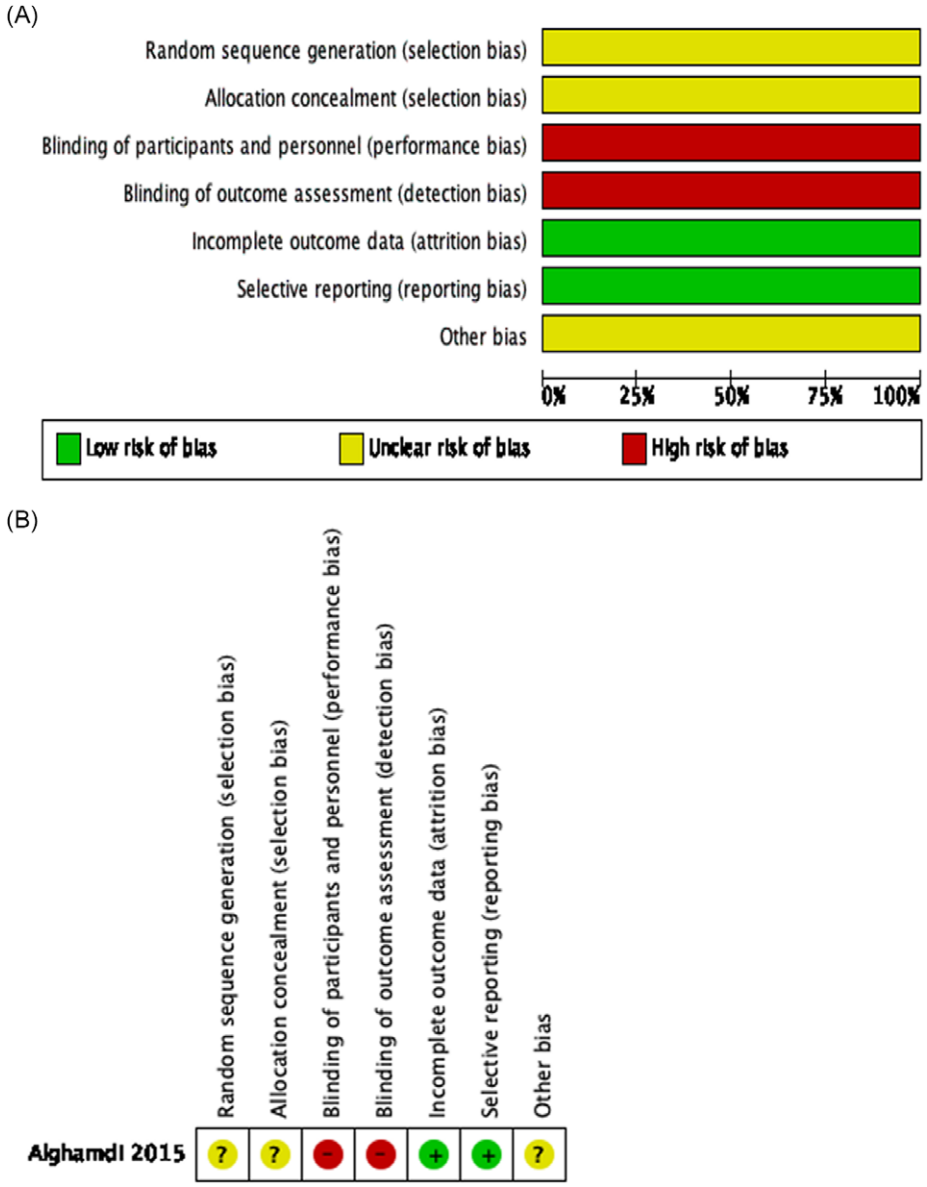

Figure 2. (A) Risk of Bias among Studies. (B) Risk of Bias within Studies.

education is provided on how to deal with stress, with the objective of taking action and making an effort to resolve the situation through cognitive transformation.[49] Establishing this type of coping is a protective factor for staff.

Self-efficacy, as a coping strategy, determined by the competence and personal capacity to face stressful situations and regulate one's own functioning, is another of the protective strategies that help control thoughts and regulate emotions in these staff.[22]

Other strategies that alleviate the symptoms were emotional support either as social support given by coworkers, bosses, or institutions and the instrumental support given by specialized mental health personnel. This support from peers, family, friends, or experts and talking about what happened after the incidents was associated with a key mechanism for the management of emotions and the ability to cope with trauma.[19,23,32,33,35,36,45]

Discussion

Health professionals in general experience stress associated with care work, and it is a frequent and globalized experience.[25,43] It is well-documented by the international literature that health personnel who attend emergencies in the prehospital setting are exposed to higher levels of stress than that of other health professionals.

Although the literature reviewed contains a variety of classifications of coping strategies (eg, focused on emotion, the problem, passive and active, negative and positive, or dysfunctional) and tools that are validated and adjusted for this objective, approaches can be different, which makes the analysis and the unification of concepts complex. However, a simple classification that encompasses all of these strategies is to characterize them as adaptive and nonadaptive,[11] which addresses the impact that each of these has on the mental health of the studied personnel.

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Of the questionnaires used, several authors have redesigned, revised, and provided evidence of validity on tests to adapt them to sociocultural contexts to which they would be applied. Hence, there are versions of instruments adapted to the Arabic, Chinese, Portuguese, Polish, and Greek languages, and culture, among others.

The strategies used by these first responders have allowed them to cope with exhaustion, PTSD, other psychiatric conditions, and even the risk of musculoskeletal injuries.[47] Forty-two percent of the studies reviewed related nonadaptive coping to PTSD, which resulted from experiencing the stress of extreme traumatic intensity.[25]

In a 2018 meta-analysis, Petrie, et al[50] reported an 11% prevalence of PTSD among ambulance personnel, which is similar to that reported in this review. Acuña, et al[51] in a systematic review in 2021 reported a causal relationship between PTSD and emergency workers, describing risk factors for the worsening of PTSD, such as female sex, diagnosis of anxiety, and chronic depression and substance abuse. In the male population evaluated, nonadaptive strategies were related to PTSD. In 2021, Brooks, et al[52] determined that coping strategies were among the factors involved in the development of PTSD symptoms.

In a 2018 study by Arble, et al,[53] the coping strategies of a group of police officers were evaluated as part of the group of professionals called first responders, which also included firefighters, rescuers, and ambulance personnel. They found that those who used coping based on adaptive coping had greater well-being and posttraumatic growth. They also reported the use of avoidant coping (nonadaptive) as one of the most used strategies by this study group and found similarities in coping behavior with other first-responder occupations. These findings are similar to those of the studies analyzed in this research.

To help understand the coping processes, authors such as Stępka-Tykwińska, et al[54] in 2019 and Borzyszkowska, et al[55] in 2020 introduced the term coping flexibility, defined as the ability to continuously search for better and more effective solutions to stress, which reflects the willingness of the individual to use different strategies to meet the demands of changing circumstances; their findings agree with those of this systematic review and studies such as Di Nota, et al[56] in 2021 and Warren-James, et al[57] in 2022 which recommended effectively promoting adaptive coping for public security personnel to mitigate posttraumatic stress injury by offering training programs with the objective of establishing psychological well-being among these personnel.

Finally, one of the adaptive strategies that facilitates improving the ability to face stressful situations and moderate the impact of stress is social support. Donovan[58] found that peer support and support from their employers helps first responders with the processing of traumatic events and experiencing greater well-being and posttraumatic growth. This adaptive strategy was the most reported in the studies evaluated in this review.

Strengths

As strengths, this systematic review describes the types of coping strategies used by first responders to emergencies and how these strategies are related to mental disorders. These affect the general and psychological health of the health personnel in this setting. Consequently, as a prevalent and global situation, these results serve as an element of analysis to set preventive measures, and coordinate support programs to improve the mental health of those who work in this area and who suffer its consequences. In addition, all staff need to be educated in using adaptive strategies and in coping flexibility to reduce the harmful effect on the first responders to emergencies.

Limitations

As a limitation, the cross-sectional design found in almost all the studies does not allow determining a causal association. They only suggest a relationship.

Longitudinal studies are required to determine causal effects.

Conclusions

The coping strategies most used by first responders to emergencies were maladaptive ones, specifically avoidance, avoiding recurring feelings and thoughts about the events they faced, generated psychological tension and the development of mental disorders.

Learning to develop adaptive coping strategies, whether focused on problems or seeking emotional support, can benefit emergency personnel and help them cope with stressful situations. These coping strategies should be strengthened to help prevent people from experiencing long-term negative effects that could arise from the traumatic events to which they are exposed, promoting the ability to choose coping strategies focused on the problem instead of avoidance strategies.

Institutions must ensure that first responders have access to emotional support groups, either social or instrumental, after critical incidents and the implementation of active coping strategies shortly after potentially traumatic events.

Supplementary Materials

To view supplementary material for this article, please visit https://doi.org/10.1017/S1049023X22001479

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