Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 10, Issue, 08, pp.72575-72581, August, 2018

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

THE GLOBAL COPING STRATEGY FOR PARAMEDICS: SCOPING REVIEW

***Anas Alnasser**

Saudi

ARTICLE INFO

Article History:
Received 15th May, 2018
Received in revised form
20th June, 2018
Accepted 07th July, 2018
Published online 30th August, 2018

Key Words:
Emergency
Medical Services-Paramedic.

ABSTRACT

Background: Paramedics have high levels of exposure to trauma and low levels of psychosocial wellbeing. As such, paramedics develop a range of personal coping strategies with the aim of challenging the demands that are put upon them. The aim of this scoping review is to understand the full range of coping strategies used by paramedics in response to exposure to trauma. **Method:** Electronic databases were searched on the basis of key search terms in order to identify research relevant to the research question. Eligibility criteria were applied during a process of sequential title and abstract screening. Following data extraction of key aspects of identified research, key coping strategies were identified and discussed. **Results:** Three key coping mechanisms were identified as follows: the use of humour, the use of alcohol, and the use of family social support. The studies identified were highly variable in their design, and many identified more than one coping mechanism used by paramedics. While the majority of studies identified the use of humour as a coping strategy, the use of alcohol was much more varied, likely due to differences in cultural norms relating to alcohol. Similarly, the use of family as social support was distinctly different across studies, with some identifying it as a useful strategy, and others clearly suggesting paramedics intentionally avoid this strategy to reduce burdening their loved ones. **Conclusion:** The coping strategies used by paramedics to stressful trauma varied across studies. Paramedics tend to seek family support, use alcohol and have sense of humour in response to traumatic events.

Citation: ***Anas Alnasser*, 2018.** "The global coping strategy for paramedics: Scoping review", *International Journal of Current Research*, 10, (08), 72575-72581.

INTRODUCTION

The Health and Care Professions Council (HCPC) defines paramedics as health professionals who are responsible for providing specialist treatment and care to those who are injured or acutely ill (HCPC, 2018). Paramedics are required to work under periods of acute stress when responding to what has been defined as 'disaster' situations which result in illness and death at the individual, and community level (Wanner & Bhimji, 2018). Given the trauma associated with disaster situations (Wanner & Bhimji, 2018), paramedics have developed coping strategies (Mildenhall, 2012), defined as cognitive and behavioural efforts to *"master, reduce or tolerate the internal and external demands of a stressful encounter"* (Ogińska-Bulik & Kobylarczyk, 2015). Largely, coping research focuses on individual responses or reactions (Mildenhall, 2012). Poor psychological health is prevalent among paramedics; for example, an Australian Senate inquiry identified 110 deaths due to intentional self-harm among paramedics over a 12 year period (Commonwealth of Australia, 2010), with separate research from the United States of America (USA) reporting that over one-third of paramedics have thought about attempting suicide (Newland, Barber, Rose, & Amy, 2015). Levels of post-traumatic stress disorder (PTSD) are high among paramedics and PTSD is strongly associated with burnout (Collopy, Kivlehan, & Snyder, 2012). A recent systematic review and meta-analysis reporting on over 30,000 ambulance personnel estimated prevalence rates of 11% for PTSD, and there was evidence that these levels have been increasing in recent decades (Petrie *et al*., 2018). The same meta-analysis also estimated high levels of depression (15%), anxiety (15%), and general psychological distress (27%), clearly suggesting higher levels of psychological ill-health compared to the general population. Despite clear and consistent relationships between paramedics and poor mental health, much of the evidence to date is correlational, meaning causal relationships cannot be drawn. Nonetheless, the International Paramedic Anxiety Wellbeing and Stress (IPAWS) longitudinal study is currently underway and will be invaluable for understanding how psychological wellbeing among an international cohort of paramedic graduates changes over a five year period (Asbury *et al*., 2018).

****Corresponding author:*** **Anas Alnasser**
Saudi
DOI: https://doi.org/10.24941/ijcr.31880.08.2018

The trauma profile of paramedics will be mapped against their psychological wellbeing, including PTSD, anxiety, depression, and burnout. The IPAWS study is collecting data from New Zealand, Australia, Canada, Finland, South Africa, the United Kingdom (UK), and the USA. Poor psychological health among paramedics negatively impacts upon patients. A recent systematic review clearly demonstrated a significant correlation between poor staff wellbeing and patient safety such as medical errors; the lower wellbeing of the staff, the poorer the patient safety (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016). The observed relationship was stronger for health care professionals experiencing burnout. Understanding paramedic coping strategies can therefore not only improve outcomes related to paramedics themselves, but also patient safety.

Aims and objectives: Research clearly demonstrates the experience of mental health issues among paramedics but less is known about the coping strategies they use. In order to design and implement effective policies and practice, it is necessary to understand the strategies paramedics use. As such, the primary aim of this scoping review is to *"understand the coping strategies used by paramedics in response to exposure to trauma"*.

The objectives of this scoping review are to:

- increase understanding of the range of coping strategies that are/are not used by paramedics
- guide future research and practice, including areas for potential systematic review

METHODOLOGY

This scoping review uses Levac's 2010 modifications (Levac, Colquhoun, & O'Brien, 2010) made to the original scoping review framework (Arksey & O'Malley, 2005) (Box 1).

Box 1: Scoping review framework (Arksey & O'Malley, 2005)

1. Identify the research question
2. Identify relevant studies
3. Study selection
4. Charting the data
5. Collating, summarising, and reporting results

A scoping review can incorporate an expert consultation (The Joanna Briggs Institute, 2015), but due to resource and time limitations, this was not possible. A scoping review methodology is particularly useful when the aim of the review is not to evaluate the effectiveness of an intervention and instead aims to usefully elucidate key concepts, and map the current evidence (The Joanna Briggs Institute, 2015). Their findings can be used to pose more specific questions and report on the types of evidence available to inform practice in a given area.

Eligibility criteria: In order to identify relevant evidence, priori eligibility criteria were defined (Table 1). Guidance for carrying out scoping reviews emphasises the importance of clearly defining the population, concept, and context (Levac *et al*., 2010) (Box 2).

Box 2 Population, Concept and Context of interest to this scoping review

Population – Paramedics who are either in-training or fully qualified paramedics and who are currently in work or signed off work as sick Concept – The core concept examined by the scoping review is the use of personal, informal, coping strategies. While it is recognised coping strategies can be implemented by health institutions, nations, or globally, the primary focus of this scoping review was on personal strategies used by individuals who make up the paramedic workforce. Context – paramedics who have been exposed to trauma, e.g. during the provision of emergency medical attention, but not during natural disasters, e.g. flooding. No limits on country of inclusion were applied.

All research designs were included except effectiveness studies. While these are invaluable for understanding which interventions may improve psychological wellbeing of paramedics, the aim of this scoping review was to identify the full range of coping strategies that are currently used to inform future intervention design. No limits were put on the quality of studies in line with the recommendations for scoping reviews (Levac *et al*., 2010).

Search strategy: Online databases were used to carry out the searches and were selected on the basis of their size and incorporation of peer-reviewed material (Fink, 2013). The following databases were used: PubMed, Web of Science, MEDLINE, and Northampton Electronic Library Search Online (NELSON). A search strategy encompassing key search terms, Boolean operators, and eligibility criteria was devised to identify literature relevant to the review question. The first set of terms focuses on the key population of interest and were as follows: 'paramedic*', 'emergency medic*', 'ambulance*'. These terms were selected as they frequently appear in 'key words' sections of published literature reflecting a trend towards their use in published studies (Coughlan & Cronin, 2016). A second set of search terms were devised to focus the results of the search on the concept and context of interest. These included 'cope OR coping', 'coping ADJ strategies', 'coping ADJ techniques', 'coping ADJ mechanisms', 'managing', 'deal*'. The first and second search string were combined (using the operator AND) within each electronic database.

To augment the search process, a process of cross-referencing was used to increase the likelihood of identifying relevant studies (Aveyard, 2014). This includes an assessment of the references of identified studies to highlight additional relevant studies that may have not been identified by the search process. This strategy is commonly used to overcome limitations of database key work indexing (Ganann, Ciliska, & Thomas, 2010).

Data extraction: In accordance with scoping review conduct guidelines, a charting table was developed and completed to enable synthesis of the findings (see Table 2 for an example). Data were extracted by a single researcher and this was completed for all studies that met the eligibility criteria.

Quality appraisal of included studies: Methodological quality or risk of bias was not appraised which is consistent with guidance on scoping review conduct(Levac *et al*., 2010).

Synthesis: Studies were refined initially based on their titles, then study abstracts, and if unclear from title and abstract alone, the full text was accessed (Aveyard, 2014). Following this, application of the eligibility criteria was applied.

This was done to determine the relevance of the study to the research question. The main results were organised by themes relating to the research question and the items shown in Table 2

RESULTS

Figure 1 outlines the search retrieval process using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Moher, Liberati, Tetzlaff, & Altman, 2009). Study heterogeneity precluded a quantitative meta-analysis.

DISCUSSION

The research studies examined in this scoping review revealed three key themes that underpin the discussion section as follows: the use of humour as a coping strategy; the use of alcohol as a coping strategy; and the use of family social support as a coping strategy. Many of the studies reported multiple types of coping strategies and therefore provided data to support more than one of the identified key themes. While these studies appear in multiple sections of the discussion, they are only counted once within the number of included studies within the PRISMA flow diagram. Table 3 provides an overview of the coping strategies identified in a small sample (n=80) of paramedics who had experienced trauma in Poland, and shows insight into a fuller range of strategies that are used than were identified and discussed within this scoping review(Ogińska-Bulik & Kobylarczyk, 2015). Future research could use these terms to guide further literature searches to generate relevant literature relating to these strategies.

The use of humour as a coping strategy: Eleven studies identified as part of this scoping review revealed the use of humour as a personal, informal, coping strategy that was used by paramedics (Alexandraki & Mooradian, 2010; Bennett, 2003; Charman, 2013; Christopher, 2015; Essex & Scott, 2008; Halpern, Gurevich, Schwartz, & Brazeau, 2009; Jonsson & Segesten, 2003; Ogińska-Bulik &Kobylarczyk, 2015; Rowe & Regehr, 2010; Shepherd & Wild, 2013; Williams, 2013). 'Black humour', which is when a sad or traumatic situation is treated with humour, was a particularly common form of coping that was observed (Christopher, 2015) serving to increase resilience despite sometimes being perceived as shocking particularly by students (Christopher, 2015).

The use of black humour was perceived by paramedics as a useful way of reducing stress, largely through a process of increasing their sense of control and coping abilities (Alexander & Klein, 2001; Essex & Scott, 2008; Halpern *et al*., 2009; Jonsson & Segesten, 2003). Taken together, the results suggested that humour increased paramedic sense of cohesion among their work force (Bennett, 2003), and evidence showed that this also occurs across other workforces experiencing acute trauma, such as the police (Charman, 2013). Often humour occurred within the emergency medicine workforce only and did not take place publicly or in the home with the family (Jonsson & Segesten, 2003). This was thought largely to arise since non-emergency staff would not understand or appreciate the 'coarse' nature of the humour. Importantly, improved group cohesion that arises through the use of humour has been shown to increase the quality of care (Bennett, 2003). This therefore suggests that humour is an important coping strategy used by paramedics, even though it may appear shocking to some. It should be noted that joking was never deemed acceptable relating to seriously ill or injured children (Jonsson & Segesten, 2003). Black humour was also identified as a coping strategy used by student paramedics in the UK and was shown to contribute to their resilience, health, and wellbeing (Christopher, 2015). Interestingly, in the UK in recent years, student paramedics have less exposure to the ambulance service compared to previous decades, and this meant that students were sometimes 'shocked' by the use of black humour used by their colleagues during traumatic events. Nonetheless, another study identified in this scoping review revealed that students frequently used humour as a coping strategy, suggesting that this strategy might be an innate coping mechanism to stressful life events, rather than one that is learned through other colleagues in the workforce (Williams, 2013).

Not all papers proposed a mechanism of action for why humour would be an effective coping strategy; however, one study suggested its use created an emotional distance between the paramedic and the trauma meaning that the worker could feel a sense of 'protection from vulnerability' while simultaneously providing a form of anxiety release (Halpern *et al*., 2009). Black humour was also described to be a way for paramedics to vent their feelings, elicit social support in a given group, and to distance themselves from a stressful situation (Rowe & Regehr, 2010). A scoping study using a small number of paramedics based in the UK (n=45) also suggested that humour can help depersonalise the situation, which in turn could reduce the risk of burnout (Shepherd & Wild, 2013).

The use of alcohol as a coping strategy among paramedics

The scoping review identified eight studies which focused on the use of alcohol as a coping strategy (Essex & Scott, 2008; Halpern *et al*., 2009; Ogińska-Bulik & Kobylarczyk, 2015; Prati, Palestini, & Pietrantoni, 2009; Regehr, Goldberg, Glancy, & Knott, 2002; Regehr & Millar, 2007; Sterud, Hem, Ekeberg, & Lau, 2008; Ward, Lombard, & Gwebushe, 2006). The studies used different methods and were carried out in different countries and the role of alcohol as a coping strategy was inconsistent. Up to 50% of paramedics in a USA study reported using alcohol as a short-term coping mechanism even though they recognised that this was unlikely to be effective (Essex & Scott, 2008), and in Poland, substance use was less common occurring on average in 1.5% of the paramedic sample (Ogińska-Bulik & Kobylarczyk, 2015). In Italy, alcohol use was one of the least commonly reported coping mechanisms (Prati *et al*., 2009), which supports a further study from South Africa showing that there was no relationship between exposure to traumatic incidents and alcohol use among over 1,000 paramedics (Ward *et al*., 2006). Taken together, these findings suggest that alcohol use as a coping mechanism is bound to the norms of different countries, each of which are known to have different patterns of overall alcohol consumption (WHO, 2014). Nonetheless, individual countries with heavier drinking cultures could be more aware that alcohol could be used as a (probably ineffective and potentially harmful) coping strategy among their professional workforce. This also has safety implications, since working under the influence is likely to impair performance (Taylor *et al*., 2010). Some studies revealed that at time of extreme stress, alcohol use became problematic, suggesting that the use of alcohol is not an effective coping strategy (Halpern *et al*., 2009; Regehr *et al*., 2002; Regehr & Millar, 2007).

Table 1. Eligibility criteria for this scoping review

Inclusion criteria	Exclusion criteria
Paper published between 2010-2018	Paper published prior to 2010
Context = Coping strategies in response to exposure to traumatic events (not including natural disasters)	Not published in the English language
Concept = primary focus must include primary, informal, coping strategies	Full-text not available
Population of interest = current registered paramedics in-work	Coping strategy based at the institutional-level, or national-level, rather than used by individuals
	Coping strategies in response to a natural disaster e.g. hurricane, flooding, blood borne virus outbreak etc.
	An evaluation of the effectiveness of coping strategies
	Commentaries / editorials / reviews
	Grey literature

Table 2. An example of the charting table used to extract study information

Item	Brief description
Author(s)	Full reference
Year of publication/study	Year study was published / conducted
Country of origin	Country data was from
Aim(s)/purpose	Studies primary research aim
Study population (size if applicable)	Size of paramedic population
Methods	Research design used
Key findings relating to scoping review question(s)	Outcomes relating to individual coping strategies used by paramedics

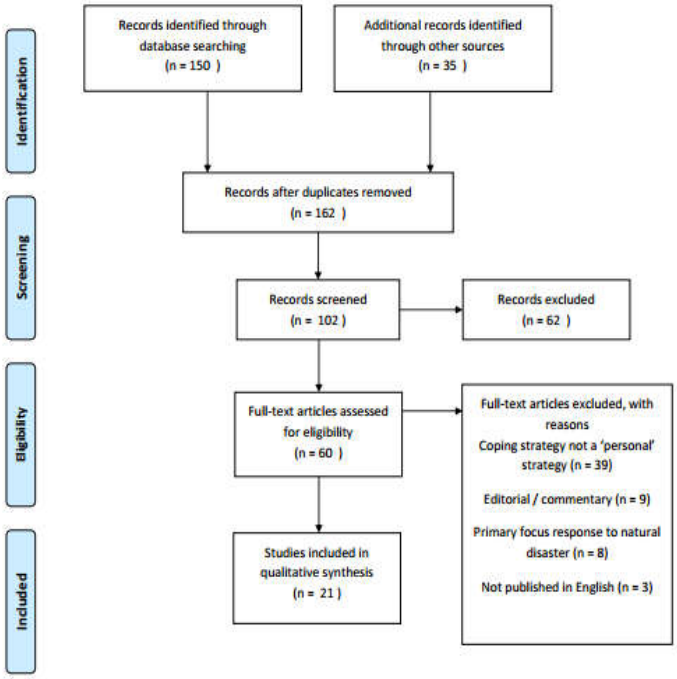

Table 3. Coping strategies identified in a sample of paramedics experiencing trauma in Poland (Ogińska-Bulik & Kobylarczyk, 2015)

Variable	Respondents (N = 80)	
Coping strategy		
Active coping	4.80	3.84
Planning	4.12	1.31
Positive reframing	3.60	1.31
Acceptance	3.85	1.46
Sense of humor	2.32	1.43
Turning to religion	2.08	1.73
Seeking of emotional support	3.23	1.44
Seeking of instrumental support	3.02	1.39
Self-distraction	3.30	1.44
Denial	1.75	1.49
Venting	2.70	1.20
Substance use	1.55	1.61
Behavioral disengagement	2.70	1.20
Self-blame	2.05	1.47

M – mean; SD – standard deviation.

Nonetheless, at times, alcohol use was shown to become problematic, and this seemed to occur most commonly during times when paramedics reported a low perceived sense of control (Regehr & Millar, 2007). Similarly, while no relationship was found in over 1,000 paramedics between stress and excessive alcohol use in Norway, among those who were using alcohol as a coping mechanism, this was a risk factor for higher levels of alcohol-related problems (Sterud *et al*., 2008). It should be noted that fear of repercussion for disclosing alcohol use, or social desirability biases, may have occurred in this research because paramedics may not have felt comfortable admitting they use alcohol as a coping strategy. As such, it is possible that paramedics were underestimating their use of alcohol as an informal, personal, coping strategy.

4.3 The use of family social support as a coping mechanism for paramedics

Overall, six studies included in this scoping review identified the use of family social support as a coping mechanism used by paramedics (Jonsson & Segesten, 2004; Mishra, Goebert, Char, Dukes, & Ahmed, 2010; Regehr, 2005; Regehr *et al*., 2002; Regehr & Millar, 2007; Shakespeare-Finch, Smith, & Obst, 2002). Commonly, paramedics reported using social support of their family members as a way of coping with exposure to trauma (Jonsson & Segesten, 2004; Regehr, 2005; Regehr & Millar, 2007), with 59% of a sample of paramedics in Hawaii reporting using this strategy, making it the second most commonly used personal coping mechanism in this study(Mishra *et al*., 2010). Approaches to understanding family social support were highly variable and were both quantitative (Mishra *et al*., 2010) and qualitative (Regehr, 2005). Qualitative studies suggested that the use of family for social support enabled coping by improving positivity among family members and problem sharing (Regehr, 2005). Despite this, a qualitative study of male paramedics (n=71) suggested that this group do not use family as a coping mechanism and instead 'compartmentalise' their work and personal environments (Shakespeare-Finch *et al*., 2002). In doing so, they did not discuss their experiences or trauma with family members or partners. No papers suggested that this might occur to 'protect' family members from being overburdened, or themselves experiencing trauma. Future research could enable a better understanding of this. This is certainly consistent with other studies identified in this scoping review which demonstrated that emotional suppression was commonly seen among paramedics (Regehr, 2005; Regehr *et al*., 2002). It is possible that this could be negative since support from peers is beneficial for mitigating against PTSD (Regehr *et al*., 2002), suggesting that future programmes to improve social support could be effective strategies for improving the wellbeing of paramedics.

Strengths and limitations: Strengths of this scoping review include a pragmatic, open research question which aimed to understand the full-range of personal, coping strategies used by paramedics across the world. In doing so, no limits were put on the type of research design included in this review. Nonetheless, the results showed that research approaches have been extremely varied making comparisons across studies difficult, and precluding firm conclusions. Many studies were observational in their design, or used small samples, meaning that while they provide useful insight, they cannot necessarily comment on the causal mechanisms, nor how coping mechanisms have changed with time.

Further strengths of this review were the use of an a priori method, with a robust literature search approach, including the use of snowballing. Nonetheless, since the review question excluded coping mechanisms in response to natural disasters, the majority of evidence was retrieved from middle- and high-income countries, limiting their applicability to lower-income countries. Similarly, papers not published in English were excluded, and this should be viewed as a limitation of the present review.

Conclusion

Currently, the evidence investigating the personal coping strategies used by individual paramedics in response to non-natural disaster trauma is highly varied and of varying quality. This makes it difficult to identify firm conclusions, or make comparisons across countries. Nonetheless, three key informal coping mechanisms were identified as part of this scoping review including the use of humour(Christopher, 2015), the use of alcohol(Sterud *et al*., 2008), and the use of family support(Mishra *et al*., 2010). While there was evidence that these coping strategies were commonly used by paramedics, there was also some evidence that these strategies were not used. Further research could usefully elucidate the reasons for the observed differences. A useful starting point would be to establish a standard methodology for identifying the prevalence and correlates of coping strategies across different countries. While the use of humour was identified as a coping mechanism in this scoping review, it is unclear how this could be used to inform best practice. Humour is something that arises innately, and cannot necessarily be incorporated into routine training. Indeed, this review has found that some paramedics found the use of humour shocking and uncomfortable(Christopher, 2015). Furthermore, the use of humour as a coping mechanism for paramedics needs to be balanced against the danger of being perceived as highly insensitive or inappropriate by patients and their family members and friends. Indeed, this represents a real risk with the use of this coping strategy.

The use of alcohol as a coping mechanism was highly variable across all studies, likely related to cultural norms around its use in different countries. For some countries, paramedics did not appear to use alcohol as a coping strategy(Ward *et al*., 2006), though for others, there was particular concern since the use of alcohol to cope was associated with higher levels of alcohol-related problems(Sterud *et al*., 2008). Furthermore, it is possible that this research underestimates the true use of alcohol as a coping mechanism due to social desirability biases or fear of repercussion from disclosure by paramedics. Nonetheless, if and where alcohol is identified as a coping strategy, a simple strategy could be to offer support and treatment. Inevitably the use of alcohol is a risk of clinical quality, since absenteeism, and presenteeism is common among those consuming alcohol problematically (Burton *et al*., 2017). Family members were sometimes used as an important point for social support, though in other cases, paramedics tries to compartmentalise their work and personal life so as to protect their family(Mishra *et al*., 2010). Social support was seen to be an effective strategy however, suggesting that future practice could focus on the provision of social support by health care institutions. Equivalently, social support could be offered by fellow paramedics, and fellowship approaches to improving coping are well evidenced (Uchino, 2006).

Overall, this scoping review has helped understand how paramedics informally cope with the exposure to traumatic events. In doing so, it has identified areas for future research and practice recommendations. Future research should aim to bring together the wide range of coping mechanisms under a more comparable framework, in order to more effectively design, test, and implement evidence-based coping strategies for paramedics.

REFERENCES

Alexander, D. A. and Klein, S. 2001. Ambulance personnel and critical incidents: impact of accident and emergency work on mental health and emotional well-being. *The British Journal of Psychiatry, 178*(1), 76-81.

Alexandraki, I. and Mooradian, A. D. 2010. Barriers related to mammography use for breast cancer screening among minority women. *Journal of the National Medical Association, 102*(3), 206-218.

Arksey, H. and O'Malley, L. 2005. Scoping studies: towards a methodological framework. *International journal of social research methodology, 8*(1), 19-32.

Asbury, E., Rasku, T., Thyer, L., Campbell, C., Holmes, L., Sutton, C. and Tavares, W. 2018. IPAWS: The International Paramedic Anxiety Wellbeing and Stress study. *Emergency Medicine Australasia, 30*(1), 132-132.

Aveyard, H. 2014. *Doing a literature review in health and social care: A practical guide*: McGraw-Hill Education (UK).

Bennett, H. J. 2003. Humor in medicine. *Southern medical journal-birmingham alabama-, 96*(12), 1257-1261.

Burton, R., Henn, C., Lavoie, D., O'Connor, R., Perkins, C., Sweeney, K., Belloni, A. 2017. A rapid evidence review of the effectiveness and cost-effectiveness of alcohol control policies: an English perspective. *The Lancet, 389*(10078), 1558-1580.

Charman, S. 2013. Sharing a laugh: The role of humour in relationships between police officers and ambulance staff. *International journal of sociology and social policy, 33*(3/4), 152-166.

Christopher, S. 2015. An introduction to black humour as a coping mechanism for student paramedics. *Journal of paramedic practice, 7*(12), 610-617.

Collopy, K. T., Kivlehan, S. and Snyder, S. R. 2012. Are you under stress in EMS. Understanding the slippery slope of burnout and PTSD. *EMS world, 41*(10), 47-50, 52-46.

Commonwealth of Australia. (2010). *The Hidden Toll: suicide in Australia*. Retrieved from https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Community_Affairs/Completed_inquiries/2008-10/suicide/report/index

Coughlan, M. and Cronin, P. 2016. *Doing a literature review in nursing, health and social care*: Sage.

Essex, B. and Scott, L. B. 2008. Chronic stress and associated coping strategies among volunteer ems personnel. *Prehospital Emergency Care, 12*(1), 69-75.

Fink, A. 2013. *Conducting research literature reviews: From the Internet to paper*: Sage Publications.

Ganann, R., Ciliska, D. and Thomas, H. 2010. Expediting systematic reviews: methods and implications of rapid reviews. *Implementation Science, 5*(1), 56.

Hall, L. H., Johnson, J., Watt, I., Tsipa, A. and O'Connor, D. B. 2016. Healthcare staff wellbeing, burnout, and patient safety: a systematic review. *Plo Sone, 11*(7), e0159015.

Halpern, J., Gurevich, M., Schwartz, B. and Brazeau, P. 2009. What makes an incident critical for ambulance workers? Emotional outcomes and implications for intervention. *Work & Stress, 23*(2), 173-189.

HCPC. 2018. *Paramedics*. Retrieved from http://www.hcpc-uk.co.uk/aboutregistration/professions/index.asp?id=10

Jonsson, A. and Segesten, K. 2003. The meaning of traumatic events as described by nurses in ambulance service. *Accident and emergency nursing, 11*(3), 141-152.

Jonsson, A. and Segesten, K. 2004. Guilt, shame and need for a container: a study of post-traumatic stress among ambulance personnel. *Accident and emergency nursing, 12*(4), 215-223.

Levac, D., Colquhoun, H. and O'Brien, K. K. 2010. Scoping studies: advancing the methodology. *Implementation Science, 5*(1), 69.

Mildenhall, J. 2012. Occupational stress, paramedic informal coping strategies: a review of the literature. *Journal of paramedic practice, 4*(6), 318-328.

Mishra, S., Goebert, D., Char, E., Dukes, P. and Ahmed, I. 2010. Trauma exposure and symptoms of post-traumatic stress disorder in emergency medical services personnel in Hawaii. *Emergency Medicine Journal, 27*(9), 708-711.

Moher, D., Liberati, A., Tetzlaff, J. and Altman, D. G. 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med, 6*. doi:10.1371/journal.pmed.1000097

Newland, C., Barber, E., Rose, M. and Amy, Y. 2015. Survey reveals alarming rates of EMS provider stress and thoughts of suicide. *JEMS, 40*(10), 30-34.

Ogińska-Bulik, N. and Kobylarczyk, M. 2015. Relation between resiliency and post-traumatic growth in a group of paramedics: the mediating role of coping strategies. *Int J Occup Med Environ Health, 28*(4), 707-719.

Petrie, K., Milligan-Saville, J., Gayed, A., Deady, M., Phelps, A., Dell, L., Glozier, N. 2018. Prevalence of PTSD and common mental disorders amongst ambulance personnel: a systematic review and meta-analysis. *Social psychiatry and psychiatric epidemiology*, 1-13.

Prati, G., Palestini, L. and Pietrantoni, L. 2009. Coping strategies and professional quality of life among emergency workers. *The Australasian Journal of disaster and trauma studies, 1*, 1-12.

Regehr, C. 2005. Bringing the trauma home: Spouses of paramedics. *Journal of loss and trauma, 10*(2), 97-114.

Regehr, C., Goldberg, G., Glancy, G. D. and Knott, T. 2002. Posttraumatic symptoms and disability in paramedics. *The Canadian Journal of Psychiatry, 47*(10), 953-958.

Regehr, C. and Millar, D. 2007. Situation critical: High demand, low control, and low support in paramedic organizations. *Traumatology, 13*(1), 49-58.

Rowe, A. and Regehr, C. 2010. Whatever gets you through today: An examination of cynical humor among emergency service professionals. *Journal of loss and trauma, 15*(5), 448-464.

Shakespeare-Finch, J., Smith, S. and Obst, P. 2002. Trauma, coping resources, and family functioning in emergency services personnel: A comparative study. *Work & Stress, 16*(3), 275-282.

Shepherd, L. and Wild, J. 2013. Cognitive appraisals, objectivity and coping in ambulance workers: a pilot study. *Emerg Med J*, emermed-2011-200511.

Sterud, T., Hem, E., Ekeberg, Ø. and Lau, B. (2008). Occupational stressors and its organizational and individual correlates: a nationwide study of Norwegian ambulance personnel. *BMC emergency medicine, 8*(1), 16.

Taylor, B., Irving, H., Kanteres, F., Room, R., Borges, G., Cherpitel, C., Rehm, J. 2010. The more you drink, the harder you fall: a systematic review and meta-analysis of how acute alcohol consumption and injury or collision risk increase together. *Drug and Alcohol Dependence, 110*(1), 108-116.

The Joanna Briggs Institute. 2015. *The Joanna Briggs Institute Reviewers' Manual 2015: Methodology for JBI Scoping Reviews*. Retrieved from http://joannabriggs.org/ assets/docs/sumari/Reviewers-Manual_Methodology-for-JBI-Scoping-Reviews_2015_v2.pdf

Uchino, B. N. 2006. Social support and health: a review of physiological processes potentially underlying links to disease outcomes. *Journal of behavioral medicine, 29*(4), 377-387.

Wanner, G. K. and Bhimji, S. S. 2018. EMS, Care Teams In Disaster Response.

Ward, C., Lombard, C. and Gwebushe, N. 2006. Critical incident exposure in South African emergency services personnel: prevalence and associated mental health issues. *Emergency Medicine Journal, 23*(3), 226-231.

WHO. 2014. *Global status report on alcohol and health*. Retrieved from http://www.who.int/ substance_abuse/ publications/global_alcohol_report/msb_gsr_2014_1.pdf?ua=1

Williams, A. 2013. The strategies used to deal with emotion work in student paramedic practice. *Nurse education in practice, 13*(3), 207-212.

****