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REVIEW ARTICLE

Review article: Prevalence of burnout in paramedics: A systematic review of prevalence studies

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Abstract

Paramedic wellness is an increasing priority within the profession. Burnout has been described as having areas of 'emotional exhaustion, depersonalisation and reduced personal accomplishment'. Prevalence of burnout is unclear, hampering evaluation of protective initiatives. The aim of this systematic review was to identify prevalence and predictors of burnout in paramedic populations. A systematic review was registered via PROSPERO and conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. MEDLINE, EMBASE, CINAHL, ERIC, PsycINFO and PsycARTICLES were searched from 2000 to present. Abstract screening and selection of articles was undertaken with good agreement. Quality assessment of included articles used Hoy's validated quality assessment tool, with excellent inter-rater agreement (K = 0.9). Qualitative synthesis of included studies was performed. Each step of the process was performed independently by two authors, with a third arbitrating disputes as required. Five studies met inclusion criteria; two were from the USA, and one each from Australia, South Africa and Israel. Burnout measurement varied; three used Copenhagen Burnout Inventory (CBI), one Maslach's Burnout Inventory (MBI), and one General Burnout Measure (GBM). Prevalence of burnout ranged between 16% and 56%. Higher prevalence was reported in CBI studies (30%, 38% and 56%), while lower prevalence was seen with other tools (MBI 18%, GBM 16%). Included studies were of low to moderate quality. The prevalence of burnout in paramedics varies from 16% to 56%. Existing evidence describing burnout in paramedics is weak; research of good methodological rigour is needed to quantify prevalence of burnout, providing a reliable baseline against which protective interventions could be measured.

Key words: *burnout, depersonalisation, emergency medical technician, prevalence.*

Key findings

- Burnout is evidently present in paramedics, although the exact prevalence is still not clear.
- Varying prevalence is compounded by the heterogeneity of measurement tools for burnout.
- Future research into interventions is required to support paramedic organisations prevent or offset burnout.

Introduction

Paramedic mental health and resilience is a high priority in the discipline of paramedicine. In 2018, a landmark report investigating the mental health of Australian emergency services workers found paramedics to have lower levels of mental well-being, substantially higher levels of psychological distress, a three-fold higher prevalence of post-traumatic stress disorder compared to a standard population.[1] While this and other research has focused on these more commonly discussed diagnosable conditions, the complex condition of burnout has received less attention and is therefore less understood within the emergency services.

Burnout has been defined as a 'negative response to continued emotional stress that is characterised by emotional and/or are ingrained into all aspects of an individual's life and influence patient care, job retention and overall well-being'.[2] While not a diagnosable condition in the DSM-5, burnout received inclusion in the World Health Organization International Classification of Disease (ICD-11) in 2019, where it is defined as 'a syndrome conceptualised as resulting from chronic workplace stress that has not been successfully managed… characterised by three dimensions: (i) feelings of energy depletion or exhaustion; (ii) increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and (iii) reduced professional efficacy'.[3] In research investigating its effects on health providers from various disciplines, burnout is linked to other mental health disorders such as depression, anxiety, physical illness,[4] increased absenteeism,

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poor job retention and decreased professionalism. From a patient care perspective, burnout has been strongly associated with decreases in quality of care, poorer patient safety and lower patient satisfaction.[5]

While those working in any occupation may be susceptible to burnout, it has been found to be prevalent in acute healthcare settings such as emergency medicine,[6] nursing[7] and paramedicine.[8-12] The occupational environment in which paramedics work is conducive to stressors including but not limited to regular exposure to traumatic and emotionally taxing situations,[13] frequently changing, dynamic and uncontrolled environments, increasing rates of occupational violence,[14] physical fatigue and risk of injury,[15] irregular hours generally involving nightshifts,[16,17] unpredictable and frequently extended shift lengths,[18] infrequent rest breaks during shifts, and high workloads.[19] In addition, paramedics are susceptible to the more generic workplace stressors such as organisational culture and politics, and workplace conditions that are previously linked to burnout in other professions.[20]

While a small body of literature describes burnout in the context of paramedicine, the prevalence of burnout remains unclear. This limits the ability to design and implement appropriate interventions to counter or mitigate burnout, and to measure the effectiveness of any such intervention through comparison with a reliable baseline. Against this background, the aim of this systematic review was to identify the prevalence of burnout in paramedics.

Methods

Protocol and registration

This systematic review was conducted and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[21] The study protocol was registered with PROSPERO (protocol number CRD42017 074942) prior to commencement of literature searching.

Eligibility

Studies were eligible for inclusion if they: (i) were a primary study reporting original results; (ii) reported a prevalence, proportion or incidence of burnout; (iii) reported a result arising from a validated instrument; and (iv) were published as a full peer-reviewed article. Studies were excluded if they were published before 2000, were not published in English, or were available as an abstract only.

Data sources, search strategy and study selection

Seven electronic databases were systematically searched (PsycINFO, MEDLINE, CINAHL, PubMed, EMBASE, ERIC, PsycARTICLES) from commencement until 18 February 2019. The following keywords were used 'Burnout' AND 'Paramedic'. Where possible database search 'limits' were employed to select articles involving 'Paramedics', 'Ambulance officers', 'Emergency medical technicians', 'Emergency medical clinicians' and 'Military medics'. Further 'limits' were applied to exclude articles involving 'Students', 'nurses', 'community health clinicians', 'doctors' and 'retirees'. The full search strategy for MEDLINE is presented in Appendix S1. The reference lists of included articles were searched to identify any other potentially eligible articles that the electronic search strategy had not.

Study selection

Titles and abstracts of the search results were scanned independently by two investigators (RA and MR). Disagreements were referred to a third reviewer and resolved by consensus (LT). Following retrieval of full text articles for the remaining search results, assessment of eligibility was conducted independently by two authors (MR and RA) against

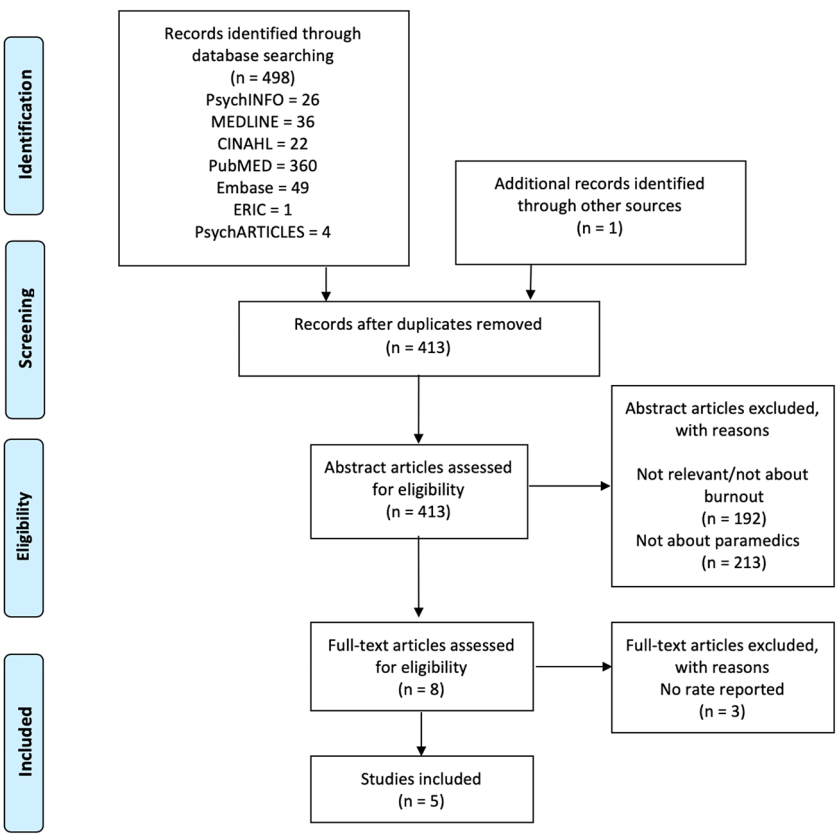

Figure 1. *PRISMA flow diagram.*

TABLE 1. *Characteristics of included studies* (n = 5)

Author	Publication year	Sample size	Response rate (%)	Country	Participants	Study design	Instrument
Nirel *et al.*[10]	2008	328	88	Israel	BLS and ALS paramedics	Cross sectional	GBM
Stassen *et al.*[11]	2012	40	46	South Africa	ALS paramedics	Cross sectional	CBI[25]
Crowe *et al.*[9]	2017	2650	14.1	USA	EMT and ALS paramedics	Cross sectional	CBI[25]
Thyer *et al.*[12]	2018	893	8.3	Australia	ALS and BLS paramedics	Cross sectional	CBI[25]
Boland *et al.*[8]	2018	190	54	USA	ALS and BLS paramedics	Cross sectional	MBI[26]

ALS, advanced life support; BLS, basic life support; CBI, Copenhagen Burnout Inventory; EMT, emergency medical technician; GBM, General Burnout Measure; MBI, Maslach Burnout Inventory.

the inclusion and exclusion criteria, with a third author (LT) involved to contribute to consensus resolution of disputed articles.

Data extraction

Data extraction was performed independently by two investigators (MR and RA). Each investigator entered extracted data into separate tables. Extracted information included year of publication, study setting; study population and participant demographics and baseline characteristics; measurement instrument used; primary and secondary outcomes. The independently completed tables were then compared to ensure agreement. When differences occurred, the source paper was re-examined by both investigators, and resolution achieved via consensus involving a third investigator.

Quality assessment

The quality (extent of bias) of included studies was assessed using Hoy's instrument for assessing quality of studies reporting prevalence.[22] The instrument is a 10-item checklist, and a modification of an earlier 11-item assessment tool originally designed by Leboeuf-Yde and Lauritzen.[23] Hoy's modified 10-item tool has demonstrated high inter-rater reliability (overall agreement 91%; K = 0.82, 95% CI 76–86). Two investigators (MR and RA) independently assessed all included studies for quality, and inter-rater agreement was assessed with an intra-class correlation coefficient.[24] The third author was engaged to form a consensus decision when disputes over quality assessment existed. Quality assessment results were not used to determine inclusion in the study, but to contextualise the strength of evidence arising from the pool of included articles.

Ethical approval

The study design did not require approval from a human ethics committee, so none was sought.

Results

Literature search

The results of the literature search are illustrated in Figure 1. Following screening and assessment for eligibility, there were five studies eligible for inclusion in the qualitative synthesis.

Characteristics of included studies

The characteristics of the five included studies are illustrated in Table 1. Two

TABLE 2. *Quality assessment of included studies using Hoy's tool*[22]

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Overall risk of bias
Nirel *et al.*[10]	H	L	L	L	L	L	L	L	L	L	Low
Stassen *et al.*[11]	H	L	H	H	L	L	L	L	H	L	Moderate
Crowe *et al.*[9]	H	H	L	H	L	L	L	L	H	L	Moderate
Thyer *et al.*[12]	H	H	H	H	L	L	L	L	L	L	Moderate
Boland *et al.*[8]	H	H	H	H	L	L	L	L	H	L	High

H, high risk of bias; L, low risk of bias; Q, question.

TABLE 3. *Prevalence of overall burnout and sub-domains if applicable*

Study	Overall burnout (%)	Copenhagen Burnout Inventory			Maslach Burnout Inventory			General Burnout Measure		
		Patient-related (%)	Personal (%)	Work-related (%)	Emotional exhaustion (%)	Depersonalisation (%)	Personal accomplishment (%)	Physical fatigue (%)	Cognitive burnout (%)	Emotional exhaustion (%)
Thyer *et al.*[12]	56	43.4	69.1	62.7		—	—	—	—	—
Crowe *et al.*[9]	38	14.4†; 5.5‡	38.3†; 24.9‡	30.1†; 19.1‡	—	—	—		—	—
Stassen *et al.*[11]	30	23	53	38	—	—	—	—	—	—
Boland *et al.*[8]	18	—	—	—	6	15	11	—	—	—
Nirel *et al.*[10]	16	—	—	—	—	—	—	35	7	9

†Advanced life support paramedics. ‡Basic life support paramedics.

were from the USA,[8,9] one each from Australia,[12] South Africa[11] and Israel.[10] There was heterogeneity in the instrumentation used to assess prevalence, with the Copenhagen Burnout Inventory (CBI) used in three studies,[9,11,12] and the General Burnout Measure (GBM)[10] and the Maslach Burnout Inventory (MBI)[8] in one each. Response rates ranged between 8.3% and 88%, and samples included paramedics qualified to Advanced Life Support (ALS)[11] or a combination of both ALS and Basic Life Support (BLS).[8-10,12]

Quality assessment of included studies

The quality assessment of included studies is detailed in Table 2. The inter-rater agreement between quality assessors was excellent (K = 0.91). One was deemed to have a low risk of overall bias,[10] three a moderate risk,[9,11,12] and one a high risk.[8] All five studies were at high risk of bias with regard to non-representative sampling.

Qualitative synthesis

Primary outcome: prevalence of burnout in paramedics. Prevalence of burnout is described in Table 3. There was substantial variation in prevalence of burnout across the included studies. Nirel *et al.*[10] reported the lowest prevalence (16%) in their study of BLS and ALS paramedics in Israel. Their study population was predominantly male (85%), reflecting the workforce gender demographic in that region. Boland *et al.* reported a similarly low burnout prevalence of 18% in their study of BLS and ALS paramedics in the USA (response rate 54%; 190 participants).[8] Theirs was the only study in those included to use the MBI for instrumentation. Crowe *et al.*[9] reported a prevalence of 38% in a large sample of 2650 ALS and BLS paramedics in the USA (response rate 14.1%). Using the CBI instrument to assess a predominantly male population (74%), prevalence of burnout was higher in the ALS paramedics compared to BLS. Thyer *et al.*[12] reported a prevalence

TABLE 4. *Predictors of burnout (overall and by CBI sub-domain where relevant)*

	Predictors of burnout			
Study	Overall burnout (GBM, CBI or MBI)	Patient-related burnout (CBI)	Work-related burnout (CBI)	Personal-related burnout (CBI)
Nirel *et al.*[10]	Physical health limitations (OR 1.6; 1.05–2.24); Emotional problems at work (OR 6.7; 2.42–18.72); High level of work overload (OR 9.4; 3.98–22.11)	Not applicable	Not applicable	Not applicable
Stassen *et al.*[11]	None reported	None reported	None reported	None reported
Crowe *et al.*[9]	None reported	Clinical level (ALS)† (OR 1.88; 1.23–2.89); Gender (male)¶ (OR 1.75; 1.20–2.26); Call volume (>20/week)§§ (OR 2.47; 1.50–4.08); Education (Bachelor)¶¶ (OR 2.52; 1.05–6.04)	Clinical level (ALS)† (OR 1.33; 1.01–1.76); Experience (5–15 years)§ (OR 1.38; 1.03–1.85); Agency type (private)‡‡ (OR 1.57; 1.22–2.02); Agency type (other)‡‡ (OR 1.79; 1.39–2.29); Call volume (10–19/week)§§ (OR 1.75; 1.27–2.42); Call volume (>20/week)§§ (OR 2.65; 1.96–3.57)	Clinical level (ALS)† (OR 1.48; 1.14–1.92); Experience (5–15 years)§ (OR 1.33; 1.01–1.74); Gender (male)¶ (OR 0.78; 0.36–0.97); Agency type (private)‡‡ (OR 1.35; 1.07–1.71); Agency type (other)‡‡ (OR 1.38; 1.09–1.74); Call volume (10–19/week)§§ (OR 1.53; 1.14–2.07); Call volume (>20/week)§§ (OR 2.69; 2.04–3.53)
Thyer *et al.*[12]	Years employed (5–9)‡ (OR 2.5; 1.7–3.6); Years employed (10–14)‡ (OR 2.2; 1.4–3.3); Years employed (15–19)‡ (OR 3.7; 2.3–6.1); Years employed (20+)‡ (OR 2.0; 1.2–3.1); Work location (small rural)†† (OR 2.6; 1.2–5.3); Work location (large rural)†† (OR 3.0; 1.5–6.1); Work location (capital city)†† (OR 3.0; 1.6–5.7)	None reported	None reported	None reported
Boland *et al.*[8]	No predictors identified	Not applicable	Not applicable	Not applicable

†Reference = BLS. ‡Reference = 1–4 years. §Reference = less than 5 years. ¶Reference = female. ††Reference = remote. ‡‡Reference = fire-based. §§Reference = less than 5 weekly calls. ¶¶Reference = high school education. CBI, Copenhagen Burnout Inventory; GBM, General Burnout Measure; MBI, Maslach Burnout Inventory.

of overall burnout using the CBI instrument of 56% in their national study of Australian paramedics that yielded an 8.3% response rate (893 participants). Stassen *et al.*[11] reported a prevalence of overall burnout of 30% using the CBI instrument, from a sample of 45 respondents working in Johannesburg, South Africa (46% response rate). This sample was predominantly male (70%).

Secondary outcome: prevalence of burnout sub-domains. Although three different survey tools were used, each study collected data on varying sub-domains of burnout as well as the overall burnout percentage (Table 3). Only one study used each of the MBI and GBM, preventing comparison. In the three studies that used the CBI instrument, prevalence was highest in the 'personal burnout' sub-domain in all studies. The lowest prevalence, consistent across all three studies, was seen in the patient-related burnout sub-domain.

Secondary outcome: predictors of burnout in paramedics. Predictors of burnout and associated odds ratio (OR) are summarised in Table 4. In their study of Israeli paramedics, Nirel *et al.*[10] reported that 'a sense of a high level of overload at work', 'emotional problems interfering with work', 'low level of job satisfaction' and 'reported physical health impeding work performance' were predictors of increased risk of total burnout. In their predominantly male sample, Boland *et al.*[8] found that increasing age, being a parent, and being in a committed relationship were suggested as being protective from burnout in that they were associated in univariate regression analysis with lower risk of burnout; however, the associations were weak and did not reach significance in multivariate analysis. In Crowe *et al.*'s[9] study of US paramedics, being female, ALS qualified, and having 5–25 years of experience were all predictors in multivariate analysis of increased risk of burnout. For work-related burnout, being ALS qualified, having 5–15 years of experience, and higher weekly call response volume were predictive of increased risk of burnout. For patient-related burnout, the gender association reversed, with males being at greater risk of patient-related burnout than females. ALS qualification, higher weekly call volume, and having Bachelor's level of education were predictive of greater risk of burnout. The Australian study by Thyer *et al.*[12] had the highest proportion of females (46%); they reported that gender was an important predictor of overall burnout, with females at 30% greater odds of overall burnout compared to males. On multivariate analysis, being female, having between 15 and 20 years' experience and working in a metropolitan location were predictive of higher risk of overall burnout (Table 4). Stassen's study of South African paramedics found no significant differences in burnout prevalence between variables of gender, operational position, educational qualification, or years of experience, therefore no predictors of burnout were identified.[11]

Discussion

This systematic review of five studies published since 2000 reveals a prevalence of 'overall burnout' ranging between 16% and 56%. However, heterogeneity in study populations, settings and burnout measurement instrumentation, along with a moderate risk of bias arising from the quality of included research, weaken the strength of this evidence and the conclusions that can be drawn from it. The included studies had lower than optimal response rates, unrepresentative samples, and were in all cases single-centre projects. This systematic review confirms that while it is known that burnout is an issue of concern in paramedicine, the scope of the condition and its impacts on the paramedics and their families and the patients they care for is less well defined and should be the subject of well-designed ongoing research. As Maslach *et al.*'s note,[2] it is also important to acknowledge the developmental nature of burnout, therefore underscoring the need for future research to include longitudinal studies.

The prevalence range reported in this review assists in comparisons with other emergency care-related health professions, for example nursing and emergency medicine. In a systematic review of 17 studies reporting burnout in emergency nurses, an average burnout rate of 26% was reported across populations from multiple countries.[7] In a 2017 national survey of emergency medicine residents in the USA that used the MBI instrument, 76% were found to be experiencing burnout.[27] The variability in reported burnout prevalence seen in this systematic review is consistent with that reported in a systematic review of burnout prevalence in physicians (prevalence range 0–84%) in which the authors described inconsistencies in instruments, and most importantly, definitions of burnout.[28]

In this analysis, personal burnout was most prevalent in the CBI-based studies, followed by work-related and patient burnout, respectively. This pattern was consistent across the three relevant studies. This is important information that should be considered by those charged with designing occupational interventions aimed at optimising paramedic wellness. Contrary to popular conception, it appears that patient-related aspects of paramedic work are least responsible for contributing to burnout. This is consistent with existing research beyond the studies included in this analysis.[29-31]

Unfortunately, current evidence is insufficient to enable paramedic organisations to use it as the foundation to develop interventions and assessed their effectiveness. Some predictors of burnout have been presented in the five articles in the present study, but similar to other results, these have not been consistent across all researchers. In their review of 25 years of burnout research, Maslach *et al.*[2] highlight that any effective burnout intervention should not only address the individual, but also the organisation; however, a discussion of intervention to reduce or limit burnout is beyond the scope of this current investigation.

In our study, the prevalence of burnout is most alarming in those articles using the CBI instrument. These three studies reported prevalence that was higher than those using the GBM or MBI, with the CBI providing prevalence results

ranging from 30% to 53%, compared to the non-CBI study range of 16–18%. Whether this is an anomaly of the specific studies included, an overestimation of burnout or an accurate assessment of the cohorts is difficult to determine. Shirom[32] considers the various merits and limitations of both the CBI and the MBI as well as the Oldenburg Burnout Inventory in his 2005 editorial reflecting on the study of burnout, but is unable to provide definitive direction toward a preferred tool; he does note concerns with both instruments, especially in relation to the various sub-domains, similar concerns were raised in an Australian which undertook a comparison of the MBI and CBI, determining that 'the two measures (MBI and CBI) seemed to indicate substantial similarity in the overall proportion of respondents identified as manifesting high burnout',[33] but still noting concerns in the robustness of the measures.

Limitations

The study protocol included a time restriction for included articles, with studies published prior to the year 2000 being excluded. Paramedicine organisational structures and systems have evolved considerably since the turn of the century, and, given the organisational factors that may play a role in burnout, it was determined that studies prior to 2000 had greater risk of presenting results that were no longer relevant to answering the research question in a contemporary sense.

As the primary research aim was to identify prevalence of burnout, studies that did not report a prevalence estimate were excluded, as were studies that did not use a validated instrument. This resulted in the exclusion of several studies reporting or measuring burnout using other questionnaires or surveys or via qualitative research. While this research contributes to the overall knowledge of the condition of burnout in paramedicine, it did not address the specific research question hence exclusion was justified.

An across-study limitation was the measurement of prevalence using different validated instruments, which could lead to a misleading interpretation of the reported ranges of prevalence.

Conclusion

This systematic review highlighted the varying prevalence of burnout in paramedics that is reported in the literature. The reason for such disparate results may sit within the complexity of the condition of burnout but is unfortunately compounded by the heterogeneity of the research tools used for measurement, obfuscating definitions and the limitations of the various study designs that were shown to affect the quality of these studies. Although the prevalence is not clear, burnout is evidently present in paramedicine and future research upon which paramedic organisations can confidently base interventions to prevent or offset burnout is still needed.

Author contributions

All authors conceived and designed the review; MR and RA undertook the search and review with LT resolving disputed articles. All authors contributed to the writing and review of the manuscript. LT is responsible for the overall content as guarantor.

Competing interests

None declared.

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Supporting information

Additional supporting information may be found in the online version of this article at the publisher's web site:

Appendix S1. Search strategy: MEDLINE (OVID).