

**Assessing vicarious traumatisation and utilisation of psychological support services amongst prehospital emergency care providers in Limpopo Emergency Medical Services: A cross-sectional survey**

by

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Submitted in partial fulfilment of the requirements for the degree of

MASTER OF PHILOSOPHY  
(Emergency Medicine)

in the  
FACULTY OF HEALTH SCIENCES  
at the  
UNIVERSITY OF CAPE TOWN

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February 2025

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## **ACKNOWLEDGEMENTS**

This research would not have been possible without the support, guidance, and encouragement of numerous individuals and institutions. I want to express my heartfelt gratitude to my supervisor, A/Prof Colleen Saunders, for her invaluable guidance, patience, and steadfast support throughout the whole research journey. Her expertise and constructive feedback have played a crucial role in shaping and materializing this study. I am also deeply thankful to the University of Cape Town, especially the Division of Emergency Medicine, for affording me the opportunity and the essential resources and support needed to carry out this research. A special mention goes to Elzarie Theron for her assistance with the data analysis. I extend my sincere appreciation to the participants of this study, specifically the prehospital emergency care providers of Limpopo Emergency Medical Services, for their time and willingness to share their experiences. This research would not have been possible without the Department of Health's approval and their contributions. To Dr Tshikani Khoza, my wife (Thato Theledi), family and friends, your unwavering support, understanding, and encouragement have been my foundation. Your belief in me kept me motivated, particularly during the most challenging moments. Lastly, I would like to acknowledge the wider academic and research community whose previous work has inspired and guided my own.

Thank you all for your invaluable contributions to this journey.

## DISSERTATION ABSTRACT

**Introduction:** Emergency Medical Services (EMS) providers face frequent exposure to traumatic incidents. Such exposure can cause vicarious trauma (VT), a psychological condition characterized by symptoms akin to post-traumatic stress disorder (PTSD). VT affects individuals empathetically engaged with trauma survivors, resulting in emotional, cognitive, and physical impacts that may lead to burnout. The Vicarious Trauma Scale (VTS) is a validated tool for assessing vicarious trauma. The aim of this study was to measure distress and exposure to VT, and to describe the awareness and utilisation of psychological support services (PSS), by EMS providers in Limpopo Government EMS, South Africa.

**Methods:** A narrative review of the literature pertaining to vicarious trauma and the utilisation of psychological support services among prehospital emergency care providers is provided in Part A. Part B describes an observational cross-sectional study employed a self-administered, anonymous questionnaire incorporating the VTS and Satisfaction with Work Scale in EMS personnel in Limpopo province, South Africa.

**Results:** Of the 258 participants (mean age:  $46.2 \pm 5.8$  years), 58.5% were male, and 77.5% were employed in clinical or operational roles. The average VTS score was  $36.6 \pm 8.6$ , with 29.8% of participants falling into the high VT category. While 82.6% reported being exposed to distressing material, only 16.3% found it challenging to cope. Job satisfaction was moderate, with a mean score of  $23.4 \pm 6.0$ , and 65.5% considered their job to be ideal. Common coping strategies included listening to music (65.5%), reading (62.8%), and participating in debriefing sessions (55.0%). However, 61.2% were not aware of available PSS, and only 11.6% had utilized them. Regression analysis indicated that being female, along with the use of alcohol and non-prescription medications, was associated with higher VTS scores, while age and job satisfaction were linked to lower scores.

**Conclusion:** Limpopo EMS providers encounter VT, yet PSS use seems low, indicating a major gap in mental health interventions, hence the need for removal of access and utilization barriers to ensure well-being of providers and quality of patient care.

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## **ABBREVIATIONS**

|       |                                            |
|-------|--------------------------------------------|
| AEA   | Ambulance Emergency Assistance             |
| ALS   | Advanced Life Support                      |
| BAA   | Basic Ambulance Assistance                 |
| CCA   | Critical Care Assistant                    |
| CF    | Compassion Fatigue                         |
| ECO   | Emergency Care Officer                     |
| ECP   | Emergency Care Practitioner                |
| ECT   | Emergency Care Technician                  |
| EMS   | Emergency Medical Services                 |
| HPCSA | Health Professions Council of South Africa |
| PSS   | Psychological Support Service              |
| PTSD  | Post Traumatic Stress Disorder             |
| SWS   | Satisfaction with Work Scale               |
| VT    | Vicarious Trauma                           |
| VTs   | Vicarious Trauma Scale                     |

## **PART A: LITERATURE REVIEW**

### **Introduction**

This chapter provides a narrative review of the literature pertaining to vicarious trauma and the utilisation of psychological support services among EMS providers. It examines relevant theoretical frameworks, including those related to secondary traumatic stress and occupational stress within emergency medical contexts, while also exploring barriers to accessing mental health support. The literature was sourced through the University of Cape Town's online library system through targeted keyword searches. Databases consulted include Google Scholar, ScienceDirect, ResearchGate, Scielo Scientific Electronic Library, PubMed, SAGE Publications, and SAGE Research Methods. Keyword search terms included, but were not limited to, "vicarious trauma", "secondary traumatic stress", "psychological support services", "mental health in EMS", "coping mechanisms in emergency care", "occupational stress among paramedics", and "trauma exposure in prehospital settings". This narrative review serves to position the current study within the broader body of academic discourse and to identify existing knowledge gaps, particularly in the context of Limpopo EMS.

### **Introduction to vicarious trauma in emergency medical services**

Vicarious traumatisation (VT) is a psychological phenomenon that occurs when individuals, who are repeatedly exposed to the traumatic experiences and suffering of others through their professional roles, begin to experience symptoms comparable to those who have directly experienced trauma (1–4). VT is characterised by unfavourable changes resulting from the emotional residue of exposure to secondary trauma and it is different from post-traumatic stress disorder (PTSD) as it often manifests as a shift in worldview, emotional exhaustion, and reduced capacity to empathize, stemming from cumulative exposure to distressing narratives or situations (1,3,4,5). It typically affects individuals in professions such as healthcare professionals, first responders, social workers, therapists, and journalists, but it can

also impact individuals who provide emotional support to friends or family members who have experienced trauma (5–8).

Vicarious traumatising is particularly relevant in the context of emergency medical services (EMS) as EMS professionals frequently encounter atrocious injuries, gruesome fatalities, and emotionally charged incidents (9–11). EMS providers do not only provide physical care, but also emotional support to patients and their families owing to empathy demands (1,2). The volatile environment in EMS can exacerbate the impact of secondary trauma resulting from chronic stress and high stakes (2,3). The impact of VT in EMS and high-stress professions is paramount due to its propensity to impact job performance, mental health, and personal relationships, making it a substantial concern in EMS (1,3,12). Vicarious traumatization can easily trigger burnout, impaired decision-making, higher staff turnover, and substandard patient care (1,4,13).

In the South African context, the high incidence of trauma-related incidents, horrific road traffic crashes, violent crimes, and domestic emergencies, place EMS providers at higher risk of VT. South Africa's distinctive socioeconomic challenges, widespread inequality, limited healthcare resources, and understaffed emergency services, increases the emotional and psychological demand on EMS providers (14,15). Healthcare system in Limpopo province faces substantial resource constraints and serve a predominantly rural population where the impact of VT may be particularly increased (14,15). Limpopo EMS providers often work long hours under intense pressure, responding to atrocious incidents in resource-limited settings where access to advanced care is delayed or unavailable (14,15). The high exposure to atrocious events, barriers to access psychological support services, and cultural stigma surrounding mental health intensifies the need to address VT in Limpopo EMS (9,14,16). Understanding and mitigating VT is crucial to safeguarding the well-being of EMS providers, improving retention rates, and ensuring the delivery of quality prehospital care in Limpopo province communities (3,17).

## **Vicarious trauma compared to other forms of occupational stress and trauma**

Literature shows that occupational stress incorporates diverse stressors that individuals encounter in their professional environments, habitually leading to psychological and physical strain (1,18–23). Among EMS providers, VT epitomizes a distinct and persistent concern, however it intersects with other forms of stress like burnout, compassion fatigue, moral injury, and direct trauma (20–23). Each form of stress affects providers uniquely, influencing their well-being and professional performance (1–3,24).

Vicarious trauma, as alluded to in the definition, arises from empathetic engagement with individuals experiencing trauma, particularly through listening to distressing stories or witnessing suffering (1,5). It is described in the literature to be accumulative, preceding changes in the healthcare provider's emotional state, worldview, and self-perception (5,6,9,27). Its characteristics include an altered sense of safety, cynicism, emotional exhaustion, reduced empathy precipitated by frequent exposure to trauma narratives, lack of coping resources and limited psychological support (1,3,6,9). EMS providers often provide care under emotionally and psychologically draining circumstances, predisposing them to compassion fatigue (1,12,20,21). Compassion fatigue intersects with VT but exhibits a more instant emotional response to providing care for others in distress and it frequently serves as a forerunner to VT (1,23,26). It is characterized by helplessness, numbness, decreased emotional energy and is precipitated by repeated exposure to anguish without adequate recovery time (1,2,23). Burnout is characterized by chronic workplace stress, often unrelated to direct trauma exposure (13,22,23). It manifests as fatigue, emotional exhaustion, depersonalization disorder, withdrawal, irritability, decreased productivity and a reduced sense of personal achievement (13,22,23). Predisposing factors include excessive workload, time pressure, lack of recognition, and organizational inefficiencies (13,22,23). Its prevalence in EMS is owed to high demand and lack of resources (13). Conversely, PTSD is the consequence of direct exposure to traumatic events and is characterized by intrusive memories, hyperarousal, and avoidance behaviours (1,6,20,23,27). It is characterized by flashbacks, nightmares, anxiety, and avoidance of triggers precipitated by experiencing or witnessing life-threatening events. EMS providers are

directly involved in disastrous incidents such as medical rescue and mass casualty incidents and may develop PTSD (28,29). Moral Injury occurs when individuals experience conflict between their ethical values and actions they are required to take, or systems that fail to align with their values (30–33). It is characterized by guilt, shame, frustration, moral dissonance and it is precipitated by inability to provide optimum care due to systemic or situational constraints (31–33). In EMS this may occur due to limited resources or systemic barriers that can prevent EMS providers from fulfilling their perceived duty to provide healthcare (31–33).

**Table 1: Comparative summary of different occupational hazards**

| Hazard Type        | Trigger                      | Duration         | Primary Impact                                                       | Relevance to EMS                                 |
|--------------------|------------------------------|------------------|----------------------------------------------------------------------|--------------------------------------------------|
| Vicarious trauma   | secondary trauma             | cumulative       | altered worldview, reduced empathy, emotional exhaustion             | frequent exposure to patients' trauma            |
| Burnout            | chronic workplace stress     | chronic          | emotional exhaustion, depersonalization, low personal accomplishment | workload pressures, organizational issues        |
| Compassion fatigue | caring for those in distress | short-term       | numbness, helplessness, emotional detachment                         | Immediate emotional toll of caregiving           |
| PTSD               | direct trauma exposure       | episodic/chronic | intrusive memories, hypervigilance, avoidance                        | result of direct involvement in traumatic events |
| Moral Injury       | ethical/moral conflict       | episodic/Chronic | guilt, shame, frustration                                            | limited resources hindering optimal care         |

EMS: Emergency Medical Service; PTSD: Post-traumatic stress disorder.

### **Impact of vicarious trauma on emergency medical services providers**

VT is increasingly recognized as a significant occupational hazard in EMS and other high-stress professions (6,17,34). Emergency Medical Services providers are uniquely vulnerable due to their frequent exposure to traumatic events, ranging from severe injuries and fatalities to emotionally charged interactions with patients and families. Studies suggest that 15-25% of EMS providers exhibit symptoms of VT, with an extensive proportion experiencing moderate to severe effects (3,6,9,23). High PTSD of 6–16% and general mental-health challenges among South African EMS providers suggest that VT is likely as prevalent, possibly more than global averages (15–25%)

(3,6,9,75). Doctors and nurses, especially in emergency and trauma settings, also report high rates of VT due to their close interactions with patients in distress and distraught families (5–8). Social workers and counsellors are frequently exposed to clients' trauma narratives, resulting in high rates of VT (23,35,36). Law enforcement and firefighters' direct involvement in high-stakes incidents further amplifies susceptibility to VT (32,37).

The cumulative and indirect nature of vicarious traumatising renders it a pervasive concern across these professions, particularly in roles demanding high levels of empathy and emotions (1,37,38). The impact of vicarious traumatising on performance at work includes cognitive impairment where vicarious traumatising can affect attention, memory, and problem-solving abilities, critical for decision-making in high-pressure scenarios (1,23,37). It can cause reduced efficiency as emotional exhaustion and detachment may lead to diminished engagement and efficiency (24). It can also increase errors as compromised focus and decision-making increase the likelihood of clinical and operational errors (24). It can impact decision making and result in delayed responses as cognitive overload from traumas can slow the reaction times during emergencies (24). EMS providers may either overextend themselves emotionally or withdraw from patient interactions (24). It can cause impaired risk assessment as emotional fatigue might skew judgment in high-stakes situations such as medical rescue and patients requiring advanced medical care, impacting patient outcomes (9,24,25). It may affect personal well-being due to emotional distress as EMS providers often experience feelings of helplessness, guilt, and frustration owing to their inability to prevent or mitigate traumatic outcomes (9,24). It can cause disruption in relationships as vicarious traumatising can strain personal relationships due to irritability, withdrawal, or emotional unavailability (6,34,39). Chronic stress can also manifest physically through headaches, fatigue, and gastrointestinal issues resulting in increased absenteeism (1,40). Depression and anxiety may manifest as persistent trauma exposure can trigger mood disorders, including chronic anxiety and depressive symptoms (1,6). Although distinct, vicarious traumatising shares symptoms with PTSD, such as hypervigilance, intrusive thoughts, and avoidance behaviours (1,21,27). Substance abuse may be evident as individuals may resort to maladaptive coping mechanisms, such as increased alcohol or drug use, to manage stress (41–43).

Research in South Africa reported that prehospital providers experienced moderate to high levels of occupational stress, with VT being a major contributor (22,28,44,45). Studies on intensity of symptoms indicate that EMS providers with longer years of service or frequent exposure to critical incidents report more intense symptoms of vicarious traumatisation (2,6,44,46). Interestingly, studies also show that female EMS providers often report higher levels of vicarious traumatisation, attributed to societal expectations of empathy and caregiving (47,48). High violence or disaster-prone areas often see elevated rates of vicarious traumatisation among EMS providers due to repeated exposure to large-scale trauma events, especially areas where cultural and regional variations are prevalent (20,46). In limited resource settings, such as Limpopo EMS, lack of psychological support may exacerbate the intensity of symptoms. Vicarious traumatisation symptoms often intensify over time without intervention, leading to chronic mental health issues (2,8). Longitudinal analyses reveal that providers with robust support systems report lower symptom severity compared to those in unsupportive work environments (2,8,38).

Safeguarding well-being from VT's psychological effect protects EMS providers' worldview as vicarious traumatisation exceptionally alters the provider's perception on safety, trust, and meaning, impacting their personal and professional lives (6,49). Identifying and addressing VT timeously can reduce the risk of burnout, compassion fatigue, and long-term mental health disorders such as PTSD (2,27,49). Enhancing patient care by preserving empathy is crucial as vicarious traumatisation diminishes the capacity to empathize, potentially leading to depersonalized care or detachment from patients (24,50). Providers affected by VT may struggle with cognitive lucidity, impairing their ability to make swift, precise decisions during emergencies therefore hindering their decision making (9,46). Promoting continuity of quality care by addressing vicarious traumatisation improves EMS providers' emotional engagement and effectiveness in their roles (1,51,52).

Reducing workforce turnover is also crucial as high levels of VT contribute to job dissatisfaction and early departure from the EMS field posing retention challenges (3,53,54). Staff turnover disrupts team dynamics and incurs recruitment and training costs, straining already limited resources in EMS systems by inflicting costs on the employer (19,41,53). Job satisfaction is essential in mitigating the impacts of vicarious



trauma and enhancing the overall mental health of EMS providers. Research indicates that increased job satisfaction correlates with diminished emotional exhaustion, better coping mechanisms, and a decreased intention to leave the job (13,22,23). In EMS environment, factors such as acknowledgment, team unity, clarity of roles, and availability of psychological support significantly influence satisfaction levels (13,22,23). The incorporation of the Satisfaction with Work Scale in this research facilitates a more thorough investigation into the interplay between these workplace dynamics and vicarious trauma (13,22,23,51). Understanding and mitigating VT helps retain experienced personnel, crucial for maintaining operational efficiency and sustaining crucial expertise (41,53).

Understanding VT specifically in the context of EMS fosters organizational resilience by enhancing team dynamics as vicarious traumatising can adversely affect interactive relationships within teams, leading to conflict and declining staff morale (41,50). EMS systems that address VT can create supportive environments that promote resilience and adaptability among staff therefore encouraging operational efficiency (50). Recognition of vicarious traumatising encourages EMS organizations to prioritize mental health, fostering a culture of care and well-being that promotes cultural shifts (5,50).

Understanding VT in the EMS context can help inform support services and policy development advocating for tailored interventions such as counselling, peer-support programs, and resilience training (1,9,49). Highlighting VT can drive policy changes that distribute resources for mental health support and establish trauma-informed practices within EMS organizations. Financial allocation and development of wellness programs to support EMS providers' mental health can be guided by evidence indicating vicarious traumatising prevalence (55,56).

### **The vicarious trauma scale**

The Vicarious Trauma Scale (VTS) is a validated psychometric tool used to measure the degree of vicarious traumatising in individuals who are exposed to the suffering of others, especially in high stress professions (57). The validated VTS measures the

emotional, cognitive, and psychological effects of indirect trauma exposure (52,57). The VTS in this study includes 8 items rated on a Likert scale, which captures symptoms such as intrusive thoughts, emotional exhaustion, and disruptions in personal belief systems (52,57).

The VTS has been used among various professional groups, for instance mental health workers, social workers, and emergency responders (1,58,59). Literature on the use of VTS by Vrlevski and Franklin (2008) indicates its reliability and validity in measuring secondary traumatic stress, with results showing frontline personnel often report higher scores due to their repeated exposure to atrocious incidents (57,58,60). A study by Kim et al. (2022) revealed that healthcare providers showed moderate to high levels of vicarious traumatisation, highlighting the scale's importance in evaluating psychological risks in high-exposure professions (2).

### **Psychological support services for emergency medical services providers**

Psychological support for EMS providers is vital, and often EMS providers encounter barriers accessing available services. Services such as Employee Assistance Programs, debriefing sessions and counselling after atrocious incidents allow teams to process their emotions (9,61,62). Colleagues trained on mental health awareness programs can provide emotional assistance through peer support programs reducing stigma and building trust (2,63,64). Mental health workshops and psychological first aid can help enhance resilience and alleviate acute stress (65). Organization's priorities, resources, and budget constraints will determine accessibility and availability of PSS (15,14,66).

Individual counselling such as cognitive-behavioural therapy may be effective in reducing symptoms of vicarious traumatisation assisting recovery (40,42,64). Programs which integrate mindfulness, resilience training, and voluntary participation in Critical Incident Stress Debriefing tend to produce the best results (2,42,64,67). Support from leadership and efforts to reduce stigma can be vital for encouraging PSS utilization (49,50). Regular assessments and the incorporation of mental health

initiatives into organizational policies may improve their relevance and accessibility therefore fostering a supportive culture for mental health of EMS providers (49,50).

### **Barriers to utilization of psychological support services**

Barriers to accessing PSS among prehospital EMS providers often stem from limited resources, stigma, which may deter individuals from seeking help (29,56,68). Cultural norms in Limpopo EMS may prioritize reliance on family or spiritual practices, further diminishing engagement with formal mental health services (28,30,47). Long shifts, heavy workloads, and a lack of awareness about available services worsen the situation, while logistical issues, such as the distance to services in rural areas, present additional challenges (14,69–71). Confidentiality concerns in close-knit communities also discourage participation (29,56).

Targeted strategies are necessary for addressing these barriers where mental health education, peer-led initiatives, and telehealth options may enhance accessibility and utilization (64,67,72,73). Providing on-site counselling and integrating psychological support into EMS operations may boost engagement (40,64). Tailored interventions, including trauma-specific therapies and culturally sensitive programs may improve effectiveness (9,41,62). Advocacy from leadership, mandatory mental health check-ins may foster a supportive environment (2,24,63,67). By addressing barriers to access and use PSS, EMS organisations may enhance the utilization of PSS therefore improving mental health of the workforce (34,56,68).

### **Coping mechanisms and resilience-building in emergency medical services**

Emergency medical services providers frequently encounter traumatic events, such as serious injuries, fatalities, and emotionally challenging situations (2,42). These continuous exposures significantly increase their vulnerability to vicarious traumatization (2,42). Consequently, the capacity to manage stress effectively and foster psychological resilience is essential for maintaining mental well-being and job performance within EMS (2,42,63). It is established that EMS providers use a range

of coping strategies to manage stress and emotional challenges, which may vary between adaptive and maladaptive methods which assist individuals in managing vicarious traumatization and foster resilience as time progresses (2,42). Adaptive strategies should be encouraged, and maladaptive strategies be discouraged for long-term well-being benefits of EMS providers (2,63,64,68).

Adaptive coping strategies utilized by EMS providers consist of various practices designed to alleviate the psychological effects of occupational stress (64,67). These strategies encompass peer support and informal debriefing, which promote emotional expression and the normalization of stress reactions after critical incidents (64,67). Problem-focused coping entails practical measures such as enhancing skills and managing workloads, whereas emotion-focused methods like mindfulness, journaling, and culturally rooted spiritual practices assist in regulating emotional responses (64,67). Engaging in physical self-care, which includes regular exercise, sufficient rest, and balanced nutrition, fosters overall well-being (64,67). Furthermore, despite being underutilized, formal psychological services offer structured therapeutic interventions that aid in developing long-term resilience (64,67).

Maladaptive coping strategies utilized by EMS providers may provide short-term relief; however, they frequently intensify psychological distress in the long run (64,67). Such strategies encompass substance use to escape traumatic memories, emotional suppression or avoidance that obstructs trauma processing, and an overcommitment to work as a form of distraction (64,67). Each of these behaviours can lead to burnout, dependency, and diminished functioning (64,67).

Resilience building encompasses individual interventions such as stress management training, mindfulness practices, and cognitive behavioural techniques, as well as organizational strategies (42,64). Programs that offer peer support, Critical Incident Stress Management, and resilience workshops that emphasize self-care, and emotional intelligence may be helpful (42,64). Supportive leadership is crucial in cultivating a resilience culture by prioritizing mental health and work life balance (42,64). The preferences for coping are significantly shaped by cultural and contextual elements, where spirituality frequently plays a crucial role in the processing of traumatization. The restricted availability of formal mental health services encourages

individuals to depend on informal support from peers, family, and the community (42,64,67). It is essential to incorporate these culturally rooted strategies into the wellness policies of EMS to enhance the resilience of the workforce. By encouraging adaptive coping strategies and implementing resilience-building strategies, EMS organisations may empower employees to manage stress effectively while mitigating the effects of trauma (42,64).

### **Knowledge gaps in the current literature**

Research on VT among EMS providers in South Africa, especially in rural regions like Limpopo, is scarce. Most existing studies concentrate on urban environments and do not provide data on mental health interventions that are culturally and logistically appropriate. The unique stressors faced in Limpopo, including under resourced systems and exposure to violent incidents, have not been thoroughly examined, underscoring the necessity for localized research (53,74).

The study presented in this dissertation seeks to fill these gaps by investigating VT and the use of psychological support services among Limpopo EMS providers. It seeks to offer culturally relevant insights into the barriers and effectiveness of current interventions. The findings will help shape policies to reduce stigma, enhance service accessibility, and raise mental health awareness. By contributing to evidence-based strategies, this research aims to support workforce well-being and improve EMS operational efficiency in Limpopo and beyond. Given its proven validity and relevance in emergency services, the VTS was selected to assess the severity of VT among prehospital emergency care providers in Limpopo EMS in the study described in this dissertation (57,60). The findings will add to the growing body of research on occupational stress in healthcare and emergency response fields.

### **Conclusion**

This literature review has highlighted vicarious trauma (VT) as a significant and often overlooked occupational hazard among EMS providers, especially in resource

constrained, high pressure settings. VT, while conceptually separate from related issues such as burnout, PTSD, compassion fatigue, and moral injury, is closely associated with the cumulative exposure to traumatic incidents and the emotional demands that are intrinsic to EMS roles. The damaging impacts of VT on cognitive abilities, emotional health, job performance, and workforce retention underscore the pressing need for focused interventions. Despite acknowledging the importance of psychological support services (PSS) and adaptive coping strategies in alleviating VT, considerable obstacles including stigma, cultural expectations, resource limitations, and restricted access persist, obstructing their effective implementation within the South African EMS framework. While coping and resilience enhancing techniques are advantageous, their adoption remains inconsistent, with maladaptive behaviours further intensifying psychological suffering. A significant gap exists in the empirical research concerning VT and PSS in rural and under-resourced EMS systems like Limpopo. This study aims to fill this gap by utilizing the validated Vicarious Trauma Scale (VTS) to evaluate the prevalence and intensity of VT and to investigate the accessibility and perceived efficacy of existing support services. The anticipated results are expected to guide culturally and contextually relevant policy and programme initiatives designed to protect the mental health and operational viability of EMS providers.

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## **PART B: MANUSCRIPT IN ARTICLE FORMAT**

This manuscript has been formatted for submission as an original article to the African Journal of Emergency Medicine, as per the author guidelines provided here:

<https://www.sciencedirect.com/journal/african-journal-of-emergency-medicine/publish/guide-for-authors>

**Assessing vicarious traumatisation and utilisation of psychological support services amongst prehospital emergency care providers in Limpopo Emergency Medical Services: A cross-sectional survey**

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Word count: 3000

Table count: 5

## Abstract

**Introduction:** Emergency Medical Services (EMS) providers face frequent exposure to traumatic incidents. Such exposure can cause vicarious traumatisation, a psychological condition characterized by symptoms akin to post-traumatic stress disorder. Vicarious traumatisation affects individuals empathetically engaged with trauma survivors, resulting in emotional, cognitive, and physical impacts that may lead to burnout. The Vicarious Trauma Scale (VTS) is a validated tool for assessing vicarious trauma (VT). The aim of this study was to measure the degree of vicarious traumatisation and describe the awareness and utilisation of psychological support services (PSS), of EMS providers in Limpopo Government EMS, South Africa.

**Methods:** This observational cross-sectional study employed a self-administered, anonymous questionnaire incorporating the VTS and Satisfaction with Work Scale in EMS personnel in Limpopo province, South Africa.

**Results:** Of the 258 participants (mean age:  $46.2 \pm 5.8$  years), 58.5% were male, and 77.5% were employed in clinical or operational roles. The average VTS score was  $36.6 \pm 8.6$ , with 29.8% of participants falling into the high vicarious traumatisation category. While 82.6% reported being exposed to distressing material, only 16.3% found it challenging to cope. Job satisfaction was moderate, with a mean score of  $23.4 \pm 6.0$ , and 65.5% considered their job to be ideal. Common coping strategies included listening to music (65.5%), reading (62.8%), and participating in debriefing sessions (55.0%). However, 61.2% were not aware of available PSS, and only 11.6% had utilized them. Regression analysis indicated that being female, along with the use of alcohol and non-prescription medications, was associated with higher VTS scores, while age and job satisfaction were linked to lower scores.

**Conclusion:** Limpopo EMS providers encounter VT, yet PSS use seems low, indicating a major gap in mental health interventions, hence the need for removal of access and utilization barriers to ensure well-being of providers and quality of patient care.

**Keywords:** Emergency Medical Services, Emergency Care Providers, Post-Traumatic Stress Disorder, Psychological Support Services, Vicarious Trauma, Vicarious Trauma Scale



## Introduction

Emergency Medical Services (EMS) fall under the category of essential services, providing emergency medical treatment, medical rescue, and transportation of the ill and injured persons in the prehospital setting to definitive healthcare facilities (1–3). To deliver quality prehospital emergency care, effective and skilled EMS providers are needed (2,4,5). It is inevitable that EMS providers at all levels of qualification are exposed to various traumatising incidents and situations in their work environment (4,6–8). These incidents can vary from critically ill patients, high impact and macabre incident scenes to violent incidents (2,9,10). Such exposure may be emotionally, physically, and psychologically exacting for the EMS providers and the degree of exposure may vary at various levels of training and qualification (4,6,7,11).

Vicarious trauma (VT) is a psychological phenomenon that occurs when individuals who are exposed to the traumatic experiences of others begin to experience symptoms comparable to those who have directly experienced trauma (13,14). It encompasses unfavourable changes resulting from the emotional residue of exposure to secondary trauma and it is different from post-traumatic stress disorder (PTSD) (14,15). This typically affects individuals in professions such as healthcare workers, first responders, social workers, therapists, and journalists, but it can also impact individuals who provide emotional support to friends or family members who have experienced trauma (13,14).

Symptoms of vicarious traumatisation can closely resemble those of PTSD, including intrusive thoughts, nightmares, anxiety, depression, emotional numbness, and feelings of helplessness, often resulting in an overall sense of being overwhelmed (13–15). Physical symptoms may show up as sleep disturbances, fatigue, and other health issues, while emotional responses can include irritability, detachment, or emotional numbness (14,15). Cognitive changes such as memory issues, difficulty concentrating, cynicism, and hopelessness are also common, along with shifts in belief systems that may cause individuals to question their worldview or lose a sense of meaning and purpose (14). VT is strongly linked to professional burnout, as ongoing exposure to trauma can lead to emotional exhaustion and decreased effectiveness in one's role

(13–15). To prevent and manage vicarious traumatising, self-care strategies like seeking peer and professional support, setting boundaries, practicing mindfulness, and taking breaks are essential (13,14). Organizations must offer training and resources to mitigate the impact of VT, particularly in EMS, where psychological support services (PSS) are crucial in helping providers cope with overwhelming stressors (13,14). Encouraging the use of such services is vital in preventing harmful coping mechanisms that could negatively impact the health and well-being of EMS providers (6,16).

The Vicarious Trauma Scale (VTS) is a validated tool for assessing the extent of vicarious traumatising experienced by individuals working in helping professions (15,27,28). The VTS was developed and validated by Vrkleviski and Franklin (2008) in a population of lawyers working with traumatised clients (18,19). Their validation study demonstrated good internal consistency (Cronbach's  $\alpha = 0.85$ ) and construct validity, indicating that the VTS is a reliable and valid measure of vicarious trauma within helping professions (18,19). It is a vital tool for both self-awareness and the development of targeted interventions (18). The emotional, psychological, and cognitive effects of VT can be measured enabling providers to gauge the severity of vicarious traumatising symptoms while identifying areas of concern (18,19). The Satisfaction with Work Scale (SWS), which is a component of the VTS, was incorporated to evaluate job satisfaction, as job dissatisfaction can be a consequence of vicarious traumatization (18,19). Developed by Vrkleviski and Franklin in 2008, it exhibited strong internal consistency ( $\alpha = 0.74$ ) (18,19). Its incorporation facilitates a more comprehensive examination of the relationship between job satisfaction, resilience, and the utilization of psychological support services among EMS providers in Limpopo thereby enriching understanding of occupational factors influencing EMS providers' mental well-being (18,19). Limpopo EMS is the selected population for this study because of its distinct geographical and operational challenges, such as a widely spread service area mainly rural environment, which can limit access to peer support and mental health resources available (12). The high frequency of atrocious incidents, coupled with possible deficiencies in mental health support, makes Limpopo EMS providers an essential population for evaluating VT and the use of PSS.

In the South African EMS, psychological support services (PSS) are expected to be in place as EMS providers are exposed to traumatising incidents and situations daily when carrying out their duties (14,15). Understanding the extent of vicarious traumatisation in a South African EMS population will allow for the development of targeted interventions and support structures. The aim of this study was, therefore, to measure the degree of vicarious traumatisation using the validated VTS, and to describe the awareness and utilisation of PSS, by EMS providers in Limpopo Government EMS, South Africa.

## **Methods**

This observational, cross-sectional study used a self-administered and anonymous questionnaire which included Vrkleviski and Franklin (2008)'s validated VTS and the SWS (13,18,19). Ethical approval was obtained from University of Cape Town Human Research Ethics Committee (HREC Ref: 086/2024). Permission was also requested from the Limpopo Director of EMS through the National Health Research Database.

Limpopo province is a predominantly rural province, with a population of 5.9 million people living in five districts. The public sector EMS comprises 57 stations with approximately 1600 Emergency Care Officers (ECOs) and approximately 35 operational Advanced Life Support (ALS) practitioners (mixture of Emergency Care Technicians (ECT), Critical Care Assistant (CCA), National Diploma in Emergency Care, Diploma in Emergency Care, and Emergency Care Practitioners (ECP) (*Personal communication: Limpopo EMS Operational Manager*). ALS practitioners are therefore very limited, and, in some instances, respond over a large distance for emergencies. Limpopo EMS is supplemented by a comprehensive 24-hour ALS aeromedical service.

All public sector, registered emergency care providers employed in Limpopo EMS who are operational on the road or in the call centre were eligible to participate in this study. There were no specific minimum or maximum length of service years applied as an inclusion criterion. Convenience and snowball sampling was used to recruit participants available at the time of distributing the hard copies of the questionnaire at

each base in the five districts in Limpopo province. Only participants who provided voluntary, informed consent took part in the study. Administrative and non-operational staff within Limpopo EMS, and former employees or retirees were excluded from the study.

The questionnaire and consent forms were distributed by the researcher at the beginning of several shifts at each base, and at various EMS gatherings within the Limpopo province. Following the consenting process, participants completed a self-administered, paper-based questionnaire. The survey consisted of four sections: (i) Participant demographics, (ii) the Vicarious Trauma Scale, (iii) Satisfaction with work scale, (iv) Coping mechanisms, (v) Awareness of psychological support services.

Data was captured into an Excel spreadsheet (Microsoft) and data entry was quality checked by a second individual. Data was analysed using SPSS (IBM, v30.0.0.0). VTS scores were calculated for both factors and the composite scale, by summing the score for items included in that measure. A score in the range of 8-28 indicates low VT, 9-42 indicates moderate VT and 43-56 indicates high VT (18,19). The Satisfaction with work scale consists of five items with a score range between 5 - 35, with higher scores indicating greater satisfaction with work (14,19,). The Satisfaction with Work Scale used in the VTS employs a Likert-type scoring mechanism, where total scores can vary from 4 and above with no absolute cutoff values. Scores of 16 or higher signify a high degree of job satisfaction, whereas scores falling below 16 indicate diminished levels of work satisfaction (14,18,19,). Coping mechanisms were evaluated using self-reported Likert-scale items that reflect both adaptive and maladaptive approaches, with an open-ended option to indicate other mechanisms not listed.

Descriptive statistics, including skewness, were performed for categorical variables. Pearson's correlation and multivariable linear regression was performed to explore relationships between variables and the VTS scores (19,21). As years of experience was significantly skewed, the variable was transformed as the square root of number of years for analysis. Three multivariable linear regression models were performed regressing VTS factor 1 score, VTS factor 2 score and the composite VTS score on all covariates initially. Final regression models were re-run with only covariates that

contributed significantly to the original models ( $p < 0.05$ ). The final list of included covariates is indicated in Table 6.

At the time of data collection, the number of registered, operational Limpopo EMS providers was 1,635 providers. A sample size of 311 participants was required to achieve a 95% confidence level with a 5% margin of error for descriptive statistical analysis in this population.

## **Results**

A total of 258 participants completed the questionnaire (Table 2). The mean age was  $46,2 \pm 5,8$  years, and 58,5% ( $n=151$ ) of participants were male. The median experience was 17 (Interquartile range (IQR): 14-19) years. The majority of participants were employed as clinical, operational staff (77,5%,  $n=200$ ) at the time of the study, with 11,6% ( $n=30$ ) employed as call centre or dispatch staff, and 10,9% ( $n=28$ ) in a management or education role. The majority of participants held either a BAA (46,9%;  $n=121$ ) or AEA (44,2%;  $n=114$ ) qualification, and only 2,7% of participants were qualified as ECPs ( $n=7$ ).

**Table 2: Descriptive statistics and outcome scores of participants included in the study.**

| Variable                                                       |                  | Descriptive statistic |
|----------------------------------------------------------------|------------------|-----------------------|
| Mean age (years)                                               |                  | 46.2 ± 5.8            |
| Sex (% Male)                                                   |                  | 58.5% (151)           |
| Median experience (years)                                      |                  | 17 (IQR: 14-19)       |
| Operational role                                               |                  |                       |
|                                                                | ECO              | 73.6% (190)           |
|                                                                | Call Centre      | 11.6% (30)            |
|                                                                | Management       | 10.9% (28)            |
|                                                                | Paramedic        | 2.7% (7)              |
|                                                                | ECP              | 1.1% (3)              |
| Qualification                                                  |                  |                       |
|                                                                | BAA              | 46.9% (121)           |
|                                                                | AEA              | 44.2% (114)           |
|                                                                | ANT              | 4.2% (11)             |
|                                                                | ECP              | 2.7% (7)              |
|                                                                | ECT              | 0.7% (2)              |
| Mean Vicarious Trauma Scale score (± standard deviation)       |                  |                       |
|                                                                | Composite score  | 36.6 ± 8.6            |
|                                                                | Affective impact | 23.4 ± 6.0            |
|                                                                | Cognitive impact | 13.2 ± 4.5            |
| Mean Satisfaction with Work Scale score (± standard deviation) |                  | 23.4 ± 6.0            |

The mean score (± standard deviation) for the composite VTS score was 36.6 ± 8.6, with 77 (29,8%) respondents achieving a score indicating a high level of vicarious traumatisation. The mean score (± standard deviation) for affective impact on the VTS was 23.4 ± 6.0, and the mean score (± standard deviation) for cognitive impact was 13.2 ± 4.5. There was a statistically significant correlation between the affective impact and cognitive impact scores on the VTS ( $r=0.320$ ,  $p<0.001$ ). There was a statistically significant inverse correlation between age and the affective impact score on the VTS ( $r=-0.154$ ,  $p=0.013$ ).

The degree of endorsement ('agree' or 'strongly agree') for each item in the VTS is presented in Table 3. Most participants agreed that their job involves exposure to distressing material and experiences (82.6%;  $n=213$ ) and that they find themselves distressed by listening to patients' stories and situations (82.9%;  $n=214$ ). However, only 16.3% ( $n=42$ ) of participants indicated that they found it difficult to deal with the

content of their work. In general, there were low levels of endorsement for items in the cognitive impact factor.

**Table 3: Endorsement of statements in the Vicarious Trauma Scale**

| <b>Vicarious Trauma Scale item</b>                                                            | <b>Endorsement by<br/>'agree' or<br/>'strongly agree'<br/>(n, %)</b> |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <i>Factor 1: Affective impact</i>                                                             |                                                                      |
| 1. My job involves exposure to distressing material and experiences                           | 213 (82.6)                                                           |
| 2. My job involves exposure to traumatised or distressed patients                             | 93 (36.0)                                                            |
| 3. I find myself distressed by listening to my patients' stories and situations               | 214 (82.9)                                                           |
| 4. I find it difficult to deal with the content of my work                                    | 42 (16.3)                                                            |
| 5. I find myself thinking about distressing material at home                                  | 52 (20.2)                                                            |
| <i>Factor 2: Cognitive impact</i>                                                             |                                                                      |
| 6. Sometimes I feel helpless to assist my patients in the way I would like                    | 88 (34.1)                                                            |
| 7. Sometimes I feel overwhelmed by the workload in my job                                     | 120 (46.5)                                                           |
| 8. It is hard to stay positive and optimistic given some of the things I encounter in my work | 82 (31.8)                                                            |

The mean score from the Satisfaction with Work Scale was  $23.4 \pm 6.0$ , indicating a moderate level of enjoyment and satisfaction with work. Nearly two-thirds of participants (65.5%; n=169) indicated that their job was close to ideal in most ways (Table 4). There was a statistically significant inverse correlation between Satisfaction with Work Scale score and the composite VTS score ( $r=-0.183$ ,  $p=0.003$ ).

**Table 4: Endorsement of statements on the Satisfaction with Work Scale**

| <b>Satisfaction with Work Scale item</b>                          | <b>Endorsement by<br/>'agree' or<br/>'strongly agree'<br/>(n, %)</b> |
|-------------------------------------------------------------------|----------------------------------------------------------------------|
| 1. In most ways my job is close to my ideal.                      | 169 (65.5)                                                           |
| 2. The conditions of my job are excellent.                        | 98 (38.0)                                                            |
| 3. I am satisfied with my job.                                    | 153 (59.3)                                                           |
| 4. So far, I have achieved the important things I want in my job. | 124 (48.1)                                                           |
| 5. If I could live my life over, I would change almost nothing.   | 58 (22.5)                                                            |

When asked what mechanisms were used to help cope with their work stresses, the most commonly reported mechanisms (used 'often' or 'very often') were listening to music (65.5%; n=169), reading (62.8%; n=162) and debriefing discussions with supervisors (55.0%; n=142; Table 5). A total of 158 (61.2%) of respondents indicated that they were not aware of the availability of psychological support services within the Limpopo EMS. Of the minority (n=30; 11.6%) who indicated that they had made use of the psychological support services within the Limpopo EMS, nearly all indicated that they were satisfied with the service (n=27; 90.0%).



**Table 5: The distribution of coping mechanisms self-reported by study respondents.**

| <b>Coping Mechanism</b>         | <b>Percentage (%)</b> |
|---------------------------------|-----------------------|
| Music                           | 65.5 (169)            |
| Reading                         | 62.8 (162)            |
| Supervisor support & debriefing | 55.0 (142)            |
| Sport & exercise                | 43.0 (111)            |
| Peer support                    | 39.5 (102)            |
| Medication (prescribed)         | 19.4 (50)             |
| Family                          | 17.4 (45)             |
| Medication (non-prescribed)     | 12.8 (33)             |
| Alcohol                         | 12.4 (32)             |
| Meditation & yoga               | 12.0 (31)             |
| Professional assistance         | 11.6 (30)             |
| Church or prayer                | 8.5 (22)              |
| Socialising with friends        | 6.6 (17)              |

Three multivariable linear regression models were performed. Initially, models included all variables in the data set and were then re-run using only those variables that were significantly associated with the outcome. Final models are presented in Table 6. Model 1 regresses VTS affective impact (factor 1) score and includes all variables that contributed significantly to VTS affective impact score ( $R^2 = 0.151$ ;  $p < 0.001$ ). In total, 15.1% of the variation in VTS affective impact can be accounted for by the factors in the model. Model 2 regresses VTS cognitive impact (factor 2) ( $R^2 = 0.146$ ;  $p < 0.001$ ). In total, 14.6% of the variation in VTS cognitive impact can be accounted for by the factors in the model. Model 3 regresses the composite VTS score on variables that contributed significantly to the model ( $R^2 = 0.212$ ;  $p < 0.001$ ). In total, 21.2% of the variation in VTS score can be accounted for by the factors in the model. Holding all else constant, females had on average a VTS score 2,754 units higher than males ( $p = 0.008$ ), and the use of alcohol ( $p = 0.002$ ) or non-prescription medication ( $p = 0.013$ ) as a coping mechanism predicted a VTS score 1.861 and 1.477 higher, respectively, than those who didn't. On average, increased age ( $p = 0.006$ ) and

increased satisfaction with work scores (Statement 1:  $p=0.020$ ; Statement 3:  $p<0.001$ ) were predictive of significantly lower VTS scores.

**Table 6: Model summaries and coefficients for three multiple linear regression models of Vicarious Trauma Scale (VTS) scores**

| Variables                                                          | Unstandardised<br>coefficient (B) | Std. error of<br>coefficient | t      | p-value | R <sup>2</sup> |
|--------------------------------------------------------------------|-----------------------------------|------------------------------|--------|---------|----------------|
| Multiple Linear regression model 1 (Outcome: VTS Affective impact) |                                   |                              |        |         |                |
| (Constant)                                                         | 23,497                            | 3,132                        | 7,502  | <0,001  | 0,151          |
| Age                                                                | -0,236                            | 0,073                        | -3,229 | 0,001   |                |
| Experience (square root of<br>years)                               | 1,480                             | 0,700                        | 2,116  | 0,035   |                |
| SWSS_Statement 5                                                   | 0,392                             | 0,181                        | 2,168  | 0,031   |                |
| Alcohol                                                            | 1,349                             | 0,434                        | 3,109  | 0,002   |                |
| Prescribed medication                                              | -0,924                            | 0,388                        | -2,383 | 0,018   |                |
| Non-prescribed medication                                          | 1,700                             | 0,449                        | 3,786  | <0,001  |                |
| Multiple Linear regression model 2 (Outcome: VTS Cognitive impact) |                                   |                              |        |         |                |
| (Constant)                                                         | 14,342                            | 1,182                        | 12,130 | <0,001  | 0,146          |
| Gender_female                                                      | 1,229                             | 0,529                        | 2,326  | 0,021   |                |
| SWSS_Statement 1                                                   | 0,471                             | 0,182                        | 2,580  | 0,010   |                |
| SWSS_Statement 3                                                   | -0,962                            | 0,160                        | -6,009 | 0,001   |                |
| Professional assistance                                            | 0,624                             | 0,353                        | 1,766  | 0,079   |                |
| Multiple Linear regression model 3 (Outcome: VTS score)            |                                   |                              |        |         |                |
| (Constant)                                                         | 36,270                            | 4,705                        | 7,708  | <0,001  | 0,212          |
| Gender_female                                                      | 2,754                             | 1,026                        | 2,683  | 0,008   |                |
| Age                                                                | -0,282                            | 0,102                        | -2,781 | 0,006   |                |
| Experience (square root of<br>years)                               | 2,403                             | 0,973                        | 2,470  | 0,014   |                |
| SWSS_Statement 1                                                   | 0,802                             | 0,342                        | 2,348  | 0,020   |                |
| SWSS_Statement 3                                                   | -1,413                            | 0,300                        | -4,703 | <0,001  |                |
| Alcohol                                                            | 1,861                             | 0,609                        | 3,056  | 0,002   |                |
| Non-prescribed medication                                          | 1,477                             | 0,591                        | 2,498  | 0,013   |                |

SWSS: Satisfaction With Work Scale; VTS: Vicarious Trauma Scale.

## Discussion

The results of this study raise important concerns about vicarious traumatisation among EMS providers in Limpopo EMS. The average VTS scores in this sample were nearing the upper limit of the moderate category, with nearly one-third of respondents reporting high levels of vicarious traumatisation. This indicates that a considerable number of EMS providers are undergoing significant psychological distress due to their repeated exposure to VT. Considering the demands of their work, it is vital to establish policies and interventions that can help reduce vicarious traumatisation, thereby protecting their mental health and ensuring the effectiveness of the EMS workforce.

One of the main insights from this study was the inverse link between satisfaction with work and the composite VTS scores. On average, personnel who had higher satisfaction with work scores reported lower levels of vicarious traumatisation. This indicates that promoting a positive work atmosphere could act as a safeguard against the effects of VT. It emphasizes the necessity for workplace strategies that improve job satisfaction, such as sufficient staffing, equitable pay, recognition of hard work, and opportunities for professional development (12,22,23). Implementing these approaches could not only boost employee well-being but also lead to higher retention rates and improved service quality.

The findings also indicated that alcohol use as a coping strategy was correlated with increased VT scores (22,24,25). This implies that some EMS providers may be turning to ineffective and potentially harmful, coping methods, which could intensify their psychological distress (22,24). To address this concern, a multi-faceted strategy is necessary, promoting healthier coping techniques such as peer support, structured debriefing sessions, and access to professional counselling services (22,26,24). Furthermore, awareness initiatives about the dangers of substance abuse, combined with providing easy access to stress relief options, could be beneficial in reducing this issue (24,25).

Supervisor support and debriefing were reported as essential tools for managing VT (22,26,26). Having robust managerial support and organized debriefing sessions can

greatly reduce the psychological strain faced by EMS providers. It would be advantageous to train senior staff and managers in de-escalation, debriefing, and counselling techniques; music and reading as valued coping preferences to ensure that EMS personnel get the emotional support they need after traumatic events (22,24,25). Making these practices a standard part of the workplace could help create a culture of psychological safety (22,24,25,26).

This study revealed a notable lack of awareness of formal PSS among EMS providers, hindering their utilization despite evident need. Targeted communication strategies such as workshops, informational campaigns, and streamlined access are essential to improve uptake (12,22,25). Integrating PSS into routine EMS practices, including post incident debriefings, may further enhance engagement with these services (12,22,25) .

The limited use of psychological support services among EMS providers in Limpopo is shaped by various barriers, including stigma, cultural norms, operational difficulties, and logistical issues (12,26,27). Both personal and organizational stigma can dissuade EMS providers from seeking psychological assistance, as worries about being viewed as weak or unfit for duty act as significant obstacles (15,26). In Limpopo, cultural influences further complicate this situation, as many people may favour family support or spiritual practices over formal mental health services, which diminishes their interaction with available psychological resources (27,29). The demanding nature of EMS work, characterized by long shifts, high call volumes, and emotional strain, leaves little time or energy for personnel to seek help (12,15,30). A lack of awareness about existing services also intensifies the issue, limiting proactive engagement with mental health support (12). Geographical and logistical challenges pose additional difficulties, especially in rural areas where mental health professionals are hard to find, and the distances to available services can be significant (12). In tight-knit communities, concerns about confidentiality may also dissuade EMS providers from pursuing psychological support, as they fear breaches of privacy (12,29). These challenges highlight the urgent need for targeted interventions that can effectively address both systemic and individual barriers to accessing mental health care.

To better utilize PSS, EMS organizations need to implement diverse strategies that address the specific needs of their workforce (22,31,32). Mental health education

programs can play a crucial role in normalizing psychological support and reducing stigma, while peer-led initiatives can help create a culture of openness and mutual aid (22,24,25). Expanding telehealth services could greatly improve accessibility, especially for providers in remote areas (32,33). Integrating psychological support into EMS operations - such as offering on-site counselling, regular mental health check-ins, and crisis intervention programs - can enhance accessibility and minimize barriers related to workload and time constraints (22,31). Culturally sensitive interventions, including trauma-informed care that acknowledges traditional coping strategies, may increase the perceived relevance and effectiveness of support services (22,26,27). Leadership advocacy and policy changes, such as mandatory psychological debriefings and confidential support channels, can further encourage utilization and foster a supportive work environment (22,26,34).

This study's findings may be limited in generalisability, as data were collected from EMS providers in a single, predominantly rural province. The cross-sectional design restricts causal inference, and the use of self-administered questionnaires may have introduced social desirability and non-response bias. Additionally, cultural and contextual factors may have influenced participants' interpretations of validated instruments, potentially affecting construct validity.

## **Conclusion**

This study reveals high levels of vicarious traumatisation and low use of psychological support services among Limpopo EMS providers, emphasizing the need for structured mental health interventions. It recommends routine screenings, peer support, VT-focused education, and trauma-informed policies. Supporting preferred coping strategies like music (65.5%) and reading (62.8%) through low-cost initiatives such as book exchanges or music access may further promote well-being, relaxation, and a supportive work environment in under-resourced EMS settings.

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**PART C: RESEARCH PROPOSAL**

**Assessing vicarious trauma and utilisation of psychological support services  
amongst prehospital emergency care providers in Limpopo Emergency  
Medical Services: A cross-sectional survey**

BY

**David Moraka Morudu  
(MRDDAV001)**

RESEARCH PROPOSAL

Submitted in partial fulfilment of the requirements for the degree of

**MASTER OF PHILOSOPHY  
(Emergency Medicine)**

In the

**FACULTY OF HEALTH SCIENCES**

At the

**UNIVERSITY OF CAPE TOWN**

**SUPERVISOR:** Dr. Colleen Saunders

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2024

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## DEFINITION OF CONCEPTS

**Emergency Medical Care:** means the evaluation, treatment, and care of an ill or injured person in a situation in which such emergency evaluation, treatment and care is required, and the continuation of treatment and care during the transportation of such person to or between health establishments<sup>(1,2)</sup>.

**Emergency Medical Services:** means an organisation or body that is dedicated, staffed, and equipped to operate an ambulance, medical rescue vehicle or medical response vehicle to offer emergency care<sup>(1,2)</sup>.

**Emergency Care:** means the evaluation, treatment, and care of an ill or injured person in a situation in which such emergency evaluation, treatment and care is required, and the continuation of treatment and care during the transportation of such person to or between health establishments<sup>(1,2)</sup>.

**Emergency Care Officer:** means personnel who are employed by the Department of Health to provide emergency care services under Basic Life Support and Intermediate Life Support qualifications.

**Emergency Care Providers:** means personnel who are registered with the Health Professions Council of South Africa (HPCSA) under the auspices of the Professional Board for Emergency Care<sup>(1,2)</sup>.

**Psychological Support Services:** Any such support which people receive to promote and protect their mental health and psychological wellbeing<sup>(3-5)</sup>.

## **ABBREVIATIONS**

|              |                                            |
|--------------|--------------------------------------------|
| <b>BAA</b>   | Basic Ambulance Assistant                  |
| <b>AEA</b>   | Ambulance Emergency Assistant              |
| <b>ECA</b>   | Emergency Care Assistant                   |
| <b>BLS</b>   | Basic Life Support                         |
| <b>ILS</b>   | Intermediate Life Support                  |
| <b>ALS</b>   | Advanced Life Support                      |
| <b>ECT</b>   | Emergency Care Technician                  |
| <b>CCA</b>   | Critical Care Assistant                    |
| <b>ECP</b>   | Emergency Care Practitioner                |
| <b>EMS</b>   | Emergency Medical Services                 |
| <b>EMCR</b>  | Emergency Medical Care and Rescue          |
| <b>HPCSA</b> | Health Professions Council of South Africa |
| <b>DoH</b>   | Department of Health                       |
| <b>SA</b>    | South Africa                               |
| <b>PSS</b>   | Psychological Support Services             |

## INTRODUCTION AND BACKGROUND

Emergency Medical Services (EMS) fall under the category of essential services, providing emergency medical treatment, medical rescue, and transportation of the ill and injured persons in the prehospital setting to definitive healthcare facilities<sup>(1,2,6)</sup>. To perform effective prehospital emergency care, optimal functioning, and skilled emergency care providers are needed as first responders to the emergencies and incident scenes<sup>(2,3,7)</sup>. It is inevitable that emergency care providers at various levels of qualifications find themselves being exposed to various traumatising incidents and situations in their work environment<sup>(3,8–10)</sup>. These incidents and situations can vary from critically ill patients, high impact accidents, gruesome incidents, to violent incidents<sup>(2,11,12)</sup>. Such exposure may be emotionally, physically, and psychologically exacting for the emergency care providers and the exposure may vary at various levels of training and qualification<sup>(8,13–16)</sup>.

Vicarious trauma, also known as secondary trauma or compassion fatigue, is a psychological phenomenon that occurs when individuals who are exposed to the traumatic experiences of others begin to experience symptoms comparable to those who have directly experienced trauma<sup>(33,34)</sup>. It represents unfavourable changes resulting from the emotional residue of exposure to secondary trauma and it is different from post-traumatic stress disorder (PTSD)<sup>(21,34)</sup>. This typically affects individuals in professions such as healthcare workers, first responders, social workers, therapists, and journalists, but it can also impact individuals who provide emotional support to friends or family members who have experienced trauma<sup>(33,34)</sup>. Key factors associated with vicarious trauma include exposure to traumatic stories - Vicarious trauma often occurs when individuals regularly hear or witness traumatic events, either through direct interactions with trauma survivors or through exposure to graphic media or reports<sup>(33,34)</sup>. In addition, those who are empathetic and deeply engaged with the experiences of trauma survivors are more susceptible to vicarious trauma. This empathy can lead to an emotional and psychological "absorption" of the trauma.

Symptoms of vicarious trauma can be identical to those of PTSD and may include intrusive thoughts, nightmares, anxiety, depression, feelings of helplessness, emotional numbing, and a general sense of being overwhelmed<sup>(21,33,34)</sup>. Physical reactions may include sleep disturbances, fatigue, and physical ailments<sup>(21,34)</sup>. Emotionally, individuals may become more irritable, detached, or emotionally numb<sup>(34)</sup>. Individuals may experience cognitive changes such as memory difficulties, difficulty concentrating, and a sense of cynicism or hopelessness<sup>(34)</sup>. Vicarious trauma can also lead to changes in one's belief system or values, causing individuals to question their worldview or lose a sense of meaning and purpose<sup>(33,34)</sup>. Vicarious trauma is often associated with professional burnout, as individuals may become emotionally exhausted and less effective in their roles due to the cumulative exposure to trauma<sup>(21,33,34)</sup>.

Preventing and managing vicarious trauma often involves self-care strategies, such as seeking support from peers, supervisors, or mental health professionals, setting boundaries, practicing mindfulness and relaxation techniques, and taking breaks to recharge<sup>(33,34)</sup>. Organizations and institutions that employ individuals at risk of vicarious trauma should also provide training and resources to address and mitigate its impact<sup>(33,34)</sup>. It's important to recognize that vicarious trauma is a valid and significant concern and seeking help when experiencing its symptoms is essential for maintaining one's mental and emotional well-being<sup>(33,34)</sup>. In the EMS work environment, it is paramount to have psychological support services such as psychologists, psychiatrists, chaplains, and therapists in place to assist those emergency care providers needing such support services to cope with the stressors due to overwhelming exposure<sup>(8,17)</sup>. Utilisation of such services should be encouraged to avoid the use of harmful coping mechanisms which could have negative effects on the health or lives of the emergency care providers. In the South African EMS, such support services are expected to be in place as emergency care providers continue to be exposed to traumatising incidents and situations daily when carrying out their duties to assist those requiring prehospital emergency care<sup>(18,19)</sup>.

Psychological support services within South African Emergency Medical Services (EMS) may vary by region and organization<sup>(20,21)</sup>. However, an overview of the typical psychological support services and initiatives that may be in place within South African EMS is as follows.

Critical Incident Stress Management (CISM): CISM programs are often utilized to provide psychological support to EMS personnel who have been exposed to traumatic incidents<sup>(20)</sup>. These programs may involve peer support teams, debriefing sessions, and mental health professionals who can offer counselling and assistance in processing critical incidents<sup>(20)</sup>.

Employee Assistance Programs (EAPs): Most EMS organizations in South Africa have EAPs in place<sup>(20,22)</sup>. EAPs offer confidential counselling services to employees and their families to address a range of personal and work-related issues, including stress, trauma, substance abuse, and relationship problems<sup>(20,22)</sup>.

Psychological First Aid (PFA): Training in PFA may be provided to EMS personnel to equip them with the skills to provide immediate emotional and psychological support to patients and colleagues during and after emergencies<sup>(23–25)</sup>. PFA focuses on basic psychological care and active listening<sup>(23,25)</sup>.

Mental Health Awareness and Education: Some EMS agencies conduct mental health awareness campaigns and educational programs to reduce the stigma surrounding mental health issues<sup>(20,23,26)</sup>. These initiatives may include workshops, seminars, and resources for recognizing and managing stress and trauma. Access to Mental Health Professionals: EMS organizations may facilitate access to mental health professionals such as psychologists, counsellors, and psychiatrists<sup>(20,25,26)</sup>. These professionals can



provide therapy and counselling to EMS personnel dealing with stress, trauma, and burnout.

Peer Support Programs: Peer support networks are established within EMS organizations to create a sense of community and provide a safe space for colleagues to share their experiences and emotions<sup>(20,22)</sup>. Peer supporters are often trained to offer emotional support and referrals to professional help when needed.

Resilience and Coping Skills Training: Training programs may be offered to EMS personnel to enhance their resilience and coping skills when dealing with the emotional toll of their work<sup>(20,27)</sup>. These programs aim to equip individuals with tools to manage stress and adversity effectively. Policy and Protocols: EMS organizations may have policies and protocols in place that address the mental health and well-being of their personnel<sup>(28)</sup>. These policies can include guidelines for seeking psychological support, confidentiality, and returning to work after a traumatic incident<sup>(28–30)</sup>.

Collaboration with Mental Health Services: EMS agencies may collaborate with local mental health services and facilities to ensure that their personnel have access to appropriate mental health care when needed<sup>(20,28,31)</sup>.

Regular Mental Health Check-ins: Some EMS organizations conduct regular mental health check-ins with their personnel to assess their well-being and identify any signs of distress or burnout.

It's important to note that the provision of psychological support services can vary between EMS agencies and regions within South Africa<sup>(23,28,32)</sup>. The effectiveness of these services depends on factors such as funding, resources, and the commitment of the organization to addressing the mental health needs of EMS personnel<sup>(20,25)</sup>.

In the context of understanding and addressing vicarious trauma, the Vicarious Trauma Scale (VTS) is a valuable tool<sup>(35,36)</sup>. This assessment instrument is designed to measure the extent of vicarious trauma experienced by individuals in various helping professions<sup>(35,36)</sup>. It encompasses a small range of questions and criteria that assess the emotional, psychological, and cognitive effects of vicarious trauma<sup>(35)</sup>. The VTS enables professionals to gauge the severity of vicarious trauma symptoms and identify areas of concern, making it a crucial resource for both self-awareness and the development of targeted interventions<sup>(35)</sup>. Numerous studies have validated the VTS' ability to measure the impact of vicarious trauma accurately<sup>(35-37)</sup>. It has demonstrated high levels of reliability and validity, making it a trusted tool for assessing the dimensions of vicarious trauma<sup>(35,37)</sup>. Specifically, the VTS has been validated to measure the severity of vicarious trauma symptoms and the degree of impairment or distress resulting from vicarious trauma exposure<sup>(35,37)</sup>. Its validation underscores its importance in understanding and addressing the nuanced effects of vicarious trauma on individuals in helping professions<sup>(35,37)</sup>.

## **PURPOSE OF THE STUDY**

### **2.1. Aim**

The aim of this study is to measure distress and exposure to vicarious trauma, and to describe the awareness and utilisation of psychological support services, by emergency care providers in Limpopo Government EMS, South Africa.

### **Objectives**

To achieve the aim of this study, the following objectives will be addressed:

- describe levels of distress and exposure to vicarious trauma in a sample of public sector EMS personnel in Limpopo using the Vicarious Trauma Scale<sup>(19,26)</sup>.
- Describe awareness and utilisation of the available psychological support services.
- Describe the satisfaction of emergency care providers with the available psychological support services.

## **RESEARCH METHODOLOGY**

### **Study design**

This is an observational, cross-sectional study using a self-administered and anonymous questionnaire which includes the Vicarious Trauma Scale<sup>(38)</sup>. This study design involves collecting data from participants at a single point in time and is well-suited for assessing the current state of awareness and utilization of psychological support services among emergency care providers.

### **Study setting and sample.**

Limpopo province is predominantly a rural province, with a population of 5.9 million people living in it and a surface area of 129000km<sup>2</sup>. The province is divided into five districts, namely: Capricorn, Waterberg, Mopani, Vhembe, and Sekhukhune. EMS serves the Limpopo population through 57 ambulance stations (with most of these stations being purpose built) with 1700 Emergency Care Officers (ECOs), and approximately 39 operational Advanced Life Support (ALS) practitioners (mixture of Emergency Care Technicians (ECT), Critical Care Assistant (CCA), National Diploma in Emergency Care, Diploma in Emergency Care, and Emergency Care Practitioners (ECP) (information supplied by the Limpopo EMS Operational Manager Mr. David Dennison). ALS practitioners are therefore very limited, and, in some instances, ALS responds over a

large distance for emergencies. Limpopo EMS deploys the use of a comprehensive 24-hour Aeromedical service, and two ALS contracted providers for ALS interhospital transfers, which assist with the coverage of advanced life support. Limpopo EMS is running operational ambulances, response vehicles, planned patient transport, rescue vehicles, and support vehicles. EMS call-taking and dispatching is still paper based, however, procurement of communication devices, push to talk, mobile radios, and Mobile Data Tablets (MDTs) have already been procured as phase 1, and Computer Aided Dispatch System is at the final stages of approval for the digitisation of the call centre, ambulances, and stations as phase 2 (Personal communication, Limpopo EMS operational manager Mr. David Dennison).

All public sector emergency care providers doing operational work employed in Limpopo EMS (approximately 1739 emergency care providers) are the population of interest (information supplied by the Limpopo Operational Manager Mr. David Dennison). Convenience and snowball sampling will be used to select those participants available at the time of distributing the online survey and hard copies of the questionnaire<sup>(39–42)</sup>. We anticipate a 30% response rate.

Inclusion criteria – All public sector, HPCSA registered emergency care providers employed in Limpopo EMS who are operational on the road or in the call centre are eligible to participate in this study. Participants will include those with varying years of experience and there will be no specific minimum or maximum length of service to allow for a diverse sample. Only participants who have provided voluntary, informed consent will be able to take part in the study.

Exclusion criteria – Individuals who do not work as operational emergency care providers within Limpopo Emergency Medical Services will be excluded from the study to ensure that the sample represents the target population accurately. Former employees or

individuals who have retired from Limpopo Emergency Medical Services will be excluded. Individuals who decline to provide informed consent will be excluded. Administrative and non-operational staff will be excluded to ensure the study's focus remains on those directly involved in emergency care provision.

## **Data collection**

The questionnaire method will be used and will be available online (Lime survey) and in paper-based format as backup<sup>(43,44)</sup>. The data collection process will commence after DRC proposal approval, UCT HREC approval, and permission from the Department of Health through the National Health Research Database (NHRD). An information letter will be provided to the study population elaborating on the study and inviting them to participate in the study (Appendix A).

An online survey will be developed using Lime Survey (Appendix B). An information page that clearly explains the purpose of the survey, the voluntary nature of participation, confidentiality assurances, and how the data will be developed and used will form the landing page of the survey. Participants will be required to read and acknowledge their voluntary consent before proceeding to the survey questions. The survey link will be shared with potential participants via email and other communication channels available following approval from Limpopo Emergency Medical Services. Participants will access the survey through the provided link and complete it at their convenience. A system to track responses and ensure that each respondent can only submit the survey once will be implemented. Participants will be assured that their responses will be kept confidential, and that no personally identifiable information will be shared. The researcher will avoid collecting any identifying information such as names, and email addresses in the survey responses. On completion of the survey, participants will be asked to share the survey invite with other Limpopo EMS emergency care providers.

A printed, hard copy version of the survey with the same questions as the online version will also be made available. The researcher will prepare printed copies of the informed consent form to be included with the paper surveys. The researcher will ensure it covers the same information as the online consent form. The researcher will schedule specific times when the researcher can distribute the study invitation and paper surveys to potential participants in person outside of operational shifts. During distribution, the researcher will explain the purpose of the survey and distribute the paper surveys along with the informed consent forms. The researcher will allow participants time to read and sign the consent forms. The researcher will emphasize that participation is voluntary and withdrawal from participation is allowed at any point. The researcher will be responsible for collecting and managing the paper surveys. The researcher will ensure that the paper surveys are stored securely to prevent unauthorized access. The researcher will accentuate the importance of confidentiality to participants during the distribution and collection process. The researcher will remove any identifying information from the surveys to maintain anonymity. To ensure that the researcher only receives surveys from participants who have completed the informed consent form, participants will be required to submit both the survey and the signed consent form together. However, the informed consent form will be separated from the survey responses.

We have assessed that the need for a translated survey and consent form is not necessary as all potential participants in the sampling frame are expected (by their employer) to be able to read and understand English. All Limpopo Department of Health EMS employees are expected to have undertaken a professional qualification with English as a medium of instruction, and all Limpopo EMS job interviews are conducted in English.

## **Data analysis**

A spreadsheet containing responses from the survey will be downloaded at the close of the data collection period. Paper based responses will then be manually captured into the same spreadsheet by the researcher.

Data cleaning and preparation will start with verifying the completeness and accuracy of the collected data and addressing any missing or inconsistent responses as well as create a dataset that is ready for analysis. The researcher will begin with descriptive statistics to provide an overview of the data by calculating frequencies and percentages for categorical variables (e.g., gender, job role, awareness of services). The researcher will compute measures of central tendency (mean, median) and variability (standard deviation, range) for continuous variables (e.g., age, years of experience). The researcher will analyse the responses related to awareness and calculate the percentage of participants who are aware of psychological support services. The researcher will also examine the sources of awareness (e.g., training, colleagues) using frequency tables. The researcher will analyse the responses related to utilization and calculate the percentage of participants who have utilized psychological support services. The researcher will explore the reasons for utilization and the perceived effectiveness of the services. The researcher will use cross-tabulations to examine the relationships between utilization and other variables (e.g., age, job role). The researcher will analyse responses related to perceived barriers and facilitators and identify the most reported barriers to accessing psychological support services. The researcher will examine factors that participants believe would facilitate the utilization of these services. The procedures (descriptive statistics, chi-square tests, regression analysis, Likert scales) which will be utilised to analyse the data will be planned and ensure that they align with the study design and the study objectives<sup>(45,46)</sup>. This will include orderly organising, categorising, manipulating, and summarising the collected data and derive meaning<sup>(46,47)</sup>.

## **ETHICAL CONSIDERATION**

Application for ethical approval from the UCT Human Research Ethics Committee will be done, then permission to commence with the study will be requested from the Limpopo Director of EMS through the National Health Research Database. Once approval and clearance have been obtained, data collection will commence.

This is a low-risk study however conducting research on sensitive topics, such as the awareness and utilization of psychological support services among emergency care providers, requires careful attention to ethical considerations to protect the rights and well-being of participants. The researcher will obtain informed consent from all participants before their involvement in the study and clearly explain the purpose of the study, what participation entails, and the voluntary nature of participation. Participants will be made aware to understand that they can withdraw from the study at any time up until the survey responses are submitted without consequences. The researcher will ensure that participation in the study is entirely voluntary, and participants understand that they will not face any coercion, pressure, or negative consequences for choosing not to participate. The researcher will ensure confidentiality of participants' responses and their identities by avoiding collecting personally identifiable information, store data securely and ensure that only authorized personnel have access to it.

The researcher will safeguard the security of the collected data, whether in digital or paper format and use secure data storage methods to protect against unauthorized access or data breaches. The researcher will clearly communicate to participants about how their data will be used and disseminated and assure them that their responses will be used for research purposes only and will not be shared with unauthorized parties.



The researcher will consider the potential emotional or psychological impact of the survey questions on participants and provide resources or contact information for psychological support services in case participants feel distressed during or after completing the survey. These are described in the information sheet for the survey as follows and are freely available to research participants:

*“Participating in this study may trigger negative emotions as you reflect on past experiences. If you are feeling distressed after taking part in this study, please contact Limpopo EMS Employee Assistance Programme office, Mr Tumelo Sedutla on WhatsApp number 0791402245 or call on 0672100910.”*

There will be no reimbursement for participation in this study and the researcher will comply with all relevant local, national, and international regulations governing research involving human participants.

## **SIGNIFICANCE OF THE STUDY**

The significance of this study lies in its potential to improve the mental health and well-being of emergency care providers, reduce stigma around seeking mental health support, and enhance the overall quality of healthcare services they provide. It can also inform policies and practices within Limpopo Emergency Medical Services and serve as a valuable resource for addressing similar issues in emergency healthcare settings globally:

Healthcare Worker Well-being: The well-being of healthcare workers, especially those in high-stress professions like emergency care providers, is crucial therefore understanding their awareness of and access to psychological support services is essential for addressing potential mental health issues and promoting their overall well-being.

Mental Health Awareness: The study contributes to raising awareness about the mental health challenges faced by emergency care providers. It sheds light on the importance of addressing mental health issues within the healthcare industry.

Reducing Stigma: By exploring the reasons behind the utilization or non-utilization of psychological support services, the study can benefit identify and address the stigma associated with seeking mental health support and reducing stigma is critical to encouraging healthcare workers to seek help when needed.

Workforce Retention: High levels of stress and burnout among emergency care providers can lead to workforce attrition and understanding the factors that influence utilization of support services can inform strategies to retain experienced professionals in the field.

Optimizing Support Services: The findings can help Limpopo Emergency Medical Services and other health organisations optimize the design and delivery of psychological support services, making them more accessible and effective for their staff.

Policy and Practice: The recommendations from this study can guide policymakers and healthcare administrators in implementing policies and practices that prioritize the mental health and well-being of emergency care providers, this can include allocating resources for support services, training, and awareness campaigns.

Research Gap Filling: Research on the mental health of emergency care providers in specific regions, such as Limpopo, may be limited and this study can help fill this research gap and provide valuable insights into the unique challenges faced by emergency care providers in Limpopo EMS.

Patient Care Quality: Healthcare providers' mental health can impact the quality of care they provide to patients and improving the mental well-being of emergency care providers can indirectly lead to better patient outcomes.

Public Health: Addressing mental health issues among healthcare workers is not only essential for their own well-being but also for public health. Burnout and stress among emergency care providers can affect their ability to respond effectively to emergencies.

Global Relevance: While the study focuses on Limpopo EMS, the findings may have broader relevance for emergency care providers globally, as they often face similar challenges concerned with mental health and stress.

### **Dissemination of findings**

The results of this study will be transcribed as a University Cape Town's MPhil dissertation that follows the journal's guidelines and focuses on the research's methodology, results, and implications, and consider submitting the research findings to peer-reviewed academic journals in fields related to healthcare, psychology, or emergency medicine. Thesis Presentation is part of the MPhil thesis, where a clear and concise presentation summarizing your study's objectives, methodology, results, and conclusions will be prepared and presented to faculty members, peers, and other students in the program.

### **Time frame**

EMDRC: March 2023

DRC Proposal approval: January 2024

HREC submission: January 2024

NHRD: February 2024

Data collection: March-April 2024.

Analysis: May 2024.

Write up: July 2024.

Final presentation: September 2024.

### **Budget**

- Transport - R3000

- Photocopies - R2000
- Internet Data - R500
- Electricity – R200

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## **APPENDICES**

### **Appendix A: Study Information and Consent**

#### **Assessing vicarious trauma and utilisation of psychological support services amongst prehospital emergency care providers in Limpopo Emergency Medical Services: A cross-sectional survey**

##### Section A: Study information and consent to participate.

Thank you for considering participating in our study. The aim of this study is to measure distress and exposure to vicarious trauma, and to describe the awareness and utilisation of psychological support services, by emergency care providers in Limpopo Government EMS, South Africa. Briefly, vicarious trauma is a particular type of psychological trauma that develops in people who are constantly exposed to other people's traumatic events and experiences during their occupational activities.

If you choose to participate in this study, you will be asked to complete a single, online questionnaire consisting of three parts. The survey should take between 15 to 20 minutes to complete. There are no direct benefits to you for taking part in this study, but your participation will help us to understand if improvements can be made to improve the accessibility and effectiveness of psychological support services within Limpopo Emergency Medical Services. This is a low-risk study, and we have put measures in place to protect your confidentiality and privacy. Participation in this study is voluntary, and you may choose not to participate. You may stop your participation at any point during the questionnaire without negative consequences to you. As the questionnaire is anonymous,

we will not be able to withdraw your responses once you have completed the questionnaire.

Participating in this study may trigger negative emotions as you reflect on past experiences. If you are feeling distressed after taking part in this study, please contact Limpopo EMS Employee Assistance Programme office, Mr Tumelo Sedutla on WhatsApp number 0791402245 or call on 0672100910.

This study is being conducted by Mr David Morudu as part of his MPhil in Emergency Medicine at the University of Cape Town. The study is supervised by Dr Colleen Saunders (Supervisor) and Dr Tshikani Lewis Khoza (Co-supervisor). If you have any queries about the study, you may contact either Mr David Morudu ([morudud@yahoo.com](mailto:morudud@yahoo.com)) or Dr Saunders ([colleen.saunders@uct.ac.za](mailto:colleen.saunders@uct.ac.za)).

This study has been approved by the Human Research Ethics Committee of the University of Cape Town (HREC ref 086/2024). If you have any queries about your rights as a research participant, you may contact the UCT HREC at [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za).

If you agree to participate in this study, you may click the link provided to go to the questionnaire, and by doing so, you agree that:

- You have been provided clear information, including the risks and benefits, about the study.
- You have been provided the opportunity to ask questions about participating in this study, and your questions have been answered.
- You have not been coerced to participate in this study but voluntarily consent to taking part in the study.

Please complete all questions in this questionnaire. As a reminder, this questionnaire is anonymous, and we encourage you to answer truthfully.

## Appendix B: Survey questionnaire

### Section 1: Participant Information

Please complete all questions in this section.

1. Gender:
2. Age (years):
3. Prehospital care education (Please tick all that have been obtained):

|                                                                  |  |
|------------------------------------------------------------------|--|
| Basic Ambulance Assistant (BAA)                                  |  |
| Ambulance Emergency Assistant (AEA)                              |  |
| Emergency Care Assistant (ECA)                                   |  |
| Paramedics (CCA, ALS, NDip)                                      |  |
| Emergency Care Practitioner -BEMC;<br>BTech; BHSc – EMC (ECP)    |  |
| Coursework and Dissertation Master's<br>Degree in Emergency Care |  |
| Research only Master's Degree in<br>Emergency Care               |  |
| Master's degree (not in Emergency Care)                          |  |
| PhD                                                              |  |

4. Number of years' experience in the following domains:

| Domain                                 | Number of years |
|----------------------------------------|-----------------|
| Operational paramedic                  |                 |
| Operational in call centre or dispatch |                 |
| Mid- to senior management              |                 |
| Teaching and education                 |                 |

5. Current operational role:

## Section 2: Vicarious Trauma Scale

Instructions: Please read the following statements and indicate on a scale of 1 (strongly disagree) to 7 (strongly agree) how much you agree with them.

Scale provided for each statement:

1. Strongly disagree
2. Disagree
3. Slightly disagree
4. Neither agree nor disagree
5. Slightly agree
6. Agree
7. Strongly agree

Statements:

1. My job involves exposure to distressing material and experiences.
2. My job involves exposure to traumatized or distressed patients.
3. I find myself distressed by listening to my patients' stories and situations.

4. I find it difficult to deal with the content of my work.
5. I find myself thinking about distressing material at home.
6. Sometimes I feel helpless to assist my patients in the way I would like.
7. Sometimes I feel overwhelmed by the workload involved in my job.
8. It is hard to stay positive and optimistic given some of the things I encounter in my work.

### **Section 3: Satisfaction with work scale**

Instructions: Please read the following statements and indicate on a scale of 1 (strongly disagree) to 7 (strongly agree) how much you agree with them.

Scale provided for each statement:

1. Strongly disagree
2. Disagree
3. Slightly disagree
4. Neither agree nor disagree
5. Slightly agree
6. Agree
7. Strongly agree

Statements:

1. In most ways my job is close to my ideal.
2. The conditions of my job are excellent.
3. I am satisfied with my job.
4. So far, I have achieved the important things I want in my job.
5. If I could live my life over, I would change almost nothing.



## **Section 4: Coping mechanisms**

To cope with your job have you ever used any of the following:

Scale provided for each statement:

1. Never
2. Occasionally
3. Often
4. Very often

- Sport / Exercise
- Reading
- Meditation/Yoga
- Alcohol
- Prescription medication
- Non-Prescription Medication
- Music
- Supervisors
- Peer support
- Professional Assistance (i.e., psychiatrist or psychologist)

Are there any other methods you may have used to help you cope with your job:

.....

## **Section 5: Awareness of Psychological Support Services**

4.1. Are you aware of the availability of psychological support services within Limpopo Emergency Medical Services (LEMS)?

- Yes
- No

4.2. If yes, please list which psychological support services you are aware of within LEMS? \_\_\_\_\_

4.3. If yes, how did you become aware of these services? \_\_\_\_\_

4.4 Have you ever used the psychological support services provided by LEMS?

- Yes
- No

4.5. If yes, please briefly describe your experience with these services.

4.5.1 What were the reasons for seeking support?

4.5.2 How satisfied were you with the service?

4.6. If no, what barriers or reasons have prevented you from utilizing psychological support services? \_\_\_\_\_

**Closing Remarks:** Thank you for participating in this survey. Your input is invaluable to our research. Your responses will remain confidential and will be used for research purposes only.

## Appendix C: STROBE Checklist of items that should be included in reports of *cross-sectional studies*

|                              | Item<br>No | Recommendation                                                                                                                           | Page<br>number |
|------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Title and abstract           | 1          | (a) Indicate the study's design with a commonly used term in the title or the abstract                                                   | 1              |
|                              |            | (b) Provide in the abstract an informative and balanced summary of what was done and what was found                                      | 4              |
| Introduction                 |            |                                                                                                                                          |                |
| Background/rationale         | 2          | Explain the scientific background and rationale for the investigation being reported                                                     | 54             |
| Objectives                   | 3          | State specific objectives, including any prespecified hypotheses                                                                         | 34, 59         |
| Methods                      |            |                                                                                                                                          |                |
| Study design                 | 4          | Present key elements of study design early in the paper                                                                                  | 59             |
| Setting                      | 5          | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection          | 59             |
| Participants                 | 6          | (a) Give the eligibility criteria, and the sources and methods of selection of participants                                              | 59             |
| Variables                    | 7          | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | 35, 40, 63     |
| Data sources/<br>measurement | 8*         | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of        | 61             |

|                        |     |                                                                                                                                                                                                   |                |
|------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                        |     | assessment methods if there is more than one group                                                                                                                                                |                |
| Bias                   | 9   | Describe any efforts to address potential sources of bias                                                                                                                                         | 44             |
| Study size             | 10  | Explain how the study size was arrived at                                                                                                                                                         | 35             |
| Quantitative variables | 11  | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why                                                                      | 35, 39, 40, 63 |
| Statistical methods    | 12  | (a) Describe all statistical methods, including those used to control for confounding                                                                                                             | 61             |
|                        |     | (b) Describe any methods used to examine subgroups and interactions                                                                                                                               | 61             |
|                        |     | (c) Explain how missing data were addressed                                                                                                                                                       | 61             |
|                        |     | (d) If applicable, describe analytical methods taking account of sampling strategy                                                                                                                | 61             |
|                        |     | (e) Describe any sensitivity analyses                                                                                                                                                             | 61             |
| Results                |     |                                                                                                                                                                                                   |                |
| Participants           | 13* | (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed | 36             |
|                        |     | (b) Give reasons for non-participation at each stage                                                                                                                                              | 36             |
|                        |     | (c) Consider use of a flow diagram                                                                                                                                                                | Not included   |
| Descriptive data       | 14* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders                                                          | 31, 36, 59     |

|                  |     |                                                                                                                                                                                                              |              |
|------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|                  |     | (b) Indicate number of participants with missing data for each variable of interest                                                                                                                          | 36, 37       |
| Outcome data     | 15* | Report numbers of outcome events or summary measures                                                                                                                                                         | Not included |
| Main results     | 16  | (a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included | 36           |
|                  |     | (b) Report category boundaries when continuous variables were categorized                                                                                                                                    | 36           |
|                  |     | (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period                                                                                             | 36           |
| Other analyses   | 17  | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses                                                                                                               | Not included |
| Discussion       |     |                                                                                                                                                                                                              |              |
| Key results      | 18  | Summarise key results with reference to study objectives                                                                                                                                                     | 36           |
| Limitations      | 19  | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias                                                   | 44           |
| Interpretation   | 20  | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence                                   | 36           |
| Generalisability | 21  | Discuss the generalisability (external validity) of the study results                                                                                                                                        | 44           |

|                   |    |                                                                                                                                                               |              |
|-------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Other information |    |                                                                                                                                                               |              |
| Funding           | 22 | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based | Not included |

\*This cross-sectional study was conducted and reported in accordance with the STROBE guidelines for observational studies.

## Appendix D: Research approvals



UNIVERSITY OF CAPE TOWN  
Faculty of Health Sciences  
Human Research Ethics Committee



Room 45 E-52-E-Floor- Old Main Building  
Groote Schuur Hospital  
Observatory 7925  
Telephone [021] 406 6492  
Email: [hrec-submissions@uct.ac.za](mailto:hrec-submissions@uct.ac.za)  
Website: [www.health.uct.ac.za/home/human-research-ethics](http://www.health.uct.ac.za/home/human-research-ethics)

13 May 2024

**HREC REF: 086/2024**

**Dr C Saunders**

Division of Emergency Medicine  
F-51 OMB  
Email: [colleen.saunders@uct.ac.za](mailto:colleen.saunders@uct.ac.za)  
Student: [morudud@yahoo.com](mailto:morudud@yahoo.com)

Dear Dr Saunders

**PROJECT TITLE: ASSESSING VICARIOUS TRAUMA AND UTILISATION OF PSYCHOLOGICAL SUPPORT SERVICES AMONGST PREHOSPITAL EMERGENCY CARE PROVIDERS IN LIMPOPO EMERGENCY MEDICAL SERVICES: A CROSS-SECTIONAL SURVEY (MASTER OF PHILOSOPHY IN EMERGENCY MEDICINE CANDIDATE: MR DAVID MORAKA MORUDU)**

Thank you for your response letter received 08 May 2024, addressing the issues raised by the Faculty of Health Sciences Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

**Approval is granted for one year until the 30 May 2025.**

Please submit a progress form, using the standardised Annual Report Form (FHS016) or FHS017 if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: [www.health.uct.ac.za/fhs/research/humanethics/forms](http://www.health.uct.ac.za/fhs/research/humanethics/forms))

***The HREC acknowledge that the student: Mr David Moraka Morudu will also be involved in this study.***

**Please quote HREC REF 086/2024 in all your correspondence.**

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

**PROFESSOR M BLOCKMAN**  
**CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE**

Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007

HREC/ref 086.2024



# LIMPOPO

PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF  
**HEALTH**

Ref : LP\_2024-05-015  
Enquires : Legodi P  
Tel : 015-293 6028/6410  
Email : Malesela.Legodi@dhsd.limpopo.gov.za

**DAVID MORAKA MORUDU**

**CC: UNIVERSITY TO ENSURE COMPLIANCE WITH CLAUSE 2d OF THIS APPROVAL LETTER**

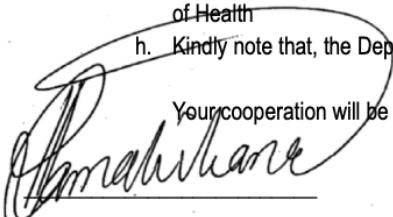
**PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES**

Your Study Topic as indicated below;

**ASSESSING VICARIOUS TRAUMA AND UTILIZATION OF PSYCHOLOGICAL SUPPORT SERVICES  
AMONGST PREHOSPITAL EMERGENCY CARE PROVIDERS IN LIMPOPO EMERGENCY MEDICAL  
SERVICES: A CROSS-SECTIONAL SURVEY**

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
  - a. Present this letter of permission to the office of Chief District and/or Director responsible for emergency medical Services a week before the study is conducted.
  - b. This permission is **ONLY** for Limpopo Provincial Offices
  - c. In the course of your study, there should be no action that disrupts the routine services or incur any cost on the Department.
  - d. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
  - e. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
  - f. **The approval is only valid for a 1-year period.**
  - g. If the proposal has been amended, a new approval should be sought from the Department of Health
  - h. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated.

  
pp. Head of Department

04/07/2024

Date

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Fidel Castro Ruz House, 18 College Street, Polokwane 0700  
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